

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

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation	PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev
--	---

COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	9506	13196	8643	10389	10482	11240	11529	Continuing	Continuing
B32 ADV MAINT CONCEPTS/EQ	2936	3403	3672	3909	4005	4118	4218	0	31664
B33 CARGO HANDLING & MISSION SPT	2725	2970	3283	3551	3561	3625	3821	0	28515
B45 AIRCREW INTEGRATED SYS-AD	3845	6823	1688	2929	2916	3497	3490	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).

<u>B. Program Change Summary</u>	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002/03 PB)	9757	9105	9429
Appropriated Value	9848	13305	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reductions	0	-109	0
b. SBIR / STTR	-251	0	0
c. Omnibus or Other Above Threshold Reductions	0	0	0
d. Below Threshold Reprogramming	0	0	0
e. Rescissions	-91	0	0
Adjustments to Budget Years Since FY2002/03 PB	0	0	-786
Current Budget Submit (FY 2003 PB)	9506	13196	8643

FY02: +\$4.2M for Visual Cockpit optimization.

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

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation		PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev						PROJECT B32		
COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost	
B32 ADV MAINT CONCEPTS/EQ	2936	3403	3672	3909	4005	4118	4218	0	31664	

A. Mission Description and Budget Item Justification: This program element enhances utilization of current and future aircraft by improving the efficiency of maintenance and servicing operations by validating new maintenance concepts to improve man machine interface, enhance aircraft maintenance processes and reduce operation and support costs. Included in the project are elements such as: advanced maintenance aids, database management software, on-board diagnostics, diagnostic and prognostic monitoring systems, trending analysis, automated data collection and migration, business process reengineering, software integration, and support infrastructure analysis. This program element will also provide evaluation of the feasibility for the advanced maintenance aid that will improve isolation of faulty components on Army helicopters, initiate automated configuration management efforts, engine diagnostics efforts and test wireless sensors for Army aircraft. Other efforts include Digital Aviation Logistics, Hybrid Electric Vehicles, and Maintenance Free Tires. The most promising concepts/evaluations will be pursued. These efforts will significantly enhance aviation asset availability and flight safety. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan.

FY 2001 Accomplishments:

- 422 Complete system development and demonstration of Structural Usage Monitoring System (SUMS).
- 754 Complete system development and demonstration of Aviation Diagnostic and Engine Prognostic Technology (ADEPT).
- 405 Mark parts and perform flight analysis to validate Aviation Parts Marking Demonstration (APMD).
- 298 Develop Digital Aviation Logistics (DAL) maintenance system definition.
- 1057 Management Support Services.

Total 2936

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

February 2002

BUDGET ACTIVITY

4 - Demonstration/validation

PE NUMBER AND TITLE

0603801A - Aviation - Adv Dev

PROJECT

B32

FY 2002 Planned Program

- 250 Digital Aviation Logistics (DAL) concept and technology development/IPT.
 - 285 Initiate effort to develop a wireless sensor application for aircraft.
 - 172 Initiate Automated Configuration Management effort.
 - 825 Develop advanced maintenance aid that will improve isolation of faulty components on Army helicopters.
 - 650 Procurement of prototype and component advanced development on Hybrid Electric Vehicle.
 - 50 Evaluation of applications to AGSE systems for Maintenance Free Tires.
 - 396 Advanced Maintenance Concepts.
 - 775 Management Support Services.
- Total 3403

FY 2003 Planned Program

- 150 Digital Aviation Logistics (DAL) - continue concept and technology development.
 - 460 Bench test of wireless sensors for aircraft.
 - 1275 Continue the automated configuration management effort.
 - 500 Continue development of the advanced maintenance aid on Army helicopters.
 - 200 System integration and early operational testing of Hybrid Electric Vehicle.
 - 249 Advanced Maintenance Concepts.
 - 838 Management Support Services.
- Total 3672

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

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation	PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev	PROJECT B32
--	---	-----------------------

<u>B. Other Program Funding Summary</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
Aircraft Procurement, Army(APA) SSN AZ3100	11817	18975	18091	19452	17201	17899	18385	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.

