

<b>Exhibit R-2, RDT&amp;E Budget Item Justification</b>	DATE <b>February 2008</b>
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<b>BUDGET ACTIVITY</b> <b>07 Operational System Development</b>	<b>PE NUMBER AND TITLE</b> <b>0401219F KC-10S</b>
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Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	4.696	13.703	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5195 Aircraft Modernization Program (AMP)	4.696	13.703	0.000	0.000	0.000	0.000	0.000	Continuing	TBD

**(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) is the first major modification to the KC-10A Extender and includes required Communication/Navigation/Surveillance (CNS) upgrades, increased survivability, net-centric operational capabilities; and reliability enhancements. Specifically, AMP provides mandatory CNS functionality for continued use of global airspace, a robust, integrated, on-board digital aircraft network enabling global net-centric operations, Night Vision Imaging System (NVIS) compatibility for aircraft exterior, boom operator station and cockpit, growth path to Defensive Systems (DS), provisions to support multi-mission payload, and real-time threat information in the cockpit (RTIC). All aircraft controls and systems will be compatible with aircrew chemical defense ensemble. Communications upgrades include datalink capability to augment/replace voice communications and adding secure capability for both voice and data. Navigation capabilities include a fully integrated GPS and an advanced flight management system. Surveillance capabilities include automatic aircraft reporting (both enroute and oceanic). The AMP will use the Systems Engineering Plan (SEP) along with Modular Open Systems Approach (MOSA) principles and Human Systems Integration Plan (HSIP) with the upgrade modifications. Anti Tamper requirements will be addressed in the Selective Availability Anti Spoofing Module (SAASM). AMP will address reliability, maintainability and obsolescence issues, to include replacing inertial navigation units (INU), central air data computer (CADC), weather radar, analog autopilot, analog engine instruments, analog flight instruments and displays, analog nav/comm radios, cockpit voice recorder (CVR), and flight data recorder (FDR), fuel system gauges, refueling boom/drogue electronics, and flight engineer station controls/instruments. AMP will automate aircrew tasks to reduce the crew's current workload, allow the crew to perform additional missions and manage the increased complexity, and integrate products and displays into an efficient package that will increase situational awareness. KC-10 training and mission planning systems will be correspondingly upgraded.

Concept Refinement Studies have addressed potential technical approaches, spiral development, cockpit commonality, affordability, etc. These studies will also be beneficial for the AMP Request for Proposal and development contract. The phasing of the SDD funding will be updated in the next budget cycle to reflect the emerging strategy.

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

Exhibit R-2, RDT&E Budget Item Justification

DATE

February 2008

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0401219F KC-10S

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

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	4.781	36.790	73.591
(U) Current PBR/President's Budget	4.763	36.790	36.991
(U) Total Adjustments	-0.018		
(U) Congressional Program Reductions			
Congressional Rescissions	-0.018		
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			

(U) **Significant Program Changes:**

Concept Refinement Studies were completed in Mar 07. These studies have provided insight into various technical approaches and assisting the program office in the development of its acquisition strategies.

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

DATE

February 2008

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 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
5195 Aircraft Modernization Program (AMP)	4.696	13.703	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	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.

KC-10 Aircraft Modernization Program (AMP) is the first major modification to the KC-10A Extender and includes required Communication/Navigation/Surveillance (CNS) upgrades, increased survivability, net-centric operational capabilities; and reliability enhancements. Specifically, AMP provides mandatory CNS functionality for continued use of global airspace, a robust, integrated, on-board digital aircraft network enabling global net-centric operations, Night Vision Imaging System (NVIS) compatibility for aircraft exterior, boom operator station and cockpit, growth path to Defensive Systems (DS), provisions to support multi-mission payload, and real-time threat information in the cockpit (RTIC). All aircraft controls and systems will be compatible with aircrew chemical defense ensemble. Communications upgrades include datalink capability to augment/replace voice communications and adding secure capability for both voice and data. Navigation capabilities include a fully integrated GPS and an advanced flight management system. Surveillance capabilities include automatic aircraft reporting (both enroute and oceanic). The AMP will use the Systems Engineering Plan (SEP) along with Modular Open Systems Approach (MOSA) principles and Human Systems Integration Plan (HSIP) with the upgrade modifications. Anti Tamper requirements will be addressed in the Selective Availability Anti Spoofing Module (SAASM). AMP will address reliability, maintainability and obsolescence issues, to include replacing inertial navigation units (INU), central air data computer (CADC), weather radar, analog autopilot, analog engine instruments, analog flight instruments and displays, analog nav/comm radios, cockpit voice recorder (CVR), and flight data recorder (FDR), fuel system gauges, refueling boom/drogue electronics, and flight engineer station controls/instruments. AMP will automate aircrew tasks to reduce the crew's current workload, allow the crew to perform additional missions and manage the increased complexity, and integrate products and displays into an efficient package that will increase situational awareness. KC-10 training and mission planning systems will be correspondingly upgraded.

