ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

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

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
106	A/C COMPON IMPROV PROG	5285	7121	2066	6702	8454	9303	10756	10674	0	67120

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.

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Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
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. 2004: Continued the development of the T700-GE-701D engine to reduce engine O&S costs and improve engine on-wing life. Completed Low Cycle Fatigue (LCF) test teardown reviews and continued component life analysis. Continued development of the Enhanced Digital Electronic Control Unit (EDECU) program [funded separately via Congressional directive] to reduce costs and improve safety). Initiated Full Authority Digital Electronic Control (FADEC) development program to improve flight safety and readiness while reducing O&S costs. 2005: 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. 2006: Initiate Time-On-Wing driver program to investigate causes for engine removals to improve readiness and reduce OS costs. Begin an Altitude Test on the 701D engine to improve flight safety. 2007: Complete the 701D Altitude Test and perform analysis of the test data to complete qualification of the 701D engine. Perform engineering analysis of service revealed deficiencies; major readiness drivers and high operating cost items. Develop new seals to preclude leakage in accessory gearbox to improve readiness and reduce O&S costs.	1856	1039	992	3285

Accomplishments/Planned Program A(continued)	FY 2004	FY 2005	FY 2006	FY 2007
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. 2004: Continue with the design & qualification of an improved bleed system and enhanced tailpipe to reduce O&S costs. Continued Safety Enhanced Plumbing program which improves engine safety. Continued efforts on the N2 Speed Sensor System to reduce amount of hardware O&S. Continued with the design effort & development of the Prime Item Development Specification (PIDS) for the T55-GA-714B engine upgrade program, a program which will increase temperature margin & reduce specific fuel consumption (SFC) and O&S costs. Started efforts to complete the qualification of an improved Engine Control Unit (ECU), a member of the "Universal Control" family of engine controls, previously funded by Congressional funding. 2005: Complete the qualification of the Safety Enhanced Plumbing and Improved Bleed System and submit the ECPs. Continue with the design & qualification of the Enhanced Tailpipe and N2 Speed Sensor Program. Finalize design and begin qualification testing for the T55-GA-714B engine program. 2006: Completed design work & continue qualification effort for the Enhanced Tailpipe, N2 Speed Sensor and T55-GA-714B programs. Complete qualification efforts for the improved ECU program and submit ECPs. Initiate Compressor Erosion Resistant Coating program. 2007: Complete Enhance Tailpipe, N2 Speed Sensor and T55-GA-714B programs and submit ECPs. Continue the Compressor Erosion Resistant Coating program.	855	750	785	2614
GTCP36 Auxiliary Power Unit (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 and service revealed deficiencies (SRDs). 2004: Initiated effort to qualify barrier filters that will prevent sand erosion damage resulting in increased APU life. Conducted engineering analysis of SRDs, life analysis of critical rotating parts and analysis/testing of fuel solenoid kickplate bracket. 2005: 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. 2006/2007: Develop new repairs and extend wear limits, new repair tools and techniques to reduce O&S costs. Conduct engineering analysis of service revealed deficiencies. Initiate program to improve Low Oil Pressure switch reliability and decrease life cycle costs.	188	150	80	270

Accomplishments/Planned Program B(continued)	FY 2004	FY 2005	FY 2006	FY 2007
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 and service revealed deficiencies (SRDs). 2004: 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. 2005: 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. 2006/2007: Develop new repairs and extend wear limits, new repair tools and techniques to reduce O&S costs. Conduct engineering analysis of SRDs. Evaluate current combustor fuel manifold failures from field and initiate redesign effort to increase reliability and maintainability.	150	150	80	270
IN HOUSE: In-house support for the CIP engineers. Contracting support for CIP contracts.	226	241	129	263
Continued development of Universal Full Authority Digital Engine Control (FADEC).	2010	4791	0	0
Totals	5285	7121	2066	6702

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	2427	2575	7717
Current Budget (FY 2006/2007 PB)	7121	2066	6702
Total Adjustments	4694	-509	-1015
Net of Program/Database Changes			
Congressional Program Reductions	-104		
Congressional Rescissions			
Congressional Increases	5000		
Reprogrammings			
SBIR/STTR Transfer	-202		
Adjustments to Budget Years		-509	-1015

Funds realigned to higher priority Army programs.

C. Other Program Funding Summary: PE □2□5633N (Aircraft Engine CIP Navy) and PE □2□7268F (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 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . T700 Engine	SS/CPFF	GE-Air, Lynn, MA	56934	1039	1-2Q	992	1-2Q	3285	1-2Q	Continue	62250	Continue
b . T55 Engine	SS/CPFF	Honeywell, Phoenix, AZ	26628	750	1-2Q	785	1-2Q	2614	1-2Q	Continue	30777	Continue
c . APU's	MIPR	Air Force, Kelly AFB, TX	13557	0		0		0		0	13557	13557
d . EDECU	SS/CPFF	GE-Air, Lynn, MA	774	0		0		0		0	774	0
e . FADEC/FDU	MIPR	CECOM, Ft. Monmouth, NJ	8107	4791		0		0		0	12898	5716
f . APU's	MIPR	Air Force, Hill AFB, UT	1263	300	3Q	160	3Q	540	3Q	Continue	2263	Continue
g . LOLA	MIPR	CECOM, Ft. Monmouth, NJ	938	0		0		0		0	938	0
Subtotal:			108201	6880		1937		6439		Continue	123457	Continue

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II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 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	107	0		0		0		0	107	107
d . Contract Engineering	SS/CPFF	Westar, Albuquerque, NM	30	0		0		0		0	30	0
Subtotal:			346	0		0		0		0	346	316

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 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	946	0		0		0		0	946	Continue
Subtotal:			946	0		0		0		0	946	Continue

Remarks: Not Applicable

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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 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	1182	241	1-4Q	129	1-4Q	263	1-4Q	Continue	1815	Continue
c . DA Withhold			118	0		0		0		0	118	0
d . Prior Year Closed Account Funding			5	0		0		0		0	5	0
e . SBIR/STTR			147	0		0		0		0	147	0
Subtotal:			11794	241		129		263		Continue	12427	Continue
Project Total Cost:			121287	7121		2066		6702		Continue	137176	Continue