<u>D. Schedule Profile</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
STRUCTURAL USAGE MONITORING SYSTEM (SUMS)							
System Development and Demonstration		2-4Q					
AVIATION DIAGNOSTIC AND ENGINE PROGNOSTIC TECHNOLOGY (ADEPT)							
System Development and Demonstration		3-4Q					
AVIATION PARTS MARKING DEMONSTRATION (APMD)							
Mark Parts and Flight Analysis		3Q					
DIGITAL AVIATION LOGISTICS (DAL)							
Complete DAL Maintenance System Definition		2Q					
Concept and Technology Development/IPT			1-4Q				
Continue Concept and Technology Development			1-4Q				
WIRELESS AIRCRAFT SENSORS							
Develop Sensor Application		2-4Q					
Bench Test			2Q				
AUTOMATED CONFIGURATION MANAGEMENT							
Initiate Management Methodology		2-3Q					
Identify Aircraft Interface Requirements			1-4Q				
ADVANCED MAINTENANCE AID							
Define System and Develop Methodology		2-4Q					
Develop Algorithms			2-3Q				

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

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B32

D. Schedule Profile (continued)	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
HYBRID ELECTRIC VEHICLE							
Procure prototype and perform component advanced development		1-4Q					
System Integration and Early Operational Testing			1-4Q				
MAINTENANCE FREE TIRES							
Application and Standardization on AGSE		2-4Q					
ADVANCED MAINTENANCE CONCEPTS							
Initiate Development of Advanced Maintenance Concepts		2-4Q					
Continue Development of Advanced Maintenance Concepts			1-4Q				

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B32

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . SUMS	SS/CPFF	The Boeing Company, Mesa, AZ	1901	422	2Q	0		0		0	2323	2250
b . ADEPT	CA/CR	Allied Signal, Tempe, AZ	823	754	3Q	0		0		0	1577	1470
c . APMD	SS/CPFF	The Boeing Company, Philadelphia, PA	490	405	3Q	0		0		0	895	800
d . DAL	CA/CR	Rita, Easton, MD	1764	298	2Q	250	1Q	150	1Q	300	2762	1870
e . Wireless Aircraft Sensors	C/CPFF	TBD	0	0		285	2Q	460	2Q	785	1530	1450
f . Automated Configuration Management	C/CPFF	TBD	0	0		172	2Q	1275	1Q	1635	3082	2820
g . Adv. Maint. Aid	C/CPFF	TBD	0	0		825	2Q	500	2Q	1520	2845	2740
h . Hybrid Electric Vehicle	MIPR	TACOM	0	0		650	1Q	200	1Q	0	850	800
i . Maintenance Free Tires	MIPR	Army Research Lab, Hampton, VA	0	0		50	2Q	0		0	50	50
j . Advanced Maintenance Concepts	C/CPFF	TBD	0	0		396	2Q	249	1Q	1391	2036	1850

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation	PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev	PROJECT B32
---	--	------------------------------

I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			4978	1879		2628		2834		5631	17950	16100

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Technical Engineering Services	MIPR	AATD	0	671	2Q	505	2Q	545	2Q	Continue	Continue	Continue
Subtotal:			0	671		505		545		Continue	Continue	Continue

Remarks: None

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B32

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												

Remarks: None

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Management Support	NA		0	119		100	2Q	110	2Q	Continue	329	Continue
b . Program Management In-House	NA		0	267		170		183		Continue	Continue	Continue
Subtotal:			0	386		270		293		Continue	Continue	Continue

Remarks: None

Project Total Cost:			4978	2936		3403		3672		Continue	Continue	Continue
---------------------	--	--	------	------	--	------	--	------	--	----------	----------	----------

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

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation		PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev					PROJECT B33			
COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost	
B33 CARGO HANDLING & MISSION SPT	2725	2970	3283	3551	3561	3625	3821	0	28515	

A. Mission Description and Budget Item Justification: This project explores, develops and integrates affordable ground support equipment and diagnostic technologies to replace obsolete and unsupported ground support equipment and diagnostics with new and standardized equipment and diagnostics that are compatible with all Army aircraft models; develops rapid battle repair procedures and tools to speed the return of aircraft to combat ready status; develops new equipment for aerial recovery of damaged aircraft, and develops equipment and procedures for improvement of loading, transport, and off-loading of helicopter cargo. FY02/03 completes prototyping, design refinement and testing of critical ground support systems in preparation for a Milestone C decision. Funds for the high-capacity external cargo winches, remote external cargo monitoring and other efforts to include Aviation Turbine Engine Diagnostics System, Aircraft Cleaning and Deicing System, New Aviation Power System, Corrosion Environment Monitor Sensors, Battle Damage Assessment and Repair, Shop Equipment Contact Maintenance, Digital Aircraft Weight Scales and Standard Aircraft Towing System. Addressing priority Aviation Ground Support Equipment (AGSE) will allow the PM to initiate the acquisition process and development of the prototype systems. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan.

