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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0401218F / KC-135s
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	4.583	3.564	12.955	0.000	12.955	7.266	0.000	0.000	0.000	Continuing	Continuing
675261: <i>KC-135 Upgrades</i>	-	4.583	3.564	12.955	0.000	12.955	7.266	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 7, PE 0401218F, project 675261, Center Console Refresh, is a new start.
 This program, BA 7, PE 0401218F, project 675261, High Frequency Modernization, is a new start.
 This program, BA 7, PE 0401218F, project 675261, COMM 2 Crypto and Data, is a new start.

A. Mission Description and Budget Item Justification

The KC-135 currently utilizes the legacy V/UHF satellite system, UHF Follow-On (UFO), to communicate with their controlling Command & Control (C2) agencies and other warfighters. This program adds to the current system by providing Beyond Line Of Sight (BLOS) and Line Of Sight (LOS) capability for secure voice and C2 data communications exchange between MAF aircraft and C2 agencies and is capable of operating with new crypto algorithms being developed under the VINSON/ANDVT Crypto Modernization (VACM) Program.

This program has 4 combined 1067s to meet the requirement:

- 1) Mobile User Objective System (MUOS): Initial integration for MUOS capable radios on Block 45 aircraft in the COM 3 position with Integrated Waveform capability and SATURN backward capability for Line of Sight. ARC-210 Gen 3 radios on KC-135 will be obsolete in 2023. Requirement for ARC-210 Gen 3 radios, 10-050 Crypto, 15-046 MUOS, 16-053 SATURN, and 17-039 IW.
- 2) Center Console Refresh (CCR) consists of Fuel Management System (FMS) and Flight Display Systems (FDS) Upgrade to combat obsolescence and provide a platform for Digital Flight Instrumentation. Requirement generated and awaiting Control Review Board.
- 3) High Frequency Modernization (HF): Replace legacy HF radio with a modernized HF radio on KC-135 aircraft. A modernized HF communications capability is necessary to enable future sustainability and growth to operate in SATCOM-denied scenarios while maintaining global, secure voice and data between Mobility Air Force aircraft and command and control (C2) agencies to exchange classified information. Requirement: Modernized High Frequency (HF) Radio.
- 4) COMM2 Crypto and Data: Initial integration for ARC-210 Radio replacement in the COMM 2 position with HAVE QUICK II and SATURN capability and solution for the Video Data Link-2000 replacement. ARC-210 Gen 3 radios on KC-135 will be obsolete Oct 1, 2023. Continued VHF Secure Voice & UHF/VHF Anti-Jam radio capability requires legacy ARC-210 Radio replacement by NSA crypto modernization suspense.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2021 \$00.000 million was expended for civilian pay expenses in this program element, and in FY 2022 \$00.000 million is forecasted for civilian pay expenses in this program element.

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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	4.583	3.564	0.000	0.000	0.000
Current President's Budget	4.583	3.564	12.955	0.000	12.955
Total Adjustments	0.000	0.000	12.955	0.000	12.955
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• 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	0.000	0.000			
• Other Adjustments	0.000	0.000	12.955	0.000	12.955

Change Summary Explanation

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY 2023 cannot be made in a relevant manner.”

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: KC-135 MUOS radio	4.583	3.564	3.795	0.000	3.795
Description: The KC-135 utilizes the legacy V/UHF satellite system, UHF Follow-On (UFO), to communicate with their controlling Command & Control (C2) agencies and other warfighters. This program upgrades COMM 3 by adding Beyond Line Of Sight (BLOS) and Line Of Sight (LOS) capability for secure voice and C2 data communications exchange between MAF aircraft and C2 agencies and is capable of operating with new crypto algorithms being developed under the VINSON/ANDVT Crypto Modernization (VACM) Program by National Security Agency.					

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C. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>FY 2022 Plans: Prototype and integration efforts for first articles.</p> <p>FY 2023 Base Plans: Integration of program upgrades COMM 3 to include BLOS capability for secure voice and C2 data communications.</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increased due to additional integration efforts for communication modernization upgrades.</p>					
<p>Title: Center Console Refresh</p> <p>Description: Center Console Refresh (CCR) consists of Fuel Management System (FMS) and Flight Display Systems (FDS) Upgrade to combat obsolescence and provide a platform for Digital Flight Instrumentation.</p> <p>FY 2022 Plans: N/A</p> <p>FY 2023 Base Plans: CCR contracting activities to include source selection.</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase due to ramp up of CCR activities.</p>					
	0.000	0.000	3.060	0.000	3.060
<p>Title: High Frequency Modernization</p> <p>Description: Replace legacy HF radio with a modernized HF radio on KC-135 aircraft. A modernized HF communications capability is necessary to enable future sustainability and growth to operate in SATCOM-denied scenarios while maintaining global, secure voice and data between MAF aircraft and command and control (C2) agencies to exchange classified information.</p> <p>FY 2022 Plans:</p>					
	0.000	0.000	1.300	0.000	1.300

