

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2004

BUDGET ACTIVITY

**4 - Advanced Component Development and Prototypes**

PE NUMBER AND TITLE

**0603801A - Aviation - Adv Dev**

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
Total Program Element (PE) Cost	10660	14307	9233	9872	10113	9876	10490	Continuing	Continuing
B32 ADV MAINT CONCEPTS/EQ	3269	7017	6392	6464	6704	6389	6910	Continuing	Continuing
B33 CARGO HANDLING & MISSION SPT	3114	0	0	0	0	0	0	0	8720
B45 AIRCREW INTEGRATED SYS-AD	4277	7290	2841	3408	3409	3487	3580	Continuing	Continuing

**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). FY 04 shows a \$4.5M Congressional increase for project B45 for the Virtual Cockpit Optimization Program. These systems support the Future Force transition path of the Transformation Campaign Plan (TCP).

<b><u>B. Program Change Summary</u></b>	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004)	10767	9968	9320
Current Budget (FY 2005 PB)	10660	14307	9233
Total Adjustments	-107	4339	-87
Congressional program reductions		-136	
Congressional rescissions	-346		
Congressional increases	2800	4500	
Reprogrammings	-2301	-25	
SBIR/STTR Transfer	-260		
Adjustments to Budget Years			-87

Beginning in FY04, funds from Project B33 have been moved to Project B32.

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

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**0603801A - Aviation - Adv Dev**

**PROJECT**  
**B32**

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
B32 ADV MAINT CONCEPTS/EQ	3269	7017	6392	6464	6704	6389	6910	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), Digital Aviation Weight & Balance Automation (DAWS), and concept exploration for the new Aviation Ground Power Unit (AGPU)-Block II. These efforts support the Future transition path of the Transformation Campaign Plan (TCP).

No Defense Emergency Response Funds (DERF) provided for this program/project.

Beginning in FY 04, Project B33 has been combined with this budget line.

<b>Accomplishments/Planned Program</b>	FY 2003	FY 2004	FY 2005
ATEDS - Software development and demonstration	0	1651	0
ATEDS - Multi Engine Integration	0	775	1200
Digital Maintenance Architecture Demonstration (DMAD)	1775	0	0
AGPU Block II - Develop performance specification and analyze prototype	0	622	350
BDAR System - Demonstration & validation Block II	0	100	125
DAWS - Algorithm automation (GCSS - Army)	0	0	350
Standard Aircraft Towing System (SATS) Block II- Advanced Fuel Electric Drive - Perform market research	0	250	300
Shop Equipment Contact Maintenance (SECM) Modernization - Block II	0	450	350
Maintenance Platform & Tow Bar Modernization	95	200	150
Hybrid Electric Vehicle Aviation - prototype, systems integration, early operational assessment	349	570	0

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**B32**

	FY 2003	FY 2004	FY 2005
<b><u>Accomplishments/Planned Program (continued)</u></b>			
Hybrid Vehicle Upgrade - (Remote Trailers)	0	0	250
Future Aviation Repair & Maintenance Systems	0	111	434
Advanced AGSE Working Group	75	100	100
Deployable SECM Maintenance Cover - I/II	0	125	0
Deployable Aviation Maintenance Shelter for SECM - III (Contact Team)	0	0	250
Swagging Tool Kit (A&B)	0	0	100
Borescope Eval Sys (Fuel Cell/Engine)	0	75	250
Aviation Vibration Analyzer II (AVA-II) - Software	0	150	0
New Aviation Tool Sets (NATS) - Evaluation and Redesign	0	0	300
Aviation Parts Marking - Automation	0	0	150
Technical Engineering Services	804	1279	1410
Management Support Services	171	355	323
Small Business Innovative Research/Small Business Technology Transfer Programs	0	204	0
<b>Totals</b>	<b>3269</b>	<b>7017</b>	<b>6392</b>

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**PROJECT**  
**B32**

<b>B. Other Program Funding Summary</b>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
Aircraft Procurement, Army(APA) SSN AZ3100	19257	16474	21933	35361	47249	51174	47491	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 2004**

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**4 - Advanced Component Development and Prototypes**

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**0603801A - Aviation - Adv Dev**