FY 2001 Accomplishments:

- 285 Complete coding of fault logic for Aviation Turbine Engine Diagnostic System (ATEDS).
- 222 Conduct lab analysis of the Aircraft Cleaning and De-icing System (ACDS).
- 135 Complete the restructured Computer-Aided Nondestructive Inspection and Repair Disposition (CANDID) program and document technology.
- 292 Complete fabrication of New Aviation Ground Power System (NAPS) prototypes.
- 75 Fabricate fuel pallets for National Guard CH-47D aircraft used on Advanced Cargo Handling System (ACHS) testing.
- 342 Initiate field analysis of prototype Corrosion Environment Monitor Sensors (CEMS).
- 359 Perform flight analysis of Unit Maintenance Aerial Recovery Kit (UMARK) with CH-47 victim aircraft and complete performance specification in preparation for Milestone C approval.
- 327 Demonstrate (field and bench tests) technologies for utilization of engine diagnostics data to isolate suspect components.
- 688 Management Support Services.

Total 2725

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)**February 2002**

BUDGET ACTIVITY

4 - Demonstration/validation

PE NUMBER AND TITLE

0603801A - Aviation - Adv Dev

PROJECT

B33**FY 2002 Planned Program**

- 1200 Develop software for Aviation Turbine Engine Diagnostics System (ATEDS).
 - 130 Continue field analysis of the Aircraft Cleaning and De-icing System (ACDS) and develop operational test prototype.
 - 150 Initiate evaluation and analysis of New Aviation Ground Power System (NAPS) prototype.
 - 108 Develop advanced technology in areas of high-capacity external cargo winches and remote external cargo monitoring for Advanced Cargo Handling System (ACHS).
 - 40 Completion of concept analysis contract for Corrosion Environment Monitor Sensors (CEMS).
 - 100 Complete the prototyping of the Electrical Repair Kit for the enhanced Battle Damage Assessment and Repair (BDAR) program.
 - 120 Evaluate designs and develop performance specification for Lightweight Power System in support of the Shop Equipment Contact Maintenance (SECM).
 - 125 Develop specifications for Digital Aircraft Weight Scales (DAWS).
 - 90 Initiate Advanced Ground Support Equipment effort to apply state-of-the-art technology in the fulfillment of AGSE operational requirements.
 - 50 Perform market research and identify equipment for Standard Aircraft Towing System (SATS).
 - 857 Management Support Services.
- Total 2970

FY 2003 Planned Program

- 1500 Complete software development for Aviation Turbine Engine Diagnostics System (ATEDS).
- 100 Operational testing and specification development for Aircraft Cleaning and De-icing System (ACDS).
- 100 Complete evaluation and develop performance specification for New Aviation Ground Power System (NAPS).
- 227 Advanced Cargo Handling System (ACHS) - design and fabricate an external cargo winch system utilizing remote external cargo monitoring.
- 150 Battle Damage Assessment and Repair (BDAR) Kit - complete prototyping of fuel cell and fluid line kits.

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

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B33

FY 2003 Planned Program (Continued)

- 275 Continue the Advanced Ground Support Equipment (AGSE) effort that will apply state-of-the-art technology to reduce the AGSE footprint and increase reliability in meeting AGSE operational requirements.
- 22 Develop performance specification for Standard Aircraft Towing System (SATS).
- 909 Management Support Services.

Total 3283

<u>B. Other Program Funding Summary</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Compl</u>	<u>Total Cost</u>
Aircraft Procurement, Army (APA) SSN AZ3100	11817	18975	18091	19452	17201	17899	18385	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.

<u>D. Schedule Profile</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
AIRCRAFT TURBINE ENGINE DIAG SYSTEM (ATEDS)							
Coding of fault logic	2Q						
Software Development		2-4Q					
Complete Software Development			1-3Q				
AIRCRAFT CLEANING AND DE-ICING SYSTEM (ACDS)							
Analysis and Lab Tests	1Q						
Field Analysis and Prototype Development		1-4Q					
Operational Test and Performance Specification			1-3Q				
COMPUTER AIDED NONDESTRUCTIVE INSPECTION AND DISPOSITION (CANDID) SYSTEM							

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

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation	PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev	PROJECT B33
---	--	------------------------------

