

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603□01A - Aviation - Adv Dev

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
Total Program Element (PE) Cost	13763	16017	6249	6614	6295	6821	9009	8947	Continuing	Continuing
079 JT SURVIVABILITY INVES	0	958	0	0	0	0	0	0	0	0
B32 ADV MAINT CONCEPTS/EQ	6662	8883	6249	6614	6295	6821	9009	8947	Continuing	Continuing
B45 AIRCREW INTEGRATED SYS-AD	7101	6176	0	0	0	0	0	0	0	17374

A. Mission Description and Budget Item Justification: This PE provides advanced development aviation support of tactical programs associated with air mobility, advanced maintenance concepts and equipment, and Aircrew Integrated Systems (ACIS).

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	12113	9872	10113
Current Budget (FY 2006/2007 PB)	16017	6249	6614
Total Adjustments	3904	-3623	-3499
Net of Program/Database Changes			
Congressional Program Reductions	-238		
Congressional Rescissions			
Congressional Increases	4600		
Reprogrammings			
SBIR/STTR Transfer	-458		
Adjustments to Budget Years		-3623	-3499

Change Summary Explanation: Funding - FY 06/07: Funds realigned to higher priority requirements.

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PROJECT

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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
B32 ADV MAINT CONCEPTS/EQ	6662	8883	6249	6614	6295	6821	9009	8947	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program explores, develops, and integrates affordable Aviation Ground Support Equipment (AGSE) and diagnostic technologies to replace obsolete and unsupportable AGSE and diagnostic equipment. It enhances utilization of current and future aircraft by improving the efficiency of maintenance and servicing operations by validating new maintenance concepts to improve man and machine interfaces, enhance aircraft maintenance processes and reduce Operation and Support (O&S) costs. It provides for development of rapid battle repair procedures and tools development to speed the return of aircraft to combat ready status, and development of new equipment for aerial recovery of damaged aircraft. Included in this program are projects such as: evaluation of database management software, diagnostic/prognostic monitoring systems, Battle Damage Assessment and Repair (BDAR) procedures and tools, support to modernized aircraft, advanced powered electric drive vehicle concepts in aviation ground support function area, Aviation Turbine Engine Diagnostic System (ATEDS), Generic Aircraft Nitrogen Generator (GANG), Multipurpose Aircraft Support System (MASS), Flexible Engine Diagnostic System/Shaft Engine Test Instrumentation (FEDS/SETI), Future Tactical Truck System (FTTS), Advanced Concept Technical Demonstration (ACTD) at the National Automotive Center (NAC), Unit Maintenance Aerial Recovery Kit (UMARK), and development of the modular Aviation Ground Power Unit (AGPU) III in conjunction with the Hybrid Electric Vehicle Aviation - prototype and Future Tactical Truck Systems - Integration (FTTS).

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Aviation Turbine Engine Diagnostic System (ATEDS) - Software development and demonstration	1651	0	0	0
ATEDS - Multi Engine/Integration	788	3147	1000	0
ATEDS II - Program Diagnostics	0	0	0	600
BDAR System - Demonstration & validation Block II	0	0	100	100
Standard Aircraft Towing System (SATS) Block II- MASS	300	200	300	510
Aviation Ground Recovery System	0	0	50	0
Shop Sets - Fuel Quantity Testers	0	0	50	100
GANG - AVUM Minipack	0	0	100	100
FEDS/SETI	0	150	250	300
Shop Equipment Contact Maintenance (SECM) Modernization - Block II	450	350	0	0
Maintenance Platform & Tow Bar Modernization	200	150	0	0
Hybrid Electric Vehicle Aviation - prototype, systems integration, early operational assessment, maintenance, modularization, and modular AGPU III.	773	1650	1065	75

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Accomplishments/Planned Program (continued)

	FY 2004	FY 2005	FY 2006	FY 2007
Hybrid Vehicle Upgrade FTTS/ACTD (NAC)	500	500	250	0
FTTS - Integration	0	0	0	1075
Advanced AGSE Working Group	0	100	100	100
Deployable SECM Maintenance Shelter - I/II	125	0	150	0
Deployable Aviation Maintenance Shelter - III (Aircraft)	0	0	50	150
UMARK II	0	0	100	100
Shop Set Complex - Redesign	0	0	205	450
Aviation Vibration Analyzer II (AVA-II)	105	111	0	0
New Aviation Tool Sets (NATS) - Evaluation and Redesign	0	0	200	250
SECM III - (FTTS Aviation Variant)	0	0	244	669
Current Force Aircraft Upgrade Support	0	0	100	100
Joint Aircraft Towing System Demo (Army and USAF)	100	200	0	0
Management Support Services	401	546	580	610
Technical Engineering Services	1269	1679	1255	1225
RDT&E Project Test Support	0	100	100	100
Totals	6662	8883	6249	6614

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B. Other Program Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
Aircraft Procurement, Army(APA) SSN AZ3100	16474	56325	70436	84098	92671	97909	82100	77552	Continuing	Continuing

C. Acquisition Strategy: This project is an aggregate of advanced maintenance concepts-related projects. While the detailed acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through Government test (developmental and operational). Program documentation for milestone decision is prepared, as appropriate, concurrently with the development effort.