**PROJECT**  
**B32**

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 . ATEDS - Software development and demonstration	C/CPFF	Boeing/GE, Mesa, AZ	0	0		1651	2Q	0		0	1651	1651
b . ATEDS - Multi Engine Integration	C/CPFF	TBS	0	0		775	2Q	1200	2Q	1913	3888	3888
c . Digital Maintenance Architecture Demo (DMAD)	C/CPFF	Boeing Co, Ridley Park, PA	918	1775	2Q	0		0		0	2693	2693
d . Aviation Ground Power Unit (AGPU) Block II	MIPR	Prototype Integration Facility (PIF), Redstone Arsenal, AL	0	0		622	3Q	350	3Q	550	1522	1522
e . BDAR System Block II	C/CPFF	TBS	0	0		100	3Q	125	3Q	0	225	225
f . DAWS	MIPR	Software Engineering Directorate, Redstone Arsenal, AL	0	0		0		350	2Q	600	950	950
g . SATS - Block II	MIPR	AATD, Ft. Eustis, VA	0	0		250	3Q	300	3Q	450	1000	1000
h . SECM - Block II	MIPR	PIF, Redstone Arsenal, AL	0	0		450	2Q	350	2Q	350	1150	1150
i . Maintenance Platform & Towbar	MIPR	AATD, Ft. Eustis, VA	0	95	4Q	200	2Q	150	2Q	0	445	500

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**BUDGET ACTIVITY**  
**4 - Advanced Component Development and Prototypes**

**PE NUMBER AND TITLE**  
**0603801A - Aviation - Adv Dev**

**PROJECT**  
**B32**

I. Product Development (continued)	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
j . Hybrid Electric Vehicle AVN - prototype, systems integ, early operational test, AGSE moduleization	C/CPFF	AM General, Detroit, MI/Solectra, Boston, MA	1649	349	2Q	570	2Q	0		0	2568	2568
k . Hybrid Electric Vehicle Upgrade - (Remote Trailers)	MIPR	AATD, Ft. Eustis, VA	0	0		0		250	2Q	825	1075	1075
l . Future Aviation Repair & Maint Sys	MIPR	AATD, Ft. Eustis, VA	0	0		111	2Q	434	2Q	1300	1845	2170
m . Advanced AGSE Working Group		AGSE, Redstone Arsenal, AL	0	75	4Q	100	3Q	100	3Q	100	375	375
n . Deployable SECM Maintenance Cover	MIPR	AATD, Ft. Eustis, VA	0	0		125	3Q	0		0	125	125
o . Deployable Aviation Maintenance Shelter for SECM (Contact Team)	MIPR	AATD, Ft. Eustis, VA	0	0		0		250	2Q	975	1225	1225
p . Swagging Tool Kit (A&B)	MIPR	AATD, Ft. Eustis, VA	0	0		0		100	2Q	0	100	100
q . Borescope Eval Sys (Fuel Cell/Engine)	MIPR	AATD, Ft. Eustis, VA	0	0		75	2Q	250	2Q	0	325	325

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**4 - Advanced Component Development and Prototypes**

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**PROJECT**  
**B32**

I. Product Development (continued)	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
r . Aviation Vibration Analyzer II - software	MIPR	AATD, Ft. Eustis, VA	950	0		150	3Q	0		0	1100	1100
s . New Aviation Tool Sets (NATS) Eval & Redesign	MIPR	AATD, Ft. Eustis, VA	523	0		0		300	2Q	700	1523	1523
t . Aviation Parts Marking	MIPR	AATD, Ft. Eustis, VA	0	0		0		150	2Q	0	150	150
Subtotal:			4040	2294		5179		4659		7763	23935	24315

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 . Technical Engineering Services	MIPR	AATD, Ft. Eustis, VA	1429	744	1-4Q	1144	1-3Q	1262	1-3Q	Continue	4579	Continue
b . Technical Engineering Services	MIPR	Directorate for Combat Developments, Ft. Rucker, AL	0	60	4Q	135	2Q	148	2Q	Continue	Continue	Continue
Subtotal:			1429	804		1279		1410		Continue	Continue	Continue

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**B32**

Remarks: None

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
			0	0		0		0		0	0	0
<b>Subtotal:</b>												

Remarks: None

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 . Program Management Support	T&M	Science Applications Intl Corp, San Diego, CA	337	81	2Q	255	1Q	223	2Q	Continue	Continue	Continue
b . Program Management In-House	NA	AGSE, Redstone Arsenal, AL	372	90	1-4Q	100	1-4Q	100	1-4Q	Continue	Continue	Continue
c . Small Business Innovative Research/Small Business Technology Transfer Programs			0	0		204		0		0	204	0
<b>Subtotal:</b>			709	171		559		323		Continue	Continue	Continue

