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

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - Operational system development	**0203752A - Aircraft Engine Component Improvement Program**	**106**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
106	A/C COMPON IMPROV PROG	14443	6767	3399	3451	3604	8798	10531	11504	0	68155

A. Mission Description and Budget Item Justification: Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Flight Safety Parts program. CIP is included in the RDTE budget vice procurement appropriations in accordance with congressional direction. This system supports the Legacy to Objective (LO) transition path of the Transformation Campaign Plan (TCP).

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
T700 Engine: Continue addressing flight safety and readiness problems that arise in the field by providing timely engineering support. 2002: Continued the development of the 701D engine to reduce engine O&S costs and improve engine on-wing life. Continue Power Turbine module life analysis modeling and update service life limits. Started development of the Enhanced Digital Electronic Control for the 701D engine to reduce O&S Costs and improve flight safety. 2003: Continue the development of the 701D engine to reduce engine O&S costs and improve engine on-wing life. Complete the Enhanced Digital Electronic Control program to reduce costs and improve safety. 2004: : Complete the development of the 701D engine to reduce engine O&S costs and improve engine on-wing life. Develop improved seals to reduce oil leakage, improve on-wing life, and reduce O&S costs. Perform component life analysis of PT hardware to improve flight safety and readiness. 2005: Complete component life analysis of PT hardware to improve flight safety and readiness. Qualify an improved GG blade damper to enhance on-wing life and reduce O&S costs. Qualify an internal coating for the stage 2 nozzle to improve life and reduce O&S costs.	9902	4800	1555	1326
T800/SPU: Complete designs and qualification testing for new hardware to improve reliability and maintainability.	0	0	0	500

Accomplishments/Planned Program (continued)	FY 2002	FY 2003	FY 2004	FY 2005
T55 Engine: Continue applying engineering effort to unanticipated flight safety problems revealed in the field and provide timely support. 2002: Continued design and qualification work on the Safety Enhanced Plumbing to introduce fire resistant and fire proof fluid lines. Started the Design and qualification of an Improved Bleed System which will reduce O & S costs. Started the qualification of the improved tailpipe to reduce removals and O&S costs. Started the design of an improved N2 Speed Sensor which will eliminate the gear train thereby reducing hardware requirements and improve O&S costs. Completed Life Management Fraction Damage Tables and completed the qualification effort for the Stage 2 Wheel life enhancement. 2003: Complete design and qualification of an improved Bleed System to reduce O & S costs. Complete the qualification of the Safety Enhanced Plumbing to improve engine safety. Continue the design and qualification of the Enhanced Tail Pipe to reduce O & S costs. Continue Design and Qualification efforts on N2 Sensor to reduce amount of hardware and improve O&S. 2004: Complete the Design and Qualification of the N2 Speed Sensor Program to reduce amount of hardware and O&S Costs. Complete the design and Qualification of the Enhanced tailpipe to reduce O & S costs. Start the Design efforts for the T55-GA-714B program to increase engine temperature margin and reduce O & S costs (engines remain on-wing longer). 2005: Continue the Design work and start the Qualification effort for the T55-GA-714B program to increase engine temperature margin and reduce O & S costs (engines remain on-wing longer).	1734	1510	1425	1250
GTCP36 APU: Component life analysis/qualification testing. Dual Alloy Turbine Design. Perform Dual Alloy Turbine Wheel containment analysis. Spin pit testing to verify life limits. PTO Clutch analytical inspection to verify improvements. Component life analysis/qualification testing. Run 200-hour Qualification Tests for numerous CIP-developed components for the Apache and Black Hawk APUs. Develop new depot repair procedures to deal with emerging failure trends. Design and test inlet barrier filter.	283	105	175	150
T62 APU: Component life analysis/qualification testing. Flow formed Combustor with flexible fuel manifold for reliability. Redesign reduction drive housing and carrier assembly to improve maintainability/reliability. Redesign wiring harness to greatly improve reliability. Component Life Analysis. Development of a flow formed Combustor Housing which will improve the reliability of the combustor. Design and test inlet barrier filters for both APUs	73	100	150	125
IN HOUSE: In-house support for the CIP engineers. Contracting support for CIP contracts.	134	252	94	100
Continued development of RAPTR DRP/Test Cell Correlation.	456	0	0	0
Continued development of Universal Full Authority Digital Engine Control (FADEC)	1000	0	0	0