<u>D. Schedule Profile (continued)</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
Final Design Review	3Q						
NEW AVIATION POWER SYSTEM (NAPS)							
Preliminary Design Review	2Q						
Field Analysis		3-4Q					
Field Analysis and Evaluation and Spec Development			1-3Q				
ADVANCED CARGO HANDLING SYSTEM (ACHS)							
Fabricate Fuel Pallets	2-3Q						
Develop Advanced Lift Technology and Restore CH-47 Aircraft		1-4Q					
Design, Fabricate and Test Lift Technology			1-4Q				
CORROSION ENVIRONMENT MONITOR SYS (CEMS)							
Field Analysis @ Fort Eustis	1-4Q	1Q					
UNIT MAINTENANCE AERIAL RECOVERY KIT (UMARK)							
CH-47 Flight Analysis and Spec Development	1-4Q						
ON-BOARD ENGINE DIAGNOSTICS							
Final Review	2Q						
BATTLE DAMAGE ASSESSMENT AND REPAIR (BDAR)							
Prototype Electrical Repair Kits		1-4Q					
Prototype Fuel Cell and Hydraulic Kits			1-2Q				
LIGHTWEIGHT POWER SYSTEM							
Evaluate Designs and Develop Performance Specifications		3Q					
DIGITAL AIRCRAFT WEIGHT SCALES							
Performance Specifications		2Q					
ADVANCED GROUND SUPPORT EQUIPMENT							
Research User Requirements		3Q					
Design and Fabricate Prototypes			3Q				
STANDARD AIRCRAFT TOWING SYSTEM (SATS)							
Market Research and Identify		1-4Q					
Develop Performance Specification			1-3Q				

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B33

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . ATEDS	C/CPFF	AlliedSignal, Phoenix, AZ; Allison, Indianapolis, IN; Sikorsky, Stratford, CT	3198	285	2Q	1200	2Q	1500	2Q	900	7083	6400
b . ACDS	C/CPFF	Riveer, South Haven, MI	611	222	1Q	130	1Q	100	1Q	0	1063	920
c . CANDID	SS/CPFF	Boeing, Mesa AZ	1317	135	3Q	0		0		0	1452	1380
d . NAPS	C/CPFF	Rome Labs, Rome, NY	722	292	2Q	150	3Q	100	2Q	0	1264	1000
e . ACHS	C/CPFF	In-House, TBD	1202	75	2Q	108	1Q	227	1Q	650	2262	2134
f . CEMS (Corrosive Envmt Mtr)	CA/CR	Honeywell; Minneapolis, MN	641	342	1Q	40	1Q	0		0	1023	600
g . UMARK	MIPR	In-house; ATTC, Fort Rucker, AL	1700	359	1Q	0		0		0	2059	1970
h . On-Board Diagnostics	C/CPFF	Sikorsky; Stratford, CT	613	327	2Q	0		0		0	940	836
i . BDAR	C/CPFF	TBD	0	0		100	1Q	150	1Q	0	250	250
j . Lightweight Power System	C/CPFF	TBD	0	0		120	3Q	0		0	120	120
k . Digital Aircraft Weight Scales	MIPR	AATD	0	0		125	2Q	0		0	125	125

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation	PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev	PROJECT B33
---	--	------------------------------

I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
1. Advanced Ground Support Equipment	C/CPFF	TBD	0	0		90	3Q	275	3Q	Continue	Continue	Continue
m. Standard Aircraft Towing System	C/CPFF	TBD	0	0		50	1Q	22	1Q	0	72	220
Subtotal:			10004	2037		2113		2374		Continue	Continue	Continue

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Technical Engineering Services	MIPR	AATD	0	560	3Q	582	3Q	600	3Q	Continue	Continue	0
Subtotal:			0	560		582		600		Continue	Continue	0

Remarks: None

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B33

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
			0	0		0		0		0	0	0
Subtotal:												

Remarks: None

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Management Support	NA		0	128	2Q	134	2Q	162	2Q	Continue	424	0
b . Program Management In-House	NA		0	0		141		147		Continue	Continue	0
Subtotal:			0	128		275		309		Continue	Continue	0

Remarks: None

Project Total Cost:			10004	2725		2970		3283		Continue	Continue	Continue
----------------------------	--	--	-------	------	--	------	--	------	--	----------	----------	----------

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

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation				PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev				PROJECT B45	
COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
B45 AIRCREW INTEGRATED SYS-AD	3845	6823	1688	2929	2916	3497	3490	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DB45 - Aircrew Integrated Systems (ACIS) Advanced Development: This project provides advanced development programs 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 will 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, 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 exceed 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 block improvements. The Air Warrior program is a vital soldier system, is linked to the Land Warrior program through the Soldier Systems Capstone Requirements Document and is one of the Army's 7 core programs for the objective force. The Virtual Cockpit Optimization Program (VCOP) demonstrates an integrated system providing pilots with improved intuitiveness, sense of 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, threat warnings, and improved transition and training of pilots who must operate a number of different aircraft platforms during different missions. 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 Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)**February 2002**

BUDGET ACTIVITY

4 - Demonstration/validation

PE NUMBER AND TITLE

0603801A - Aviation - Adv Dev

PROJECT

B45**FY 2001 Accomplishments:**

- 3845 Continued Virtual Cockpit Optimization Program PDRR integrated technologies simulation and demonstration.

