RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: June 2001

BUDGET ACTIVITY: 05 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605011F RDT&E For Aging Aircraft

PROJECT: 4685

COST ($ in Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
4685	Aging Aircraft	4,870	25,468	20,113	25,164	30,225	30,861	31,509	32,176	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

Note: FY 2003-FY 2007 budget numbers do not reflect the DoD strategy review results.

(U) A. Mission Description

This program extends the service life, controls the rapidly rising sustainment costs, and retains the operational capability of the aging aircraft fleet. Using business case analyses, cross-cutting opportunities to reduce total ownership costs and improve productivity, reliability, availability, and maintainability (PRAM) are identified. The program develops tools to facilitate the sharing of aging aircraft information, knowledge, technology, and solutions among the Air Logistics Centers, Product Centers, System Program Offices, other Services and government agencies, and industry. The program provides senior Air Force decision makers with a common, comprehensive understanding of program areas such as corrosion, wiring, etc. The program also analyzes and recommends changes to existing sustainment processes such as field and depot repair processes.

(U) FY 2000 ($ in Thousands)

(U) $132 Continued corrosion maintenance improvements to develop abatement processes and temporary repairs. Provided a wider range of repair options, reducing the cost and manhours associated with corrosion maintenance. Continued development and integration of software and analytical tools to support corrosion management, such as environmental exposure models and corrosion damage analyses, to allow depot engineers to better anticipate corrosion-related workload for future depot maintenance cycles.

(U) $2,469 Continued work on improved non-destructive inspection (NDI) techniques that reduce the time required to detect flaws and damage (e.g., fatigue cracking, corrosion, disbonds, and trapped moisture) and/or enable early damage detection, allowing for less costly repairs. Efforts included the development of a NDI technique that detects small cracks in deep, multi-layer structures without removing fasteners, reducing inspection time as well as eliminating the potential for further damage by removing fasteners.

(U) $2,139 Continued work on technologies to maintain the structural integrity of aging weapon systems, ensuring continued flight safety. Efforts included development of viable maintenance procedures to address the delamination of aging integral fuel tank coatings, which offers improved corrosion protection and eliminates the need to replace wing skins.

(U) $130 Initiated 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) $4,870 Total

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE June 2001
BUDGET ACTIVITY 05 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0605011F RDT&E For Aging Aircraft	PROJECT 4685

(U) A. Mission Description Continued

(U) FY 2001 ($ in Thousands)

(U)	$166	Continue corrosion maintenance improvements. Develop abatement processes and temporary repairs. Provide a wider range of repair options. Reduce the cost and man-hours 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 that will better allow engineers to anticipate workload.
(U)	$6,211	Continue work on improved non-destructive inspection (NDI) techniques. Reduce the time required to detect flaws and damage (e.g., fatigue cracking, corrosion, disbonds, and trapped moisture). Enable early damage detection, thus allowing for less costly repairs. Develop NDI techniques to detect cracks without removing fasteners, 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)	$7,415	Continue work on technologies to maintain the structural integrity of aging weapon systems, ensuring continued flight safety. Develop viable procedures to correct the delamination of aging integral fuel tank coatings, which offer improved corrosion protection and eliminate the need to replace wing skins.
(U)	$176	Continue studies to identify policies and processes that need to be developed or refined to help resolve 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)	$10,000	Start and complete engineering tasks associated with Aging Landing Gear Life Extension program.
(U)	$1,500	Start and complete Aging Aircraft efforts related to Viable Combat Avionics.
(U)	$25,468	Total

(U) FY 2002 ($ in Thousands)

(U)	$6,230	Continue corrosion maintenance improvements. Develop corrosion abatement techniques, procedures, and temporary repairs. Expand the range of available repair technologies. Reduce the cost and man-hours associated with corrosion maintenance actions. Continue development and integration of software and analytical tools to support corrosion management workload prediction (e.g., environmental exposure models, corrosion damage analyses).
(U)	$1,100	Continue work on improved NDI techniques. Shorten detection time for flaws and damage due to fatigue cracking, corrosion, composite material delaminations, and trapped moisture. Sponsor technology advancements to enable early damage detection, thus allowing for less costly repairs over the weapon system life cycle. Develop non-destructive inspection (NDI) techniques to detect cracks without removing fasteners to reduce inspection time and eliminate the potential for further damage by removing fasteners. Broaden the application of ultrasonic inspection techniques

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: June 2001
BUDGET ACTIVITY: 05 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0605011F RDT&E For Aging Aircraft	PROJECT: 4685

(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands) Continued

to detect fatigue cracks in internal wing structure from the outside of the aircraft to eliminate fuel tank entry requirements and potential damage caused by rivet removal.

(U) $4,800 Continue work on technologies to maintain the structural integrity of aging weapon systems to ensure continued flight safety. Develop viable procedures to correct the delamination of aging integral fuel tank coatings for improved corrosion protection and elimination of wing skin replacements.

(U) $1,930 Conduct analyses on aging aircraft problems to drive affordable modernization and sustainment solutions. Leverage existing knowledge of aging aircraft structures, avionics, and propulsion into business case analyses and related efforts to identify opportunities to reduce total ownership costs.

(U) $3,158 Develop cross-cutting aging aircraft system solutions (e.g., an NDI corrosion assessment tool for accurate structural health assessments). Develop techniques to incorporate high strength, corrosion resistant alloys into legacy airframes. Study aging wiring in the F-16 and C-17 fleet. Develop techniques for predicting aging wiring problems. Improve repair procedures to maintain the integrity of aging integral fuel tank coating materials.

