

## UNCLASSIFIED

PE NUMBER: 0401219F

PE TITLE: KC-10S

## Exhibit R-2, RDT&amp;E Budget Item Justification

DATE

February 2005

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0401219F KC-10S

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	6.410	0.000	13.472	38.710	49.999	5.609	0.000	0.000	Continuing	TBD
4496 KC-10 GATM	6.410	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	84.761
5195 Aircraft Modernization Program (AMP)	0.000	0.000	13.472	38.710	49.999	5.609	0.000	0.000	Continuing	TBD

One aircraft kit in FY08

(U) **A. Mission Description and Budget Item Justification**

Global Air Traffic Management (GATM) was based upon evolving Communication, Navigation and Surveillance (CNS) and Free Flight concepts and requirements. Key elements of its architecture were Dual MMR (Multi-Mode Receiver), Dual CMU (Communications Management Unit), Communication Data links (HF, VHF, SATCOM), and associated avionics components and wiring. Communications upgrades included a data link to augment/replace voice communications. The navigation capabilities included a fully integrated GPS and an advanced flight management system. The surveillance capabilities included automatic aircraft position reporting (both enroute and oceanic). Prototype aircraft delivery was scheduled for 3QFY03 but due to schedule slips and cost overruns, the prototype delivery was expected to be delayed to 2QFY05. The development program was terminated in April 2004.

KC-10 Aircraft Modernization Program (AMP) will provide a fully digital aircraft where all measurements are taken by digital sensors, transmitted to digital equipment to use these readings to operate the aircraft and displays for the aircrew. This will include the capability to display real time information in the cockpit. Communications upgrades include a data link to augment/replace voice communications. Navigation capabilities include a fully integrated GPS and an advanced flight management system. Surveillance capabilities include automatic aircraft position reporting (both enroute and oceanic). KC-10 aircraft modernization is needed. Reliability/maintainability concerns and obsolescence issues include inertial navigation units (INU), central air data computer (CADC), radar, analog autopilot, analog engine instruments, analog flight instruments, analog nav/comm radios, cockpit voice recorder (CVR), and flight data recorder (FDR), fuel system gauges and flight engineer station controls/instruments. KC-10 AMP will automate aircrew tasks to reduce the crew's workload, integrate all products and displays into an efficient package that will allow the KC-10 to be operated by a pilot, co-pilot and boom operator. System controls and displays will be digitized and relocated to provide safe and efficient operation of the KC-10 in its primary air refueling and all secondary missions. An aircrew augmentee and/or flight engineer must be able to be seated in the cockpit to assist in cockpit operations.

These efforts support a fielded weapon system and therefore are assigned to Budget Activity 7, Operational Systems Development.

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(U) B. Program Change Summary (\$ in Millions)

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Previous President's Budget	2.306	18.452	0.000	0.000
(U) Current PBR/President's Budget	6.410	0.000	13.472	38.710
(U) Total Adjustments	4.104	-18.452		
(U) Congressional Program Reductions				
Congressional Rescissions	-0.020	-18.452		
Congressional Increases				
Reprogrammings	4.124			
SBIR/STTR Transfer				
(U) <u>Significant Program Changes:</u>				
GATM Development Program Cancelled; Congress rescinded GATM RDT&E appropriations in FY05.				
The Aircraft Modernization Program is a new start in FY06.				

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07 Operational System Development

## PE NUMBER AND TITLE

0401219F KC-10S

## PROJECT NUMBER AND TITLE

4496 KC-10 GATM

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4496 KC-10 GATM	6.410	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	84.761
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) **A. Mission Description and Budget Item Justification**

Global Air Traffic Management (GATM) was based upon evolving Communication, Navigation and Surveillance (CNS) and Free Flight concepts and requirements. Key elements of its architecture were Dual MMR (Multi-Mode Receiver), Dual CMU (Communications Management Unit), Communication Data links (HF, VHF, SATCOM), and associated avionics components and wiring. Communications upgrades included a data link to augment/replace voice communications. The navigation capabilities included a fully integrated GPS and an advanced flight management system. The surveillance capabilities included automatic aircraft position reporting (both enroute and oceanic). Prototype aircraft delivery was scheduled for 3QFY03 but due to schedule slips and cost overruns, the prototype delivery was expected to be delayed to 2QFY05. The development program was terminated in April 2004

