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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0401219F / KC-10s							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	3.500	7.933	6.569	0.000	6.569	0.020	0.000	0.000	0.000	Continuing	Continuing
675195: Aircraft Modernization Program (AMP)	-	3.500	7.933	6.569	0.000	6.569	0.020	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	1	-	-	-	-	-	-	-	-		

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

The KC-10 is an aerial refueling asset built on the commercial DC-10 airframe. This aircraft creates an air bridge enabling rapid global mobility and global strike missions. There are 59 KC-10A aircraft in the USAF tanker fleet. KC-10 has a divestiture strategy that is to be completed in 2024.

Mode 5 program is a FAA mandated upgrade to the USAF Identification Friend or Foe (IFF) system, the primary means of command and control aircraft identification. Mode 5 increases anti-spoofing capabilities and lowers the possibility of aircraft/aircrew loss due to misidentification of friendly aircraft. The KC-10 modification program includes a Mode 5 capable APX-119 transponder, a new KIV-77 crypto applique and integration/control through the CDU-7000F flight management computer.

An FAA mandated Automatic Dependent Surveillance-Broadcast (ADS-B) upgrade to the KC-10 is also included as part of Mode 5 to meet DO-260B requirements set by the FAA. Both Identification Friend or Foe (IFF) Mode 5 and Automatic Dependent Surveillance - Broadcast (ADS-B) Out are mandated programs (JROCM 047-07 and FAA Advisory Circular 20-165B) that have a required incorporation NLT 1 Jan 2020 (ADS-B) and 1 July 2020 (Mode 5). Both modifications are accomplished by modification of the APX-119 Line Replaceable Unit (LRU) and can easily be accomplished at the same time and at a significant cost savings to the USAF.

The program includes a Technology Maturation Risk Reduction Study (TMRR), Formal EMD, Procurement and Installation on KC-10 aircraft.

BA Justification: Mode 5 and ADS-B Out are mandated are JROCM (047-07) and FAA (AC 20-165B) mandated programs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver KC-10 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Previous President's Budget		0.000	7.933	6.618	0.000	6.618	
Current President's Budget		3.500	7.933	6.569	0.000	6.569	
Total Adjustments		3.500	0.000	-0.049	0.000	-0.049	
• Congressional General Reductions		0.000	0.000				
• Congressional Directed Reductions		0.000	0.000				
• Congressional Rescissions		0.000	0.000				
• Congressional Adds		3.500	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	-0.049	0.000	-0.049	
Change Summary Explanation							
Change in FY17 funding resulted from congressional add to accelerate the program schedule to meet FAA mandate (1 Jan 2020).							
C. Accomplishments/Planned Programs (\$ in Millions)					FY 2017	FY 2018	FY 2019
Title: KC-10 Mode 5 IFF					3.500	7.933	6.569
Description: FAA mandated upgrade to the IFF system to increase anti-spoofing and exploitation capabilities and lower the possibility of aircraft/aircrew loss due to misidentification of friendly aircraft.							
FY 2018 Plans: Engineering design and analysis effort (EMD) will include upgrading the APX-119 transponder with Mode 5 capability, replacing the KIV-119 with a KIV-77 and integration/control through the CDU-7000B.							
FY 2019 Plans: Continuation of engineering design and analysis effort (EMD).							
FY 2018 to FY 2019 Increase/Decrease Statement: Funding decreased to appropriate level to complete EMD, which is projected to end around 3QFY19.							
Accomplishments/Planned Programs Subtotals					3.500	7.933	6.569

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<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 0401219F / KC-10s						
<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• APAF 05 Line Item C01000: KC-10A (ATCA) - All Programs	4.570	4.243	11.104	-	11.104	5.108	3.959	3.443	3.505	0.000	35.932
<b>Remarks</b>											
<b>E. Acquisition Strategy</b> The acquisition strategy will be a sole source RDT&E effort followed by procurement of kits and modification of KC-10 aircraft.											
<b>F. Performance Metrics</b> 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 2019 Air Force												Date: February 2018			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0401219F / KC-10s				Project (Number/Name) 675195 / Aircraft Modernization Program (AMP)					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
KC-10 Mode 5: TMRR/ TMRR Extension	SS/ Various	Rockwell Collins : Cedar Rapids, IA	-	3.460	Aug 2017	-		-		-		-	Continuing	Continuing	7.549
KC-10 Mode 5: EMD	SS/CPFF	Rockwell Collins : Cedar Rapids, IA	-	-		7.549	Nov 2017	5.719	Oct 2018	-		5.719	Continuing	Continuing	-
Subtotal			-	3.460		7.549		5.719		-		5.719	Continuing	Continuing	N/A
Remarks 22 Mar 17: TMRR Study contract awarded to RCI to further develop ADS-B out from CNS/ATM developed DO260A to updated DO260B requirement with integration of IFF Mode 5.															
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
KC-10 Mode 5: Govt Travel	Reqn	KC-10 PO : Tinker AFB, OK	-	0.040	Oct 2016	0.100	Oct 2017	0.050	Oct 2018	-		0.050	Continuing	Continuing	0.120
Subtotal			-	0.040		0.100		0.050		-		0.050	Continuing	Continuing	N/A
Remarks Funds program office travel.															
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
KC-10 Mode 5: Test and Eval	SS/FPIF	Rockwell Collins : Cedar Rapids, IA	-	-		0.074	Jul 2018	0.150	Oct 2018	-		0.150	Continuing	Continuing	0.740
Subtotal			-	-		0.074		0.150		-		0.150	Continuing	Continuing	N/A
Remarks Funds initial test planning.															

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Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
KC-10 Mode 5: Mgmt Support	C/FFP	EPASS : Dayton, OH	-	-		0.210	Feb 2018	0.650	Oct 2018	-		0.650	Continuing	Continuing	0.630
<b>Subtotal</b>			-	-		0.210		0.650		-		0.650	Continuing	Continuing	N/A

  

<b>Remarks</b> Funding for A&AS support contractors.															
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			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	3.500		7.933		6.569		-		6.569	Continuing	Continuing	N/A

  

<b>Remarks</b>															
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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force										Date: February 2018									
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0401219F / KC-10s					Project (Number/Name) 675195 / Aircraft Modernization Program (AMP)									

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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>KC-10 Mode 5</b>																												
KC-10 Mode 5: TMRR (contract MOD awarded 22 Mar 17)																												
KC-10 Mode 5: EMD (contract awarded 16 Nov 17)																												
KC-10 Mode 5: Production of Kits																												
KC-10 Mode 5: Kit Installation																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Air Force		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401219F / KC-10s	<b>Project (Number/Name)</b> 675195 / Aircraft Modernization Program (AMP)

**Schedule Details**

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
<b>KC-10 Mode 5</b>				
KC-10 Mode 5: TMRR (contract MOD awarded 22 Mar 17)	2	2017	4	2017
KC-10 Mode 5: EMD (contract awarded 16 Nov 17)	1	2018	3	2019
KC-10 Mode 5: Production of Kits	1	2019	4	2019
KC-10 Mode 5: Kit Installation	4	2019	4	2019