Remarks: None

<b>Project Total Cost:</b>			6178	3269		7017		6392		Continue	Continue	Continue
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# Schedule Profile (R4 Exhibit)

February 2004

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PE NUMBER AND TITLE  
**0603801A - Aviation - Adv Dev**

PROJECT  
**B32**

Event Name	FY 02				FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09			
	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	1	2	3	4
Aviation Turbine Engine Diagnostic System									ATEDS																							
ATEDS Integration													ATEDS - I																			
Digital Maint Architecture Demo					DMAD																											
Aviation Ground Power Unit - Block II													AGPU - II																			
BDAR Block II (2 Kits)													BDAR-II																			
Digital Avn Weight & Bal													DAWS																			
Std Aircraft Towing Syst (Blk II)													SATS																			
Shop Equip Contact Maint Mod - Blk II													SECM - II																			
Maint Platform & Towbar Mod													MPT																			
Hybrid Electric Vehicle - AVN													HE - AVN																			
Future Avn. Repair & Maint Syst.													FARMS																			
Advanced AGSE Working Group													AGSE - WG																			
Deployable Avn Maint Shelters - (SECM/Maint/Acft) - I/II/III													AMS - D (I/II/III)																			
Misc Projects (SWAG Kit/Borescope/AVA II/Tools/Parts Marking)													MISC PROJ																			

## Schedule Detail (R4a Exhibit)

**February 2004**

**BUDGET ACTIVITY**  
**4 - Advanced Component Development and Prototypes**

**PE NUMBER AND TITLE**  
**0603801A - Aviation - Adv Dev**

**PROJECT**  
**B32**

<u>Schedule Detail</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
AVIATION TURBINE ENGINE DIAGNOSTIC SYSTEM (ATEDS) - Develop software		2-4Q	1Q				
AVIATION TURBINE ENGINE DIAGNOSTIC SYSTEM (ATEDS) - Multi Engine Integration		2-4Q	1-4Q	1-4Q	1-4Q	1Q	
DIGITAL MAINT ARCHITECTURE DEMO (DMAD)	2-4Q	1Q					
AVIATION GROUND POWER UNIT (AGPU) BLOCK II		3-4Q	1-4Q	1-4Q	1-2Q		
BATTLE DAMAGE ASSMNT & REPAIR (BDAR) SYSTEM - DEMO & VALIDATION BLOCK II		3-4Q	1-4Q	1-2Q			
DIGITAL AVIATION WEIGHT & BALANCE (DAWS)			2-4Q	1-4Q	1Q		
STANDARD AIRCRAFT TOWING SYSTEM (SATS) - BLOCK II - MARKET RESEARCH		3-4Q	1-4Q	1-4Q	1-2Q		
SHOP EQUIPMENT CONTACT MAINTENANCE (SECM) MODERNIZATION - BLOCK II		2-4Q	1-4Q	1-4Q	1Q		
MAINTENANCE PLATFORM & TOWBAR MODERNIZATION	4Q	1-4Q	1-4Q	1Q			
HYBRID ELECTRIC VEHICLE AVN - PROTOTYPE, SYS INTEGRATION, EARLY OPERATIONAL TESTING	2-4Q	1-4Q	1Q				
HYBRID VEHICLE UPGRADE - (REMOTE TRAILERS)			2-4Q	1-4Q	1-4Q	1Q	
FUTURE AVIATION REPAIR & MAINT SYSTEMS		2-4Q	1-4Q	1-4Q	1-4Q	1Q	
ADVANCED AGSE WORKING GROUP		1-4Q	1-4Q	1-4Q	1-2Q		
DEPLOYABLE SECM MAINTENANCE COVER - I/II		3-4Q	1-2Q				
DEPLOYABLE AVIATION MAINTENANCE SHELTER FOR SECM - III (CONTACT TEAM)			2-4Q	1-4Q	1-4Q	1Q	
SWAGGING TOOL KIT (A&B)			2-4Q				
BORESCOPE EVAL SYS (FUEL CELL/ENGINE)		2-4Q	1-4Q	1Q			
AVIATION VIBRATION ANALYZER II - SOFTWARE		3-4Q	1-2Q				
NEW AVIATION TOOL SETS (NATS) EVALUATION AND REDESIGN			2-4Q	1-4Q	1-4Q	1Q	
AVIATION PARTS MARKING AUTOMATION			2-4Q	1Q			