(U) **B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) System Engineering	3.878	0.000	0.000	0.000
(U) Program Management	1.936	0.000	0.000	0.000
(U) FAA Certification	0.596	0.000	0.000	0.000
(U) Total Cost	6.410	0.000	0.000	0.000

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Other APPN	8.320	6.455								14.775
PE#401219F / KC-10 Squadrons, Aircraft Procurement										

(U) **D. Acquisition Strategy**

A sole source cost plus award fee contract was awarded to Boeing, the aircraft manufacturer, for the Engineering, Manufacturing, and Development (EMD) effort. The contract was managed at the KC-10 System Program Office at OC-ALC. Development effort was terminated in April 2004.

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## Exhibit R-3, RDT&amp;E Project Cost Analysis

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## BUDGET ACTIVITY

## 07 Operational System Development

## PE NUMBER AND TITLE

0401219F KC-10S

## PROJECT NUMBER AND TITLE

4496 KC-10 GATM

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &amp;</u> <u>Type</u>	<u>Performing</u> <u>Activity &amp;</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>														
KC10/MD10 Growth Path Study	T&M	Boeing, OK	0.636										0.636	
GATM Sys Eng	SS/CPAF	Boeing, KS	95.518	3.878	Oct-03								99.396	
FAA Certification	SS/CPAF	Boeing, KS	5.688	0.596									6.284	
Subtotal Product Development			101.842	4.474		0.000		0.000		0.000		0.000	106.316	0.000
Remarks:														
(U) <u>Support</u>														
Support Contractors	T&M	ARINC, other support contractors	0.411										0.411	
AF Mission Support System (AFMSS)	T&M	Hanscom AFB	1.095										1.095	
Subtotal Support			1.506	0.000		0.000		0.000		0.000		0.000	1.506	0.000
Remarks:														
(U) <u>Test &amp; Evaluation</u>														
Test Planning	T&M	418 Test Squadron AFFTC (Edwards AFB)	0.073										0.073	
EMC/EMI Analysis	T&M	Joint Spectrum Center, OH	0.097										0.097	
Subtotal Test & Evaluation			0.170	0.000		0.000		0.000		0.000		0.000	0.170	0.000
Remarks:														
(U) <u>Management</u>														
Program Office		OC-ALC	0.138	1.936									2.074	
Subtotal Management			0.138	1.936		0.000		0.000		0.000		0.000	2.074	0.000
Remarks:														
(U) <u>Boeing</u>														
(U) Total Cost			103.656	6.410		0.000		0.000		0.000		0.000	110.066	0.000
Remarks:														

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**Exhibit R-4, RDT&E Schedule Profile**

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**February 2005**

BUDGET ACTIVITY

**07 Operational System Development**

PE NUMBER AND TITLE

**0401219F KC-10S**

PROJECT NUMBER AND TITLE

**4496 KC-10 GATM**

**NO SCHEDULE REQUIRED**

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## Exhibit R-4a, RDT&amp;E Schedule Detail

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0401219F KC-10S

PROJECT NUMBER AND TITLE

4496 KC-10 GATM

(U) Schedule ProfileFY 2004FY 2005FY 2006FY 2007

(U) Issue Stop Work order

3Q

(U) Contract Terminated for Convenience

3Q

There are no GATM RDT&amp;E appropriations in FY05

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## Exhibit R-2a, RDT&amp;E Project Justification

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## BUDGET ACTIVITY

07 Operational System Development

## PE NUMBER AND TITLE

0401219F KC-10S

## PROJECT NUMBER AND TITLE

5195 Aircraft Modernization Program  
(AMP)

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
5195 Aircraft Modernization Program (AMP)	0.000	0.000	13.472	38.710	49.999	5.609	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) **A. Mission Description and Budget Item Justification**

