ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2004

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

COST (In Thousands)		FY 2003 Actual	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	6759	5339	2427	2575	7717	9433	10388	Continuing	Continuing

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 Current to Future transition path of the Transformation Campaign Plan (TCP).

Accomplishments/Planned Program	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. Continue the development of the T700-GE-701D, an essential upgrade required for the UH-60M aircraft. Continue the engineering support of fielded engines to enhance war fighting capability and improve durability and reliability while reducing cost of ownership. 2003: Continued the development of the 701D engine to reduce engine O&S costs and improve engine on-wing life. Completed the Gas Generator Turbine (GGT) Life Validation effort to compare recent life predictions versus commercial turboprop validated lives. Continued work on the Enhanced Digital Electronic Control Unit (EDECU) program [funded separately via Congressional directive] to reduce costs and improve safety. 2004: Evaluate LCF test results and perform life analysis work on the 701D engine to reduce engine O&S costs, increase flight safety, and improve engine on-wing life. Complete development of the Enhanced Digital Electronic Control Unit and support flight testing on the UH-60L to reduce O&S costs and improve safety. Perform life analysis of cooling plates to improve flight safety. 2005: Complete analysis of 701D Combustor and qualify alternate HMU vendor for T700-GE-701D engine qualification. Initiate 701D altitude test to improve readiness and reduce O&S costs. Anticipate start of EDECU Phase II to reduce O&S costs and improve safety	1673	1657	1044

Accomplishments/Planned Program A(continued)	FY 2003	FY 2004	FY 2005
T55 Engine: Continue applying engineering effort to unanticipated flight safety problems revealed in the field & provide timely support. Continue development of T55-GA-714B for CH-47 D/F aircraft. Continue the engineering support of fielded engines to enhance war-fighting capability, improve durability & reliability while reducing cost of ownership. 2003:Continued with the design & quality of an improved bleed system to reduce O&S costs. Continued Safety Enhanced Plumbing to improve engine safety. Design & Quality of the Enhanced tailpipe to reduce O&S costs. Continue efforts on N2 Speed Sensor to reduce amount of hardware O&S. Start the design effort & drafted the Prime Item Development Specification (PIDS) for the T55-GA-714B engine upgrade program, program will increase temp margin & reduce O&S costs. 2004:Complete the quality of the Safety Enhanced Plumbing & submit the ECP. Continue with the design & quality of the N2 Speed Sensor Program to reduce amount of Accessory Gearbox hardware reliability & reducing O&S Costs. Increase activity on the Design efforts & finalize the PIDS for the T55-GA-714B engine program to increase engine temp margin & reduce O&S costs (engines remain on-wing longer). Continue the design of the Improved Bleed System to reduce O&S costs by improving reliability of the system. 2005:Continue with design work & start the quality effort for the T55-GA-714B increase engine temp margin & reduce O&S costs (engines remain on-wing longer). Complete the quality effort to include flight-testing of the Enhanced tailpipe to reduce O&S costs, submit the ECP for incorporation. Complete quality efforts for the Improved Bleed System to reduce O&S costs and submit the ECP for incorporation. Continue quality efforts for the N2 Speed Sensor Program to reduce the amount of accessory Gearbox hardware, increasing reliability & reducing O&S costs.	1363	1137	950

Accomplishments/Planned Program A(continued)	FY 2003	FY 2004	FY 2005
GTCP36 APU: Continue to provide timely responses to technical problems arising in the field during operational use. Review operational and repair reports, perform engineering analysis of failed engines and equipment. Perform investigation and testing as required to isolate/verify reported field problems. 2003: Initiated effort to qualify barrier filters that will prevent sand erosion damage resulting in increased APU life. Conducted engineering analysis of service revealed deficiencies. Continued life analysis of critical rotating components. Completed design and testing of fuel solenoid kickplate bracket. 2004: Complete life analysis and establish and/or verify life limits for turbine and compressor wheels to improve flight safety. Conduct engineering analysis of service revealed deficiencies. 2005: Develop new repairs and extend wear limits, new repair tools and techniques to reduce O&S costs. Develop a dual alloy turbine wheel to ensure safety, improved reliability, and decrease O&S costs. Conduct engineering analysis of service revealed deficiencies.	101	165	150
T62 APU: Continue to provide timely responses to technical problems arising in the field during operational use. Review operational and repair reports, perform engineering analysis of failed engines and equipment. Perform investigation and testing as required to isolate/verify reported field problems 2003: Conducted engineering analysis of service revealed deficiencies as well as continued life analysis of critical rotating components. Completed material testing in support of life analysis. 2004: Complete life analysis and establish and/or verify life limits for turbine and compressor wheels to improve flight safety. Conduct engineering analysis of service revealed deficiencies. 2005: Develop new repairs and extend wear limits, new repair tools and techniques to reduce O&S costs. Conduct engineering analysis of service revealed deficiencies.	100	155	125
IN HOUSE: In-house support for the CIP engineers. Contracting support for CIP contracts.	449	226	158
Continued development of Universal Full Authority Digital Engine Control (FADEC)	2012	1847	0
Continued development of Variable Displacement Vane Pump (VDVP) and Liquid or Light End Air (LOLA) Equipped Fuel Delivery Unit (FDU)	938	0	0
Reprogramming	118	0	0
Prior year closed account funding	5	0	0
Small Business Innovative Research/Small Business Technology Transfer Programs	0	152	0
Totals	6759	5339	2427

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004)	6767	3399	3451
Current Budget (FY 2005 PB)	6759	5339	2427
Total Adjustments	-8	1940	-1024
Congressional program reductions		-51	
Congressional rescissions	-91		
Congressional increases	3400	2000	
Reprogrammings	-3125	-9	
SBIR/STTR Transfer	-192		
Adjustments to Budget Years			-1024

FY 2005: Funds realigned (-$1.0 million) to higher priority Army programs.

C. Other Program Funding Summary: PE 0205633N (Aircraft Engine CIP Navy)and 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(R3)

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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 . T700 Engine	SS/CPFF	GE-Air, Lynn, MA	53438	1670	1-3Q	1657	1-2Q	1044	1-2Q	Continue	57809	Continue
b . T55 Engine	SS/CPFF	Honeywell, Phoenix, AZ	24428	1363	1-3Q	1137	1-3Q	950	1-2Q	Continue	27878	Continue
c . APU's	MIPR	Air Force, Kelly AFB, TX	13557	0		0		0		0	13557	13557
d . FADEC/FDU	MIPR	CECOM, Ft. Monmouth, NJ	5577	1908	2-4Q	1999	2-4Q	0		0	9484	5716
e . APU's	MIPR	Air Force, Hill AFB, UT	724	201	3Q	320	3Q	275	3Q	Continue	1520	Continue
f . LOLA	MIPR	CECOM, Ft. Monmouth, NJ	0	938		0		0		0	938	0
Subtotal:			97724	6080		5113		2269		Continue	111186	Continue

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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
c . Contract Engineering	SS/CPFF	AMS, Huntsville, AL	0	107	3Q	0		0		0	107	107
Subtotal:			209	107		0		0		0	316	316

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

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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	407	449	1-4Q	226	1-4Q	158	1-4Q	Continue	1240	Continue
c . DA Withhold			0	118		0		0		0	118	0
d . Prior Year Closed Account Funding			0	5		0		0		0	5	0
Subtotal:			10749	572		226		158		Continue	11705	Continue
Project Total Cost:			109243	6759		5339		2427		Continue	123768	Continue