## Schedule Detail (R4a Exhibit)

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<b><u>Schedule Detail (continued)</u></b>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
TECHNICAL ENGINEERING SERVICES	1-4Q						
MANAGEMENT SUPPORT SERVICES	1-4Q						

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**PROJECT**  
**B33**

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
B33 CARGO HANDLING & MISSION SPT	3114	0	0	0	0	0	0	0	8720

**A. Mission Description and Budget Item Justification:** This project explores, develops and integrates affordable Aviation Ground Support Equipment (AGSE) and diagnostic technologies to replace obsolete and unsupportable ground support equipment and diagnostics with new and standardized equipment and diagnostics that are compatible with all Army aircraft models. Projects include funding for the Aviation Turbine Engine Diagnostics System (ATEDS), Battle Damage Assessment and Repair (BDAR), Shop Equipment Contact Maintenance (SECM), Strategic Plan for AGSE and Vibration Management Enhancement Program (VMEP)- AVA II. Addressing priority Aviation Ground Support Equipment (AGSE) will allow the PM to initiate the acquisition process and development of the prototype systems. These efforts support the Future transition path of the Transformation Campaign Plan (TCP).

No Defense Emergency Response Funds (DERF) provided for this program/project.

Funds from this Project have been moved to B32 starting in FY 04.

<b>Accomplishments/Planned Program</b>	FY 2003	FY 2004	FY 2005
Aviation Turbine Diagnostic System (ATEDS) - Software development.	1500	0	0
Vibration Management Enhancement Program (VMEP) - AVA II	169	0	0
Shop Equipment Contact Maintenance (SECM) Upgrade - Block I	234	0	0
Strategic Plan for Aviation Ground Support Equipment	521	0	0
Battle Damage Assessment and Repair (BDAR) Kit - Block I Demonstration & validation.	100	0	0
Technical Support Services	508	0	0
Management Support Services	82	0	0
<b>Totals</b>	<b>3114</b>	<b>0</b>	<b>0</b>

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PROJECT  
**B33**

<b>B. Other Program Funding Summary</b>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
Aircraft Procurement, Army (APA) SSN AZ3100	19257	16474	21933	35361	47249	51174	47491	Continuing	Continuing

**C. Acquisition Strategy:** This project is an aggregate of advanced mission support and cargo handling 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 decisions is prepared, as appropriate, concurrently with the development effort.

# 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 . ATEDS	C/CPFF	Boeing/GE, Mesa, AZ	6220	1500	2Q	0		0		0	7720	7383
b . Vibration Management Enhancement Program (VMEP)	MIPR	MRDEC, Redstone Arsenal, AL	450	169	3Q	0		0		0	619	619
c . SECM	MIPR	Program Integration Facility, Redstone Arsenal, AL	0	234	2Q	0		0		0	234	234
d . Strategic Plan (AGSE)	C/CPFF	Camber Corp, Huntsville, AL	0	521	2Q	0		0		0	521	521
e . BDAR - BLOCK I	MIPR	PIF, Redstone Arsenal, AL	100	100	3Q	0		0		0	200	200
Subtotal:			6770	2524		0		0		0	9294	8957

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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 . Technical Engineering Services	MIPR	AATD, Ft. Eustis, VA	1060	508	1Q	0		0		0	1568	1527
<b>Subtotal:</b>			1060	508		0		0		0	1568	1527

Remarks: None

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
<b>Subtotal:</b>			0	0		0		0		0	0	0

Remarks: None

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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 . Program Management Support	N/A	AGSE, Huntsville, AL	362	82	1-4Q	0		0		0	444	444
Subtotal:			362	82		0		0		0	444	444

Remarks: None

Project Total Cost:			8192	3114		0		0		0	11306	10928
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# Schedule Profile (R4 Exhibit)

February 2004

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**4 - Advanced Component Development and Prototypes**

PE NUMBER AND TITLE  
**0603801A - Aviation - Adv Dev**

PROJECT  
**B33**

Event Name	FY 02				FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09			
	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	1	2	3	4
Avn Turbine Eng Diagnostic Syst	ATEDS																															
Vibration Mgt Enh Prog (AVA-II)					VMEP																											
Shop Equip Contact Maint Mod - Blk I					SECM-I																											
AGSE Strategic Plan					STRAT PLAN																											
BDAR System Blk I (3 Kits)	BDAR-I																															

