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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2000		
BUDGET ACTIVITY 05 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0605011F RDT&E For Aging Aircraft				PROJECT 654685		
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
654685	Aging Aircraft	4,640	4,856	14,204	28,212	42,053	42,895	43,743	Continuing	TBD
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0
<p>(U) <u>A. Mission Description</u> This program is comprised of multiple efforts which will transition needed technology from laboratory research and commercial technology development into fieldable tools or capabilities and reduce total ownership costs. Projects will target critical needs of the aging fleet such as structures, subsystems, avionics/electronics, and non-destructive inspection (NDI) methods. Structures related projects will include the development of a corrosion prediction capability, alternate repair processes, and an economic service life evaluation capability. Subsystem projects will develop inspection and repair methods needed to maintain the full spectrum of subsystems (wiring, landing gear, fuel systems, etc.). Avionics/electronics efforts include studies and approaches to effectively managing aging-related issues to include obsolescence and diminishing sources. NDI projects will develop equipment and procedures for detecting hidden corrosion, fatigue cracks, and damage under repairs. Projects are typically focused on developing tools (NDI equipment, computer models) and capabilities (alternate repair processes) for Major Command (MAJCOM) and Air Logistics Center (ALC) use in extending useful aircraft service life, resolving flight safety problems, or replacing components no longer procurable. Projects will typically yield a single, validated prototype system or capability that is production ready; final depot or field implementation (equipment purchases, tech order updates, training, etc.) will be the responsibility of the MAJCOMs and ALCs. There is strong emphasis on developing solutions that will benefit multiple weapon systems, thereby reducing or eliminating stovepipe development of platform-specific solutions.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u></p> <p>(U) \$2,505 Began developing improved capabilities for corrosion abatement, prevention, and control to reduce the associated maintenance burden. Improved corrosion detection capabilities to decrease inspection times and/or detect corrosion earlier. Developed and integrated software and analytical tools for more effective fleet corrosion management.</p> <p>(U) \$1,016 Developed improved non-destructive inspection techniques that will reduce the time required to detect flaws and damage, such as fatigue cracking, corrosion, disbonds, and trapped moisture, and/or enable early detection of damage, thus allowing for less costly repairs.</p> <p>(U) \$1,119 Developed technologies to ensure the continued structural integrity of aging weapon systems, thus ensuring continued flight safety.</p> <p>(U) \$4,640 Total</p>										
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BUDGET ACTIVITY		PROJECT
05 - Engineering and Manufacturing Development	0605011F RDT&E For Aging Aircraft	February 2000 654685
(U) <u>A. Mission Description Continued</u>		
(U) <u>FY 2000 (\$ in Thousands)</u>		
(U) \$2,617	Continue work in corrosion maintenance improvements to develop corrosion abatement processes and temporary repairs which will provide a wider range of repair options, thus reducing the cost and manhours associated with corrosion maintenance. Continue development and integration of software and analytical tools to support corrosion management such as environmental exposure models and corrosion damage analyses which will allow depot engineers to better anticipate corrosion-related workload for future depot maintenance cycles. Continue work on improved corrosion detection capabilities to decrease inspection times and allow for earlier corrosion detection.	
(U) \$1,028	Continue work on improved non-destructive inspection (NDI) techniques that will reduce the time required to detect flaws and damage, such as fatigue cracking, corrosion, disbonds, and trapped moisture, and/or enable early damage detection, thus allowing for less costly repairs. Efforts include the development of an NDI technique that will detect small cracks in deep, multi-layer structure without removing fasteners, thus reducing inspection as well as eliminating the potential for further damage by removing fasteners.	
(U) \$1,111	Continue work on technologies to maintain the structural integrity of aging weapon systems, thus ensuring continued flight safety. Efforts include development of viable maintenance procedures to address the delamination of aging integral fuel tank coatings, which should offer improved corrosion protection and eliminate the need to replace wing skins.	
(U) \$100	Initiate studies to identify policies and processes that need to be developed or refined to better address aging avionics/electronics issues such as parts obsolescence and diminishing manufacturing sources.	
(U) \$4,856	Total	
(U) <u>FY 2001 (\$ in Thousands)</u>		
(U) \$5,000	Continue work in corrosion maintenance improvements to develop corrosion abatement processes and temporary repairs which will provide a wider range of repair options, thus reducing the cost and manhours associated with corrosion maintenance. Continue the development and integration of software and analytical tools to support corrosion management such as environmental exposure models and corrosion damage analyses which will better allow engineers to anticipate workload. Continue work on improved corrosion detection capabilities, such as the Mobile Automated Scanner (MAUS), which will decrease inspection hours and repair costs.	
(U) \$4,644	Continue work on improved NDI techniques that will reduce the time required to detect flaws and damage, such as fatigue cracking, corrosion, disbonds, and trapped moisture, and/or enable early damage detection, thus allowing for less costly repairs. Continue development of an NDI technique that will detect small cracks in deep, multi-layer structure without removing fasteners, thus reducing inspection time as well as eliminating the potential for further damage by removing fasteners. Expand the application of ultrasonic inspection techniques to detect fatigue cracks in internal wing structure from the outside of the aircraft, which will eliminate fuel tank entry requirements and potential damaging rivet removal.	
(U) \$4,460	Continue work on technologies to maintain the structural integrity of aging weapon systems, thus ensuring continued flight safety. Develop	
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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development	0605011F RDT&E For Aging Aircraft	654685		
(U) <u>A. Mission Description Continued</u>				
(U) <u>FY 2001 (\$ in Thousands) Continued</u>				
	viable maintenance procedures to address the delamination of aging integral fuel tank coatings, which should offer improved corrosion protection and eliminate the need to replace wing skins.			
(U) \$100	Continue studies to identify policies and processes that need to be developed or refined to better refine aging avionics/electronics issues such as parts obsolescence and diminishing manufacturing sources. Initiate development of integrated avionics/electronics change management plans for common solutions across multiple platforms.			
(U) \$14,204	Total			
(U) <u>B. Budget Activity Justification</u>				
This program is in Budget Activity 5, Engineering and Manufacturing Development, because projects/capabilities will be developed in this program, then made available for procurement by already operational systems.				
(U) <u>C. Program Change Summary (\$ in Thousands)</u>				
	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 2000 PBR)	4,887	4,889	14,310	
(U) Appropriated Value	4,901	4,889		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-14			
b. Small Business Innovative Research	-143			
c. Omnibus or Other Above Threshold Reprogram		-33		
d. Below Threshold Reprogram	-78			
e. Rescissions	-26			
f. Other				TBD
(U) Adjustments to Budget Years Since FY 2000 PBR			-106	
(U) Current Budget Submit/FY 2001 PBR	4,640	4,856	14,204	TBD
(U) <u>Significant Program Changes:</u>				
Not Applicable.				
Project 654685				
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(U) **D. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</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) AF RDT&E
- (U) Other APPN
 - (U) Related Activities:
 - (U) PE 0708026F, Productivity/Reliability/Availability/Maintainability.