(U) $2,895 Develop an information/knowledge portal tool to share aging aircraft technology and solutions across the aeronautical community. Identify existing databases which contain aging aircraft information. Connect existing databases to a single web portal. Develop web-based data mining views that turn the raw data into information to facilitate strategic planning and trend analysis for reducing total ownership costs.

(U) $20,113 Total

(U) B. Budget Activity Justification

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) C. Program Change Summary ($ in Thousands)

	FY 2000	FY 2001	FY 2002	Total Cost
(U) Previous President's Budget (FY 2001 PBR)	4,856	14,204	28,212	
(U) Appropriated Value	4,889	25,704		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions				
b. Small Business Innovative Research				
c. Omnibus or Other Above Threshold Reprogram				

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: June 2001
BUDGET ACTIVITY: 05 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0605011F RDT&E For Aging Aircraft	PROJECT: 4685

(U) C. Program Change Summary ($ in Thousands) Continued

		FY 2000	FY 2001	FY 2002	Total Cost
	d. Below Threshold Reprogram				
	e. Rescissions	-19	-236		
(U)	Adjustments to Budget Years Since FY 2001 PBR			-8,099	
(U)	Current Budget Submit/FY 2002 PBR	4,870	25,468	20,113	TBD

(U) Significant Program Changes:
Program funding was reduced due to higher priority Air Force requirements resulting in approximately 9 projects being deferred to latter years.

(U) D. Other Program Funding Summary ($ in Thousands)

	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
(U) AF RDT&E										
(U) Other APPN										

(U) Related Activities:
(U) PE 0708026F, Productivity/Reliability/Availability/Maintainability.

(U) E. Acquisition Strategy

Funding may be executed internally within the Aging Aircraft SPO via full and open competition or released to other organizations for projects for which they are the Office of Primary Responsibility (OPR). The OPRs 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

		FY 2000				FY 2001				FY 2002			
		1	2	3	4	1	2	3	4	1	2	3	4
(U)	Screening for Corrosion and Maintenance Improvement Projects			X				X				X	
(U)	Request For Proposal Release			X				X				X	
(U)	Contract Awards	*	*	*		*	*	*		X	X	X	

Note: 1Q and 2Q contract awards are from prior year funds

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: June 2001

BUDGET ACTIVITY: 05 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605011F RDT&E For Aging Aircraft

PROJECT: 4685

(U) A. Project Cost Breakdown ($ in Thousands)

		FY 2000	FY 2001	FY 2002
(U)	Corrosion Prevention and Control Techniques	132	166	6,230
(U)	Improved Non-Destructive Inspection Capabilities	2,469	6,211	1,100
(U)	Technologies to Enhance Structural Integrity	2,139	7,415	4,800
(U)	Aging Avionics/Electronics Approaches	130	176	0
(U)	Aging Landing Gear Life Extension		10,000	0
(U)	Viable Combat Avionics		1,500	0
(U)	Aging Aircraft Analysis			1,930
(U)	Cross-Cutting Aging Aircraft Technology			3,158
(U)	Aging Aircraft Knowledge Management Tools			2,895
(U)	Total	4,870	25,468	20,113

(U) B. Budget Acquisition History and Planning Information ($ in Thousands)

(U) Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 2000	Budget FY 2000	Budget FY 2001	Budget FY 2002	Budget to Complete	Total Program
Product Development Organizations										
ARINC/Boeing	T&M	Mar 01	N/A	N/A	0	520	487	0	0	1,007
Boeing	T&M	Apr 01	N/A	N/A	0	30	770	1,100	0	1,900
Lockheed Martin	T&M	Feb 01	N/A	N/A	0	565	467	0	0	1,032
Southwest Research	T&M	Mar 01	N/A	N/A	0	0	350	250	1,190	1,790
SAIC/Boeing	FFP	Mar 01	N/A	N/A	0	300	600	300	0	1,200
SAIC	T&M	Mar 01	N/A	N/A	0	300	980	300	300	1,880
UDRI/S&K Tech	TBD	Mar 01	N/A	N/A	0	750	1,380	0	0	2,130
UDRI	T&M	Mar 01	N/A	N/A	0	80	1,500	1,500	0	3,080
UDRI/Anteon	T&M	Apr 01	N/A	N/A	0	150	450	0	0	600
UDRI/NASA	T&M	Mar 01	N/A	N/A	0	160	1,330	1,190	0	2,680

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: June 2001

BUDGET ACTIVITY: 05 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605011F RDT&E For Aging Aircraft

PROJECT: 4685

(U) Performing Organizations Continued:

Product Development Organizations										
General Atomics	TBD	TBD	N/A	N/A	0	0	10,000	0	0	10,000
Illinois Institute of Tech	T&M	Jan 01	N/A	N/A	0	0	1,500	0	0	1,500
Numerous	Various	Various	N/A	N/A	0	2,015	5,654	15,473	Continuing	TBD
Support and Management Organizations										
In House										
Test and Evaluation Organizations										

(U) Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 2000	Budget FY 2000	Budget FY 2001	Budget FY 2002	Budget to Complete	Total Program
Product Development Property									
None									
Support and Management Property									
None									
Test and Evaluation Property									
None									

Subtotals	Total Prior to FY 2000	Budget FY 2000	Budget FY 2001	Budget FY 2002	Budget to Complete	Total Program
Subtotal Product Development	0	4,870	25,468	20,113	TBD	TBD
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project	0	4,870	25,468	20,113	TBD	TBD