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A					
FY 2023 Base Plans: Testing and integration of modernized HF radio and communications capabilities.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase due to increase in testing and integration activities for modernized HF radio.					
Title: COMM 2 Crypto and Data	0.000	0.000	4.800	0.000	4.800
Description: Initial integration for ARC-210 Radio replacement in the COMM 2 position with HAVE QUICK II and SATURN capability and solution for the VHF Data Link-2000 replacement. ARC-210 Gen 3 radios on KC-135 will be obsolete Oct 1, 2023. Continued VHF Secure Voice & UHF/VHF Anti-Jam radio capability requires legacy ARC-210 Radio replacement by NSA crypto modernization suspense.					
FY 2022 Plans: N/A					
FY 2023 Base Plans: Contract activities for initial integration of ARC-210 Gen 3 radio replacement.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase due to ramp-up of EMD activities and contract award.					
Accomplishments/Planned Programs Subtotals	4.583	3.564	12.955	0.000	12.955

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• APAF 05 C13500: C-135	0.000	0.000	47.256	0.000	47.256	31.064	28.591	21.233	62.462	Continuing	Continuing

Remarks

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force Date: April 2022

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0401218F / KC-135s

E. Acquisition Strategy

MUOS
Procure B-Kit components through PMA-209 a Navy IDIQ contract.
Utilize existing contract vehicle for RDT&E effort. To include integration, testing, and prototypes.
Potential small business for A-Kit and depot-level for installs.

Center Console Refresh (CCR)
Planned ASP approval 4QFY22

High Frequency Modernization (HF)
Prototypes delivered and product selected by AFLCMC/WNS
Planned ASP approval 4QFY22

Comm 2 Crypto & Data
Planned ASAP approval for 4QFY22

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401218F / KC-135s	Project (Number/Name) 675261 / KC-135 Upgrades
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
MUOS Radios Product Development	SS/CPFF	Not specified. : TBD	-	3.810	Feb 2022	3.544	Jun 2022	3.777	Oct 2022	-		3.777	Continuing	Continuing	-
MUOS Long Lead B-Kit Procurement for RDT&E	MIPR	Not specified. : TBD	-	0.723	May 2021	-		-		-		-	Continuing	Continuing	-
COMM 2 Crypto and Data Long Lead B-Kit Procurement for RDT&E	TBD	Not specified. : TBD	-	-		-		4.800	Oct 2022	-		4.800	Continuing	Continuing	-
Not specified.	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	4.533		3.544		8.577		-		8.577	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
MUOS Support	Various	Not specified. : TBD	-	0.050	Mar 2022	0.020		0.018		-		0.018	Continuing	Continuing	-
Subtotal			-	0.050		0.020		0.018		-		0.018	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
HF Test and Evaluation	TBD	Not specified. : TBD	-	-		-		1.300	Mar 2023	-		1.300	Continuing	Continuing	-
Subtotal			-	-		-		1.300		-		1.300	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
CCR Dir Cite Auth Civ Pay	TBD	Not specified. : TBD	-	-		-		1.360	Nov 2022	-		1.360	Continuing	Continuing	-
CCR RFP and Source Selection	TBD	Not specified. : TBD	-	-		-		1.700	Mar 2023	-		1.700	Continuing	Continuing	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401218F / KC-135s	Project (Number/Name) 675261 / KC-135 Upgrades
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FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

KC-135 MUOS Radio	
Long Lead B-Kit components for RDT&E	
Contract Award, EMD, and Test	
COMM 2 Crypto and Data	
Contract award, EMD and Test	
HF Modernization	
Integration and Test	
Center Console Refresh (CCR)	
Contract award, EMD and Test	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0401218F / KC-135s	Project (Number/Name) 675261 / KC-135 Upgrades
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
KC-135 MUOS Radio				
Long Lead B-Kit components for RDT&E	2	2021	2	2022
Contract Award, EMD, and Test	3	2022	2	2024
COMM 2 Crypto and Data				
Contract award, EMD and Test	3	2023	3	2024
HF Modernization				
Integration and Test	2	2023	2	2024
Center Console Refresh (CCR)				
Contract award, EMD and Test	1	2023	4	2024