(U) **E. Acquisition Strategy**
 Funding will be released to the Air Logistics Centers for the projects for which they are the Office of Primary Responsibility (OPR) that year. OPR will determine the most appropriate contract vehicle, Design Engineering Program (DEP) contract or full and open competition, to accomplish the project.

(U) **F. Schedule Profile**

	<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Project Screening			*				X				X	
(U) Request For Proposal Release	*				*		X				X	
(U) Contract Awards		*	*	*	X	X	X		X	X	X	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE February 2000		
BUDGET ACTIVITY 05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0605011F RDT&E For Aging Aircraft				PROJECT 654685	
(U) A. Project Cost Breakdown (\$ in Thousands)										
						<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>		
(U)	Corrosion prevention and control techniques					2,505	2,617	5,000		
(U)	Improved non-destructive inspection capabilities					1,016	1,028	4,644		
(U)	Technologies to enhance structural integrity					1,119	1,111	4,460		
(U)	Aging Avionics/Electronics approaches					0	100	100		
(U)	Total					4,640	4,856	14,204		
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U) Performing Organizations:										
<u>Contractor or</u>	<u>Contract</u>									
<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>						
<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Organizations</u>										
ARINC	FFP	Jun 98	N/A	N/A	0	0	500	0	0	500
Boeing	FFP	Mar 99	N/A	N/A	0	1,800	1,046	200	0	3,046
Lockheed-Martin	FFP	Mar 99	N/A	N/A	0	693	600	0	0	1,293
NCI	FFP	May 99	N/A	N/A	0	1,700	1,500	2,880	0	6,080
Univ Dayton Research Inst	FFP	TBD	N/A	N/A	0	0	160	1,320	1,190	2,670
Anteon	FFP	TBD	N/A	N/A	0	0	150	450	0	600
Boeing/SAIC	FFP	TBD	N/A	N/A	0	0	300	450	300	1,050
SAIC	FFP	TBD	N/A	N/A	0	0	600	0	0	600
Numerous	FFP	TBD	N/A	N/A	0	447	0	8,904	Continuing	TBD
<u>Support and Management Organizations</u>										
In House										
<u>Test and Evaluation Organizations</u>										

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BUDGET ACTIVITY			PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development			0605011F RDT&E For Aging Aircraft		654685	
			<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>
			<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
					<u>Budget to</u>	<u>Total</u>
					<u>Complete</u>	<u>Program</u>
<u>Subtotals</u>						
Subtotal Product Development			0	4,640	4,856	14,204
Subtotal Support and Management						TBD
Subtotal Test and Evaluation						TBD
Total Project			0	4,640	4,856	14,204
						TBD
						TBD