Total 3845

FY 2002 Planned Program

- 2677 Begin advanced development of Air Warrior preplanned Block 2 improvements.
- 4146 Continued Virtual Cockpit Optimization Program PDRR integrated technologies simulation and demonstration.

Total 6823

FY 2003 Planned Program

- 1688 Continue advanced development of Air Warrior preplanned Block 2 improvements.

Total 1688

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

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B45

<u>B. Other Program Funding Summary</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Compl</u>	<u>Total Cost</u>
RDTE, A PE 0604801A PROJ DC45 - ACIS EMD	10698	4032	3150	2433	2437	2356	2347	Continuing	Continuing
Aircraft Procurement, Army SSN AZ3110 - ACIS	10494	10179	15215	34668	34526	35622	36734	Continuing	Continuing

C. Acquisition Strategy: DB45 - An Air Warrior Program Definition and Risk Reduction development contract was awarded in FY 97 to perform a functional requirements analysis and consider user requirements and available technologies to optimize recommended alternatives within the constraints of cost as an independent variable. The Air Warrior basic ensemble program was approved to proceed into an engineering manufacturing development system life cycle phase in 1st Quarter, FY 1999. Currently, a combined government and contractor team is developing Air Warrior improvements and integrating those components into a Block I Air Warrior ensemble that will be integrated with the force modernization aircraft. Prototypes have been developed that represent the Block I Air Warrior ensemble for test and evaluation. The Air Warrior aircraft platform specific nonrecurring production engineering will begin during FY 02 in preparation for Block I ensemble production, aircraft integration, and fielding. Beginning in FY 2002, advanced development of preplanned product improvements to the Block I ensemble will integrate joint and new technologies as block improvements to the Air Warrior ensemble. Through a combined government and contractor team, the Virtual Cockpit Optimization Program Definition and Risk Reduction 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, like the Future Combat System.

<u>D. Schedule Profile</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
Air Warrior System Preliminary Design Review							
Air Warrior System Critical Design Review	2Q						
Begin Air Warrior System Test	3Q						
Begin Air Warrior System Developmental and Operational Tests		1Q					
Begin Air Warrior nonrecurring production engineering integration into aircraft platforms		2Q					
Air Warrior basic ensemble Full Rate Production Decision			2Q				
Advanced Development of Air Warrior Block improvements		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Engineering Manufacturing Development of Air Warrior Block improvements		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
VCOP components demonstration in Advanced Prototyping Engineering Experimentation (APEX) simulator	3Q	2Q					

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B45

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Air Warrior Block improvements Advanced Development	C- C/FP	Various	0	0		2059	2Q	1095	2Q	Continue	Continue	Continue
b . Virtual Cockpit Optimization Program Advanced Development	SS-CPFF	Microvision, Seattle, WA	3902	2909	2Q	4146	2Q	0		Continue	10957	Continue
Subtotal:			3902	2909		6205		1095		Continue	Continue	Continue

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Matrix Support	MIPR	Various Government	1119	876	1-4Q	93	1-4Q	142	1-4Q	Continue	Continue	Continue
Subtotal:			1119	876		93		142		Continue	Continue	Continue

ARMY RDT&E COST ANALYSIS(R-3)

February 2002

BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603801A - Aviation - Adv Dev

PROJECT
B45

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Air Warrior Block improvements demonstration and validation	MIPR	Various Government Agencies	83	0		270	3Q	100	3Q	Continue	Continue	Continue
b . Virtual Retinal Display Demonstration and Validation	MIPR	Various Government Agencies	512	0		0		0		0	512	0
c . VCOP			90	0		0		0		0	90	0
Subtotal:			685	0		270		100		Continue	Continue	Continue

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . PM Administration	Allotment	Various Government	30	60	1-4Q	255	1-4Q	351	1-4Q	Continue	Continue	Continue
Subtotal:			30	60		255		351		Continue	Continue	Continue

Project Total Cost:			5736	3845		6823		1688		Continue	Continue	Continue
---------------------	--	--	------	------	--	------	--	------	--	----------	----------	----------