

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

June 2001

BUDGET ACTIVITY
4 - DEM/VAL

PE NUMBER AND TITLE
0603801A - Aviation Advanced Development

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	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	8455	9757	9105	0	0	0	0	0	0	0
B32 ADV MAINT CONCEPTS/EQ	2908	3006	3432	0	0	0	0	0	0	0
B33 CARGO HANDLING & MISSION SPT	2683	2788	2996	0	0	0	0	0	0	0
B45 AIRCREW INTEGRATED SYS-AD	2864	3963	2677	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification:

PLEASE NOTE: This administration has not addressed FY2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.

This PE provides advanced development aviation support of tactical programs associated with air mobility, advanced maintenance concepts and equipment, and Aircrew Integrated Systems (ACIS).

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<u>B. Program Change Summary</u>	FY 2000	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2001 PB)	8655	5848	9071	0
Appropriated Value	8746	9848	0	
Adjustments to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	0	0	
b. SBIR / STTR	-200	0	0	
c. Omnibus or Other Above Threshold Reductions	-31	0	0	
d. Below Threshold Reprogramming	0	0	0	
e. Rescissions	-60	-91	0	
Adjustments to Budget Years Since FY2001 PB	0	0	34	
Current Budget Submit (FY 2002/2003 PB)	8455	9757	9105	0

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COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	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	2908	3006	3432	0	0	0	0	0	0	0

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: Portable Maintenance Aids (PMA), database management software, on-board diagnostics, health/usage 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. 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 2000 Accomplishments

- 1136 Detailed design and algorithm completed for Structural Usage Monitoring System (SUMS).
 - 598 Continued preliminary design and developed methodology and algorithms for the Army Diagnostic & Engine Prognostics Technology (ADEPT).
 - 490 Evaluated parts marking and tracking technology for the Aviation Parts Marking Demonstration (APMD) program.
 - 684 Continued Digital Aviation Logistics (DAL) program to develop an overall maintenance system architecture and methodology.
- Total 2908

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FY 2001 Planned Program

- 422 Complete program definition/risk reduction of SUMS.
- 754 Complete program definition/risk reduction of ADEPT.
- 405 Mark parts and perform flight analysis to validate APMD.
- 298 Complete DAL maintenance system definition.
- 343 Initiate integrated engine diagnostics.
- 714 Management Support Services.
- 70 Small Business Innovative Research (SBIR)/ Small Business Technology Transfer Program (STTR)

Total 3006

FY 2002 Planned Program

- 385 Initiate effort to develop a wireless sensor application for aircraft.
- 891 Continue integrated engine diagnostics to begin interface definition for the use of on-board engine data to isolate suspect components on engines.
- 426 Develop advanced maintenance aid that will improve isolation of faulty components on Army helicopters.
- 501 Initiate automated configuration management effort.
- 900 Management Support Services.
- 329 Advanced Maintenance Concepts

Total 3432

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<u>B. Other Program Funding Summary</u>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
Aircraft Procurement, Army(APA) SSN AZ3100	12351	11817	19113	0	0	0	0	0	0	0

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 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
SUMS				0	0	0	0	0
Develop Algorithms	2Q			0	0	0	0	0
Program Definition/Risk Reduction		2-4Q		0	0	0	0	0
ADEPT				0	0	0	0	0
Develop Algorithms	3Q			0	0	0	0	0
Program Definition/Risk Reduction		3-4Q		0	0	0	0	0
Aviation Parts Marking Demonstration				0	0	0	0	0
Select Parts to Be Marked	3Q			0	0	0	0	0
Evaluate Marking Technologies	4Q			0	0	0	0	0
Mark Parts		3Q		0	0	0	0	0
Digital Aviation Logistics (DAL)				0	0	0	0	0
Define Automated Maint. Mgmt System	1Q			0	0	0	0	0
Define Sustainment Base Info. Sys. Reqs.	3Q			0	0	0	0	0
Complete DAL Maintenance System Definition		2Q		0	0	0	0	0
Wireless Aircraft Sensors				0	0	0	0	0
Develop Sensor Application			2-4Q	0	0	0	0	0
Bench Test				0	0	0	0	0
Integrated Engine Diagnostics				0	0	0	0	0
Modify JAHUMS Engine Model		3Q		0	0	0	0	0
Interface with ATEDS			2-4Q	0	0	0	0	0