## Schedule Detail (R4a Exhibit)

**February 2004**

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**0603801A - Aviation - Adv Dev**

**PROJECT**  
**B33**

<u>Schedule Detail</u>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
AVIATION TURBINE ENGINE DIAGNOSTIC SYSTEM (ATEDS) - Develop Software	1-4Q	1Q					
VIBRATION MANAGEMENT ENHANCEMENT PROGRAM (VMEP) - AVA II	1-4Q	1Q					
SHOP EQUIPMENT CONTACT MAINTENANCE (SECM) UPGRADE - BLOCK I	2-4Q	1-2Q					
STRATEGIC PLAN FOR AGSE	2-4Q	1Q					
BATTLE DAMAGE ASSESSMENT & REPAIR (BDAR) KIT BLOCK I - Demonstration & validation	1-4Q	1-2Q					
TECHNICAL SUPPORT SERVICES	1-4Q						
MANAGEMENT SUPPORT SERVICES	1-4Q						

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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
B45 AIRCREW INTEGRATED SYS-AD	4277	7290	2841	3408	3409	3487	3580	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Project DB45 - Air Warrior Systems (AW) Advanced Development: This project provides concept and technology programs, to include Future Force Warrior, for improved aviator safety, survivability, and human performance that amplify the warfighting effectiveness of the Army Transformation aircraft including the RAH-66 Comanche, AH-64 Apache/Longbow, CH-47 Improved Cargo Helicopter, and UH-60 Black Hawk. These programs include those systems and items of equipment that are unique and necessary to the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield and related training missions. 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 (AW) program will provide the aircrew with a systems approach to chemical and biological (CB) protection, noise protection, three-dimensional audio and external audio capability, microclimate conditioning, crash and post-crash survivability, concealment and environmental protection, ballistic protection, night vision capability, heads-up displays, directed energy eye protection, and flame/heat protection. Specifically, Air Warrior will enable the Army Aviation Warfighter to meet the approved Operational Requirements Document mission length of 5.3 hours of flight operations, as opposed to the 1.6 hours of mission capability that exists today with aviators in full chemical/biological protective gear. The AW design will improve overall aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety, and survivability. Advanced development will demonstrate and evaluate emerging technologies for integration into the Air Warrior ensemble through a series of technology improvements. The Virtual Cockpit Optimization Program (VCOP) will demonstrate an integrated system providing pilots with improved intuitiveness, awareness, overall aircrew mission performance, aircrew and aircrew station interface, safety, and survivability by providing the pilot with augmented visionics, three-dimensional audio improvements, and visual data regarding aircraft systems status and operation, and threat warnings. This project in this Program Element does not duplicate any aircraft platform program efforts. Both joint and service independent efforts continue to be pursued under the scope of this project. This system supports the Future Force transition path of the Transformation Campaign Plan (TCP).

<b>Accomplishments/Planned Program</b>	FY 2003	FY 2004	FY 2005
Continue advanced component development of Air Warrior preplanned technology improvements.	1689	2605	2841
Continued Virtual Cockpit Optimization Program Advanced Component Development and Integration of technologies for simulation and demonstration.	2588	4476	0
Small Business Innovative Research/Small Business Technology Transfer Programs	0	209	0
<b>Totals</b>	<b>4277</b>	<b>7290</b>	<b>2841</b>

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

February 2004

BUDGET ACTIVITY  
**4 - Advanced Component Development and Prototypes**

PE NUMBER AND TITLE  
**0603801A - Aviation - Adv Dev**

PROJECT  
**B45**

<b>B. Other Program Funding Summary</b>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
RDTE, A PE 0604801A PROJ DC45 - ACIS	2979	3344	2378	2292	2290	2517	2613	Continuing	Continuing
AVDCraft Procurement, Army SSN AZ3110 - ACIS	14956	32848	28609	29477	34098	41343	38163	Continuing	Continuing

**C. Acquisition Strategy:** DB45 - An Air Warrior Program Definition and Risk Reduction development contract was awarded in FY 1997 to perform a functional requirements analysis. Air Warrior was approved to proceed into the Engineering and Manufacturing development phase in 1st Quarter, FY 1999. A combined government and contractor team developed Air Warrior components and integrated those components into a Block 1 Air Warrior system. After a successful Milestone C decision, production contracts were awarded in FY 2003 for procurement of the Block 1 Air Warrior system. Spiral development, integrating joint and new technologies as improvements to the Air Warrior system, began in FY 2002. These efforts include electronic data management, wireless communications, body armor, modular integrated helmet display systems with increased nuclear, ballistic and laser eye protection, improved soldier environmental control systems, waste management, and other program integration. The Virtual Cockpit Optimization Program component development and system integration effort will investigate and demonstrate how a future rotary wing crewstation could be crafted to deal effectively with information overload on the digital battlefield. This effort also investigates the use of this technology in other crew stations, such as the Future Combat System.