Accomplishments/Planned Program (continued)	FY 2002	FY 2003	FY 2004	FY 2005
Continued development of Variable Displacement Vane Pump (VDVP) and Liquid or Light End Air (LOLA) Equipped Fuel Delivery Unit (FDU)	861	0	0	0
T800 Engine:	0	0	0	0
Totals	14443	6767	3399	3451

B. Program Change Summary	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003)	14889	3689	3858	3923
Current Budget (FY 2004/2005 PB)	14443	6767	3399	3451
Total Adjustments	-446	3078	-459	-472
Congressional program reductions				
Congressional rescissions		-91		
Congressional increases		3400		
Reprogrammings	-35	-39		
SBIR/STTR Transfer	-411	-192		
Adjustments to Budget Years			-459	-472

FY04/FY05: Minor adjustments due to funds being redirected to higher priority Army programs.

C. Other Program Funding Summary: PE 0205633N (Aircraft Engine CIP Navy)
PE 0207268F (Aircraft Engine CIP Air Force)

D. Acquisition Strategy: Improved designs will be implemented via Engineering Change Proposal (ECP) and follow-on procurement or modification to a production contract to introduce the improved hardware.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
7 - Operational system development

PE NUMBER AND TITLE
0203752A - Aircraft Engine Component Improvement Program

PROJECT
106

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . T-700 Engine	SS/CPFF	GE-Air, Lynn, MA	53400	4800	1-2Q	1555	1-2Q	1326	1-2Q	Continue	61081	Continue
b . T-800 SPU	SS/CPFF	Williams International, Walled Lake, MI	0	0		0	1-2Q	100		0	100	0
c . T-800 Engine	SS/CPFF	Honeywell, Phoenix, AZ	0	0		0	1-2Q	200		0	200	0
d . T-800 Engine	SS/CPFF	Rolls Royce, Indianapolis, IN	0	0		0	1-2Q	200	1-2Q	0	200	0
e . T-55 Engine	SS/CPFF	Honeywell, Phoenix, AZ	22694	1510	1-2Q	1425	1-2Q	1250	1-2Q	Continue	26879	Continue
f . APU's	MIPR	Air Force, Kelly AFB, TX	13557	0		0		0		0	13557	13557
g . FADEC/FDU	MIPR	CECOM, Ft. Monmouth, NJ	5577	0		0		0		0	5577	5716
h . APU's	MIPR	Air Force, Hill AFB, UT	724	205	3Q	325	3Q	275	3Q	Continue	1529	Continue
Subtotal:			95952	6515		3305		3351		Continue	109123	Continue

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
7 - Operational system development

PE NUMBER AND TITLE
0203752A - Aircraft Engine Component Improvement Program

PROJECT
106

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Contract Engineering	SS/CPFF	Westar, St. Louis, MO	10	0		0		0		0	10	10
b . Contract Engineering	SS/CPFF	Camber, Huntsville, AL	199	0		0		0		0	199	199
Subtotal:			209	0		0		0		0	209	209

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Redstone Avn Prop Test Res (RAPTR) Facility Data Reduction Prog	MIPR	Redstone Technical Test Center, RSA, AL	561	0		0		0		0	561	Continue
Subtotal:			561	0		0		0		0	561	Continue

Remarks: Not Applicable

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
7 - Operational system development

PE NUMBER AND TITLE
0203752A - Aircraft Engine Component Improvement Program

PROJECT
106

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . In-house Engineering		ATCOM, St. Louis, MO	10342	0		0		0		0	10342	10342
b . In-house Engineering	NA	AMCOM, Redstone Arsenal, AL	445	252	1-4Q	94	1-4Q	100	1-4Q	Continue	891	Continue
Subtotal:			10787	252		94		100		Continue	11233	Continue
Project Total Cost:			107509	6767		3399		3451		Continue	121126	Continue