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
4 - Advanced Component Development and Prototypes					0603□01A - Aviation - Adv Dev					B32		
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 . ATEDS - Software development and demonstration	C/CPFF	Boeing/GE, Mesa, AZ	1651	0		0		0		0	1651	1651
b . ATEDS - Multi Engine/Integration	C/CPFF	Boeing/GE, Sikorsky/GE, Honeywell; PIF, Redstone Arsenal, AL	1563	3147	2Q	1000	2Q	0		0	5710	5710
c . ATEDS II - Program Diagnostics	C/CPFF	TBS	0	0		0		600	1Q	Continue	Continue	Continue
d . BDAR System Block II	MIPR	AATD, Ft. Eustis, VA	0	0		100	3Q	100	2Q	0	200	0
e . SATS - Block II (MASS)	MIPR	AATD, Ft. Eustis, VA	300	200	2Q	300	2Q	510	2Q	Continue	1310	Continue
f . Aviation Ground Recovery System	TBS	TBS	0	0		50	3Q	0		0	50	0
g . Shop Sets - Fuel Quantity Testers	TBS	TBS	0	0		50	3Q	100	2Q	0	150	0
h . GANG - AVUM Minipack	MIPR	AATD, Ft. Eustis, VA	0	0		100	3Q	100	2Q	0	200	0
i . FEDS/SETI	MIPR	Navy, Lakehurst, NJ	0	150	3Q	250	2Q	300	3Q	Continue	Continue	Continue
j . SECM - Block II	MIPR	PIF, Redstone Arsenal, AL	450	350	2Q	0		0		0	800	0

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
4 - Advanced Component Development and Prototypes					0603□01A - Aviation - Adv Dev					B32		
I. Product Development (continued)	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
k . Maintenance Platform & Towbar Modernization	MIPR	AATD, Ft. Eustis, VA	200	150	2Q	0		0		0	350	0
l . Hybrid Electric Vehicle AVN - prototype, sys integ, early opr test, maint, modular AGPU III	C/CPFF	AM General, Detroit, MI/Solectra, Boston, MA, (Applied Geo Tech (AGT)/AAI Corp, Choctaw, MS	2771	1650	2Q	1065	2Q	75	2Q	0	5561	5561
m . Hybrid Vehicle Upgrade FTTS/ACTD (NAC)	MIPR	Tank and Automotive Research and Development Command (TARDEC), NAC	500	500	1Q	250	2Q	0		0	1250	0
n . FTTS Integration	MIPR	TARDEC, NAC	0	0		0		1075	2Q	Continue	Continue	Continue
o . Advanced AGSE Working Group	TBS	AGSE, Redstone Arsenal, AL	0	100	3Q	100	2Q	100	2Q	Continue	Continue	Continue
p . Deployable SECM Maintenance Shelter I/II	MIPR	AATD, Ft. Eustis, VA	125	0		150	3Q	0		0	275	0
q . Deployable Aviation Maintenance Shelter III (Aircraft)	MIPR	AATD, Ft. Eustis, VA	0	0		50	2Q	150	2Q	Continue	Continue	Continue
r . UMARK II	MIPR	AATD, Ft. Eustis, VA	0	0		100	3Q	100	3Q	0	200	0

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BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
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I. Product Development (continued)	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
s . Shop Set Complex - Redesign	TBS	TBS	0	0		205	2Q	450	2Q	450	1105	0
t . AVA II	MIPR	PIF, Redstone Arsenal, AL	1055	111	2Q	0		0		0	1166	0
u . NATS Eval & Redesign	MIPR	AATD, Ft. Eustis, VA	0	0		200	2Q	250	2Q	Continue	Continue	Continue
v . SECM III (FTTS Aviation Variant)	MIPR	PIF, Redstone Arsenal, AL	0	0		244	3Q	669	3Q	Continue	Continue	Continue
w . Current Force Aircraft Upgrade Support	TBS	TBS	0	0		100	3Q	100	2Q	0	200	0
x . Joint Aircraft Towing System Demo (Army and USAF)	MIPR	USAF, Warner Robbins Air Force Base, GA	100	200	2Q	0		0		0	300	0
Subtotal:			8715	6558		4314		4679		Continue	Continue	Continue