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<u>D. Schedule Profile (continued)</u>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Flight Analysis				0	0	0	0	0
Automated Configuration Management				0	0	0	0	0
Initiate Management Methodology			2-3Q	0	0	0	0	0
Identify Aircraft Interface Requirements				0	0	0	0	0
Advanced Maintenance Aid				0	0	0	0	0
Define System and Develop Methodology			2-4Q	0	0	0	0	0
Develop Algorithms				0	0	0	0	0
Advanced Maintenance Concepts				0	0	0	0	0
Initiate Development of Advanced Maintenance Concepts			2-4Q	0	0	0	0	0
Continue Development of Advanced Maintenance Concepts				0	0	0	0	0

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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	0	0	0
b . ADEPT	CA/CR	Allied Signal, Tempe, AZ	823	754	3Q	0		0	0	0	0	0
c . APMD	SS/CPFF	The Boeing Company, Philadelphia, PA	490	405	3Q	0		0	0	0	0	0
d . DAL	CA/CR	Rita, Easton, MD	1764	298	2Q	0		0	0	0	0	0
e . Wireless Aircraft Sensors	C/CPFF	TBD	0	0		385	2Q	0	0	0	0	0
f . Int. Eng. Diag.	SS/CPFF	The Boeing Company, Mesa, AZ	0	343	3Q	891	2Q	0	0	0	0	0
g . Adv. Maint. Aid	C/CPFF	TBD	0	0		426	2Q	0	0	0	0	0
h . Automated Config. Maint.	C/CPFF	TBD	0	0		501	2Q	0	0	0	0	0
i . Advanced Maintenance Concepts	C/CPFF	TBD	0	0		329	2Q	0	0	0	0	0
Subtotal:			4978	2222		2532		0		0	0	0

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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	2Q	580	2Q	0	0	0	0	0
Subtotal:			0	560		580		0		0	0	0

Remarks: None

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
Subtotal:			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 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	C/FP	TBD	0	0		160	2Q	0	0	0	0	0
b . Program Management In-House			0	154		160		0	0	0	0	0
c . SBIR/STTR			0	70		0		0	0	0	0	0
Subtotal:			0	224		320		0		0	0	0

Remarks: None

Project Total Cost:			4978	3006		3432		0		0	0	0
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BUDGET ACTIVITY 4 - DEM/VAL				PE NUMBER AND TITLE 0603801A - Aviation Advanced Development					PROJECT B33	
COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	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	2683	2788	2996	0	0	0	0	0	0	0

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 diagnostic procedures 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 III decision. Funds for the high-capacity external cargo winches, remote external cargo monitoring and other efforts. Addressing priority 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 2000 Accomplishments

- 577 Completed the detail design of Aviation Turbine Engine Diagnostics System (ATEDS) hardware and initiated coding of fault logic.
- 185 Identified and prioritized performance requirements for the New Aviation Ground Power System (NAPS).
- 290 Initiated hub stress analyses for Army aircraft to be hoisted by the Unit Maintenance Aerial Recovery Kit (UMARK).
- 407 Developed and fabricated prototype Corrosion Environment Monitor Sensors (CEMS).
- 89 Completed fabrication of advanced technology prototype for the Aircraft Cleaning and Deicing System (ACDS).
- 596 Initiate process to utilize engine data to isolate suspect components.
- 466 Completed preliminary nondevelopmental items (NDI) design objective of Computer-Aided Nondestructive Inspection and Repair Disposition (CANDID) system.
- 73 Completed prototype installation of Advanced Cargo Handling System (ACHS) in National Guard aircraft.

Total 2683

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FY 2001 Planned Program

- 285 Complete coding of fault logic for Aviation Turbine Engine Diagnostic System (ATEDS).
- 222 Conduct field analysis of the Aircraft Cleaning and Deicing System (ACDS).
- 292 Complete fabrication of New Aviation Ground Power System (NAPS) prototypes.
- 359 Perform flight analysis of Unit Maintenance Aerial Recovery Kit (UMARK) with CH-47 victim aircraft and complete procurement specification in preparation for Milestone III approval.
- 342 Initiate field analysis of prototype Corrosion Environment Monitor Sensors (CEMS).
- 327 Demonstrate (field and bench tests) technologies for utilization of engine data to isolate suspect components.
- 135 Complete the restructured Computer-Aided Nondestructive Inspection and Repair Disposition (CANDID) program and document technology.
- 75 Restore National Guard CH-47D aircraft used for Advanced Cargo Handling System (ACHS) testing to original condition.
- 688 Management Support Services.
- 63 Small Business Innovative Research (SBIR)/ Small Business Technology Transfer Program (STTR)

Total 2788

FY 2002 Planned Program

- 239 Complete the prototyping of the Electrical Repair Kit for the enhanced Battle Damage Assessment and Repair (BDAR) program.
- 300 Develop software for Aviation Turbine Engine Diagnostics System (ATEDS).
- 410 Complete field analysis of the Aircraft Cleaning and De-icing System (ACDS) and complete procurement specification in preparation for Milestone III approval.
- 227 Initiate Advanced Lightweight Ground Power Unit design for portable, battlehardened, reliable field power.
- 390 Initiate Advanced Ground Support Equipment effort to apply state-of-the-art technology in the fulfillment of AGSE operational requirements.
- 108 Explore advanced technology in areas of high-capacity external cargo winches and remote external cargo monitoring.
- 297 Initiate evaluation and analysis of New Aviation Ground Power System (NAPS) prototype.