# ARMY RDT&E COST ANALYSIS(R3)

**February 2004**

**BUDGET ACTIVITY**  
**4 - Advanced Component Development and Prototypes**

**PE NUMBER AND TITLE**  
**0603801A - Aviation - Adv Dev**

**PROJECT**  
**B45**

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 . Air Warrior Block Improvements Concept Development	C- CPFF	Various	2059	709	1Q	1897	2Q	1741	2Q	Continue	6406	Continue
b . Virtual Cockpit Optimization Program Concept Development	SS-CPFF	Microvision, Seattle, WA	10731	2200	2Q	4185	2Q	0		10957	28073	10957
Subtotal:			12790	2909		6082		1741		Continue	34479	Continue

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 . Matrix Support	MIPR	Various Government	2088	528	1-4Q	608	1-4Q	477	1-4Q	Continue	3701	Continue
Subtotal:			2088	528		608		477		Continue	3701	Continue

# ARMY RDT&E COST ANALYSIS(R3)

**February 2004**

**BUDGET ACTIVITY**  
**4 - Advanced Component Development and Prototypes**

**PE NUMBER AND TITLE**  
**0603801A - Aviation - Adv Dev**

**PROJECT**  
**B45**

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 . Air Warrior Block improvements System Development and Validation	MIPR	Various Government Agencies	353	108	3Q	0		0		Continue	461	Continue
<b>Subtotal:</b>			353	108		0		0		Continue	461	Continue

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 . PM Administration	Allotment	Various Government	345	732	1-4Q	600	1-4Q	623	1-4Q	Continue	2300	Continue
<b>Subtotal:</b>			345	732		600		623		Continue	2300	Continue

<b>Project Total Cost:</b>			15576	4277		7290		2841		Continue	40941	Continue
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# Schedule Profile (R4 Exhibit)

February 2004

BUDGET ACTIVITY  
**4 - Advanced Component Development and Prototypes**

PE NUMBER AND TITLE  
**0603801A - Aviation - Adv Dev**

PROJECT  
**B45**

Event Name	FY 02				FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09			
	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	1	2	3	4
Block 1 RDT&E	Block 1 RDT&E																															
DT&E					Block 1 DT																											
OT&E					Block 1 OT																											
(1) ORD					▲ 1 ORD Revision																											
(2) DR (MCS)					▲ 2 MCS Accelerated Production Decision																											
(3) Production Contract Award (MCS)					▲ 3 MCS Production Contract Award																											
(4) FRP DR					▲ 4 MS C Full Rate Production Decision																											
(5) Production Contract Award (CIE)					▲ 5 FRP Contract Award																											
(6) FUE									▲ 6 160th SOAR(A)																							
(7) Fielding to XVIII Corps													▲ 7 Start Fielding to 101st and 82nd																			
Block 1 Fielding													Block 1 Fielding																			
Block 2 RDT&E	Block 2 RDT&E																															
Block 2 Test and Evaluation									Block 2 DT/OT																							
(8) Production Contract Block 2																	▲ 8 Block 2 Contract Award															
Block 2 Fielding																					Block 2 Fielding											
Block 3 RDT&E																									Block 3 RDT&E							

## Schedule Detail (R4a Exhibit)

**February 2004**

**BUDGET ACTIVITY**  
**4 - Advanced Component Development and Prototypes**

**PE NUMBER AND TITLE**  
**0603801A - Aviation - Adv Dev**

**PROJECT**  
**B45**

<u>Schedule Detail</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Completed Block 1 Air Warrior System Developmental and Operational Tests.	1Q						
Began Air Warrior nonrecurring production engineering integration into aircraft platforms.							
Air Warrior basic ensemble Full Rate Production Decision.	3Q						
Advanced Component Development of Air Warrior Block improvements.	1-4Q						
System Development and Demonstration of Air Warrior Block improvements.	1-4Q						
VCOP components demonstration in Advanced Prototyping Engineering Experimentation (APEX)	2Q	2Q					
Air Warrior FUE		2Q					