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes					PE NUMBER AND TITLE 0603□01A - Aviation - Adv Dev					PROJECT B32		
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 . Technical Engineering Services	MIPR	AATD, Ft. Eustis, VA	3058	1077	1-3Q	1055	1-3Q	1025	1-3Q	Continue	6215	Continue
b . Technical Engineering Services	C/FFP	Camber/Directorate for Combat Developments, Ft. Rucker, AL	219	602	1-3Q	200	1-2Q	200	1-3Q	Continue	1221	Continue
Subtotal:			3277	1679		1255		1225		Continue	7436	Continue
Remarks: None												
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 . RDT&E Project Test Support	MIPR	ATEC	0	100	1-3Q	100	1-3Q	100	1-3Q	Continue	Continue	Continue
Subtotal:			0	100		100		100		Continue	Continue	Continue
Remarks: None												

ARMY RDT&E COST ANALYSIS(R3)										February 2005		
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
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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 . Program Management Support	C/T&M	Science Applications Intl Corp, San Diego, CA	949	223	1-3Q	240	1Q	250	1Q	Continue	1662	Continue
b . Program Management In-House	In-house	AGSE, Redstone Arsenal, AL	753	323	1-4Q	340	1-4Q	360	1-4Q	Continue	1776	Continue
Subtotal:			1702	546		580		610		Continue	3438	Continue
Remarks: None												
Project Total Cost:			13694	8883		6249		6614		Continue	Continue	Continue

Schedule Profile (R4 Exhibit)																				February 2005												
BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes										PE NUMBER AND TITLE 0603□01A - Aviation - Adv Dev																		PROJECT B32				
Event Name	FY 04				FY 05				FY 06				FY 0□				FY 0□				FY 0□				FY 10				FY 11			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Aviation Turbine Engine Diagnostic System/Integration/ATEDS II Diagnostic	ATEDS																															
New Aviation Tool Sets-Evaluation & Redesign	NATS																															
Battle Damage Assessment & Repair-Block II	BDAR																															
Flexible Engine Diagnostic System/Shaft engine Test Instrumentation	FEDS/SETI																															
Standard Aircraft Towing System / Multiple Aircraft Support System	SATS / MASS																															
Shop Equipment Contact Maintenance Mod-Block I / II / III	SECM - I / II / III																															
Hybrid Vehicle / Future Tactical Truck System / Modular AGPU III	HYBRID VEHICLE / FTTS / Modular AGPU III																															
Misc Projects (Mt Platforms, Towbars, Mt Cover, UMARK II, GANG, etc.)	MISC PROJECTS																															

Schedule Detail (R4a Exhibit)							February 2005	
BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes				PE NUMBER AND TITLE 0603 01A - Aviation - Adv Dev			PROJECT B32	
<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
AVIATION TURBINE ENGINE DIAGNOSTIC SYSTEM (ATEDS) - DEVELOP SOFTWARE	1-4Q							
AVIATION TURBINE ENGINE DIAGNOSTIC SYSTEM (ATEDS) - MULTI ENG INTEGRATION	2-4Q	1-4Q	1-4Q					
AVIATION TURBINE ENGINE DIAGNOSTIC SYSTEM (ATEDS II), PROG DIAGNOSTICS				1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
BATTLE DAMAGE ASSMNT & REPAIR (BDAR) SYSTEM - DEMO & VALIDATION BLOCK II			3-4Q	1-4Q				
STANDARD AIRCRAFT TOWING SYSTEM (SATS) - BLOCK II - MASS	3-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-2Q		
AVIATION GROUND RECOVERY SYSTEM			3-4Q					
SHOP SETS - FUEL QUANTITY TESTERS			3-4Q	1-2Q				
GENERIC AIRCRAFT NITROGEN GENERATOR (GANG) - AVUM MINIPACK			3-4Q	1-4Q				
FLEX ENGINE DIAGNOSTIC SYS/SHAFT ENGINE TEST INSTRUMENT/(FEDS/SETI)		3-4Q	1-4Q	1-4Q	1-4Q			
SHOP EQUIPMENT CONTACT MAINT (SECM) MODERNIZATION - BLOCK II	2-4Q	1-4Q						
MAINT PLATFORM & TOWBAR MODERNIZATION	1-4Q	1-4Q						
HYBRID ELEC VEH AVN-PROTOTYPE, SYS INTEG, EARLY OPR TEST, MAINT, MODULAR AGPU III	1-4Q	1-4Q	1-4Q	1-4Q				
HYBRID VEHICLE UPGRADE FUTURE TACT TRUCK SYS/ ADV CONCEPT TECH DEMO (FTTS/ACTD)	1-4Q	1-4Q	1-4Q					
FUT TACT TRUCK SYS (FTTS) - INTEGRATION				1-4Q	1-4Q	1-4Q	1-4Q	
ADVANCED AGSE WORKING GROUP		3-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
DEPLOYABLE SHOP EQUIPMENT CONTACT MAINT (SECM) SHELTER - I/II	3-4Q		3-4Q					
DEPLOYABLE AVIATION MAINTENANCE SHELTER - III (AIRCRAFT)			2-4Q	1-4Q	1Q			