KC-10 Aircraft Modernization Program (AMP) will provide a fully digital aircraft where all measurements are taken by digital sensors, transmitted to digital equipment to use these readings to operate the aircraft and displays for the aircrew. This will include the capability to display real time information in the cockpit. Communications upgrades include a data link to augment/replace voice communications. Navigation capabilities include a fully integrated GPS and an advanced flight management system. Surveillance capabilities include automatic aircraft position reporting (both enroute and oceanic). KC-10 aircraft modernization is needed. Reliability/maintainability concerns and obsolescence issues include inertial navigation units (INU), central air data computer (CADC), radar, analog autopilot, analog engine instruments, analog flight instruments, analog nav/comm radios, cockpit voice recorder (CVR), and flight data recorder (FDR), fuel system gauges and flight engineer station controls/instruments. KC-10 AMP will automate aircrew tasks to reduce the crew's workload, integrate all products and displays into an efficient package that will allow the KC-10 to be operated by a pilot, co-pilot and boom operator. System controls and displays will be digitized and relocated to provide safe and efficient operation of the KC-10 in its primary air refueling and all secondary missions. An aircrew augmentee and/or flight engineer must be able to be seated in the cockpit to assist in cockpit operations.

(U) **B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Program Management/ System Engineering	0.000	0.000		5.700
(U) Kit Design/Development	0.000	0.000		15.200
(U) Prototype Fabrication	0.000	0.000		11.090
(U) FAA Certification	0.000	0.000	0.500	2.000
(U) Mission Support	0.000	0.000	4.072	4.720
(U) Vulnerability Assessment			5.000	
(U) Military Flight Operations Quality Assurance Program			0.400	
(U) Trng Systems Reqt's Analysis / Bus Case Analysis			0.500	
(U) Wright Labs SIL Development			2.800	
(U) Independent Cost Estimates			0.200	
(U) Total Cost	0.000	0.000	13.472	38.710

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PROJECT NUMBER AND TITLE

5195 Aircraft Modernization Program  
(AMP)(U) **C. Other Program Funding Summary (\$ in Millions)**

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Other APPN			1.600	2.000	7.503	37.215	46.165	63.742	Continuing	TBD
PE # 40219F / KC-10 Squadrons, Aircraft procurement, AF, BA-5, KC-10 Mods, BP-11, BP-16										

(U) **D. Acquisition Strategy**

Will be competitively awarded, best value contract.



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5195 Aircraft Modernization Program  
(AMP)

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &amp;</u> <u>Type</u>	<u>Performing</u> <u>Activity &amp;</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>														
Kit Design/Development and Prototype Fabrication	TBD	TBD	0.000							26.290	May-07	Continuing	TBD	
FAA Certification								0.500		2.000		Continuing	TBD	
Subtotal Product Development			0.000	0.000		0.000		0.500		28.290		Continuing	TBD	0.000
Remarks:														
(U) <u>Support</u>														
Mission Support		Wright Patterson AFB, OH						4.072		4.720		Continuing	TBD	
Subtotal Support			0.000	0.000		0.000		4.072		4.720		Continuing	TBD	0.000
Remarks:														
(U) <u>Test &amp; Evaluation</u>														
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000		Continuing	TBD	0.000
Remarks:														
(U) <u>Management</u>														
Program Management/System Engineering		Wright Patterson AFB, OH								5.700		Continuing	TBD	
Vulnerability Assessment								5.000	Jan-06			Continuing	TBD	
Military Flight Operations Quality Assurance Program								0.400				Continuing	TBD	
Trng Systems Reqt's Analysis / Bus Case Analysis								0.500				Continuing	TBD	
Wright Labs SIL Development								2.800	Jan-06			Continuing	TBD	
Independent Cost Estimates								0.200				Continuing	TBD	
Subtotal Management			0.000	0.000		0.000		8.900		5.700		Continuing	TBD	0.000
Remarks:														
(U) Total Cost			0.000	0.000		0.000		13.472		38.710		Continuing	TBD	0.000

## Exhibit R-4, RDT&amp;E Schedule Profile

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BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0401219F KC-10S


PROJECT NUMBER AND TITLE

5195 Aircraft Modernization Program  
(AMP)

## KC-10S R-4 AMP Schedule Profile

Fiscal Year	FY05				FY06				FY07				FY08				FY09				FY10				FY11				FY12			
	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	1	2	3	4
Capabilities Development Document								☆																								
Contract Award												☆																				

☆ Major Event or Milestone

 Planned Ongoing Activity

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## Exhibit R-4a, RDT&amp;E Schedule Detail

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PROJECT NUMBER AND TITLE

5195 Aircraft Modernization Program  
(AMP)(U) Schedule ProfileFY 2004FY 2005FY 2006FY 2007

(U) Capabilities Development Document

2Q

(U) Contract Award

3Q