Concept Refinement Studies have addressed potential technical approaches, spiral development, cockpit commonality, affordability, etc. These studies will also be beneficial for the AMP Request for Proposal and development contract. The phasing of the SDD funding will be updated in the next budget cycle to reflect the emerging strategy.

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

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BUDGET ACTIVITY <b>07 Operational System Development</b>	PE NUMBER AND TITLE <b>0401219F KC-10S</b>	PROJECT NUMBER AND TITLE <b>5195 Aircraft Modernization Program (AMP)</b>
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(U) <b><u>B. Accomplishments/Planned Program (\$ in Millions)</u></b>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Development Engineering, Design, and Integration		31.790	26.891
(U) Studies and Analysis	0.200	0.200	2.600
(U) Government Test and Evaluation		0.000	2.000
(U) Mission Support	4.563	4.800	5.500
(U)			
(U) Total Cost	4.763	36.790	36.991

(U) <b><u>C. Other Program Funding Summary (\$ in Millions)</u></b>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</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>Complete</u>	
(U) Other APPN	0.000	0.000	0.000	0.000	0.000	48.721	46.467	Continuing	TBD
PE # 41219F / KC-10, Aircraft procurement, BP-11, Aircraft Modernization Program									

(U) **D. Acquisition Strategy**  
 Concept Refinement Studies (CRS) in FY06/FY07 have fostered competition and mitigated some of the identified acquisition risks. CRS will also support System Development and Demonstration (SDD) Request for Proposal (RFP). FY07 will consist of CRS analysis, RFP preparation and development. FY08 will consist of solicitation. Source Selection will take place between 3QFY08 and 2QFY09. The KC-10 AMP SDD prime contract will be a competitively awarded, best value contract, in 3QFY09. The phasing of the SDD funding will be updated in the next budget cycle to reflect the emerging strategy.

UNCLASSIFIED

**Exhibit R-3, RDT&E Project Cost Analysis**

DATE

**February 2008**

BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE				
<b>07 Operational System Development</b>				<b>0401219F KC-10S</b>				<b>5195 Aircraft Modernization Program (AMP)</b>				
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2007 Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) <u>Product Development</u>												
Studies and Analysis	C/CPFF			0.200		0.200		2.600		Continuing	TBD	
Development Engineering, Design, and Integration	TBD					31.790		26.891	Jun-09	Continuing	TBD	
	N/A									Continuing	TBD	
Subtotal Product Development			0.000	0.200		31.990		29.491		Continuing	TBD	0.000
Remarks:												
(U) <u>Support</u>												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) <u>Test &amp; Evaluation</u>												
Gov Test and Evaluation						0.000		2.000		Continuing	TBD	
Subtotal Test & Evaluation			0.000	0.000		0.000		2.000		Continuing	TBD	0.000
Remarks:												
(U) <u>Management</u>												
Mission Support		Wright Patterson AFB, OH		4.563		4.800		5.500		Continuing	TBD	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			0.000	4.563		4.800		5.500		Continuing	TBD	0.000
Remarks:												
(U) Total Cost			0.000	4.763		36.790		36.991		Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile

DATE

February 2008

BUDGET ACTIVITY  
07 Operational System Development

PE NUMBER AND TITLE  
0401219F KC-10S

PROJECT NUMBER AND TITLE  
5195 Aircraft Modernization Program  
(AMP)

Exhibit R-4, RDT&E Schedule Profile																	
07 Operational Systems Development																	
	FY06				FY07				FY08				FY09				
Fiscal Year	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
CDD JROC Approved – FY06Q3			X														
Concept Refinement Studies Completion						X											
Draft SDD RFP				X				X									
SDD RFP										X							
Source Selection																	
SDD Contract Award/Milestone B																	X

**Exhibit R-4a, RDT&E Schedule Detail**

DATE

**February 2008**

BUDGET ACTIVITY

**07 Operational System Development**

PE NUMBER AND TITLE

**0401219F KC-10S**

PROJECT NUMBER AND TITLE

**5195 Aircraft Modernization Program  
(AMP)**

**(U) Schedule Profile**

(U) Concept Refinement Studies

(U) Draft System Development & Demonstration (SDD) Request for Proposal (RFP) Released

(U) SDD RFP Released

(U) Source Selection

(U) SDD Contract Award/Milestone B

FY 2007

2Q

4Q

FY 2008

2Q

3Q

FY 2009

2Q

3Q