Schedule Detail (R4a Exhibit)

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4 - Advanced Component Development and Prototypes

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PROJECT

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<u>Schedule Detail (continued)</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
UNIT MAINT AERIAL RECOVERY KIT (UMARK) II			3-4Q	1-4Q				
SHOP SETS COMPLEX - REDESIGN			2-4Q	1-4Q	1-4Q	1-4Q		
AVIATION VIBRATION ANALYZER II	3-4Q	1-4Q						
NEW AVN TOOL SETS (NATS) EVAL AND REDESIGN			2-4Q	1-4Q	1-2Q			
SECM III - (FTTS Aviation Variant)			3-4Q	1-4Q	1-4Q			
CURRENT FORCE AIRCRAFT UPGRADE SPT			3-4Q	1-4Q				
JOINT AIR TOW SYS DEMO (ARMY AND USAF)	4Q	1-3Q						
MANAGEMENT SUPPORT SERVICES	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
TECHNICAL ENGINEERING SERVICES	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
RDT&E PROJECT TEST SUPPORT		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

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B45

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
B45 AIRCREW INTEGRATED SYS-AD	7101	6176	0	0	0	0	0	0	0	17374

A. Mission Description and Budget Item Justification: Project DB45 - Aviation Advanced Development: This project provides concept and technology programs for improved aviator safety, survivability, and human performance that amplify the warfighting effectiveness of the Army rotary wing aircraft including the AH-64 Apache/Longbow, CH-47 Chinook, UH/HH-60 Blackhawk, Light Utility Helicopter, and Armed Reconnaissance Helicopter. These projects include those systems and items of equipment that are unique and necessary for the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield. Advanced development programs focus on the development and evaluation of emerging technologies and the adaptation of commercial and nondevelopmental items (NDI) to military requirements. The Air Warrior provides a mission-tailorable system that standardizes and integrates Aviation Life Support Equipment (ALSE) for aviation personnel during flight and ground operations. The current effort includes design and development of a Modular Integrated Helmet Display System with new display capabilities, three-dimensional audio and external audio capability, nuclear flash protection and ballistic protection; design and development of a bodily waste management system for the chemical/biological environment; and improvements to personal environmental control systems and ballistic protection. These development activities will concentrate on requirements analysis through full system integration and demonstration of the capabilities.

Beginning in FY06 Aircrew Integrated Systems Advanced Development funds are under PE 0603827A, Project S51.

Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Continue advanced component development of Air Warrior preplanned technology improvements.	2695	2580	0	0
Continued Virtual Cockpit Optimization Project Advanced Component Development and Integration of technologies for simulation and demonstration.	4406	3596	0	0
Totals	7101	6176	0	0

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B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
RDTE, A PE 0603827A PROJ S51 - Adv Dev	0	0	3374	3443	3525	3619	4044	4040	Continuing	Continuing
RDTE, A PE 0604801A PROJ DC45 - EMD	3256	3239	0	0	0	0	0	0	0	6495
RDTE, A PE 0604601A PROJ S61 - EMD	0	0	2248	2291	2523	2620	2706	2805	Continuing	Continuing
Aircraft Procurement, Army SSN AZ3110 - ACIS	32848	29694	29352	34821	42127	38873	56594	42268	Continuing	Continuing

C. Acquisition Strategy: Funds are under PE 0603827A - S51 after FY 2005. Technologies developed under the System Integrator contract will integrate the Air Warrior (AW) Block 1 and 2 features with additional Block 3 capabilities. Specifically these Block 3 capabilities will include a fully compliant Modular Integrated Helmet and Display System (MIHDS), Chemical, Biological, Radiological, and Nuclear (CBRN) waste disposal system and upgrades to AW block 1 and 2 components as emerging technologies become available. The MIHDS helmet will provide a day heads up display, nuclear flash protection, external audio, don in flight CBRN protection and Agile laser eye protection. The System Integrator contract is a 5 year delivery order cost plus fixed fee and was awarded in August 2004. The Virtual Cockpit Optimization project is Congressionally funded for development of technologies to increase pilots' situational awareness and provide cognitive decision aiding tools. Funds are available only in the year of execution. As funds are received, they will be placed on contract.