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FY 2002 Planned Program (Continued)

- 125 Develop specifications for Digital Aircraft Weight Scales (DAWS).
 - 900 Management Support Services
- Total 2996

<u>B. Other Program Funding Summary</u>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
Aircraft Procurement, Army (APA) SSN AZ3100	12351	11817	19113	0	0	0	0	0	0	0

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>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
ACFT TURBINE ENGINE DIAGNOSTIC SYS (ATEDS)				0	0	0	0	0
Detailed Design Review	3Q			0	0	0	0	0
Coding of fault logic		2Q		0	0	0	0	0
Software Development			2-4Q	0	0	0	0	0
Complete Software Development				0	0	0	0	0
AIRCRAFT CLEANING AND DEICING SYSTEM (ACDS)				0	0	0	0	0
Fabrication	4Q			0	0	0	0	0
Analysis		1Q		0	0	0	0	0
Field Analysis		3Q		0	0	0	0	0
Procurement Specification			3Q	0	0	0	0	0
COMPUTER AIDED NONDESTRUCTIVE INSPECTION AND DISPOSITION (CANDID) SYSTEM				0	0	0	0	0
Completed Preliminary Design Objective	4Q			0	0	0	0	0
Final Design Review		3Q		0	0	0	0	0

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D. Schedule Profile (continued)	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
NEW AVIATION POWER SYSTEM (NAPS)				0	0	0	0	0
Finalize User Requirements	4Q			0	0	0	0	0
Preliminary Design Review		2Q		0	0	0	0	0
Field Analysis			3-4Q	0	0	0	0	0
Field Analysis and Evaluation				0	0	0	0	0
ADVANCED CARGO HANDLING SYSTEM (ACHS)				0	0	0	0	0
Restore A/C to Original Condition		2Q		0	0	0	0	0
Explore Advanced Winch Technology			1-4Q	0	0	0	0	0
Design and Fabricate				0	0	0	0	0
CORROSION ENV.MONITORING SYSTEM (CEMS)				0	0	0	0	0
Fabrication	4Q			0	0	0	0	0
Field Analysis @ Fort Eustis		1Q		0	0	0	0	0
UNIT MAINTENANCE AERIAL RECOVERY KIT (UMARK)				0	0	0	0	0
Initiate Hub Stress Analysis	4Q			0	0	0	0	0
Complete Stress Analysis		1-2Q		0	0	0	0	0
CH-47 Flight Analysis		3Q		0	0	0	0	0
BATTLE DAMAGE ASSESSMENT AND REPAIR (BDAR)				0	0	0	0	0
Prototype Electrical Repair Kits			1-4Q	0	0	0	0	0
Performance Specifications				0	0	0	0	0
ON-BOARD ENGINE DIAGNOSTICS				0	0	0	0	0
Initiate Integration Effort	4Q			0	0	0	0	0
Final Review		2Q		0	0	0	0	0
ADVANCED LIGHTWEIGHT GPU				0	0	0	0	0
Initiate Technology Search			3Q	0	0	0	0	0
Fabrication				0	0	0	0	0
PRIORITY AGSE NEEDS				0	0	0	0	0
Evaluate Soldier Needs				0	0	0	0	0
MODERN TECHNOLOGY AIRCRAFT TUG				0	0	0	0	0
Market Research and Identify				0	0	0	0	0
ADVANCED GROUND SUPPORT EQUIPMENT				0	0	0	0	0
Research User Requirements			3Q	0	0	0	0	0
Design and Fabricate Prototypes				0	0	0	0	0

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<u>D. Schedule Profile (continued)</u>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
DIGITAL AIRCRAFT WEIGHT SCALES				0	0	0	0	0
Procurement Specifications			2Q	0	0	0	0	0

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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	300	2Q	0	0	0	0	0
b . ACDS	C/CPFF	Centech, ArlingtonVA	611	222	1Q	410	3Q	0	0	0	0	0
c . CANDID	SS/CPFF	Boeing, Mesa AZ	1317	135	3Q	0		0	0	0	0	0
d . NAPS	C/CPFF	Rome Labs, Rome,NY	722	292	2Q	297	3Q	0	0	0	0	0
e . ACHS	C/CPFF	In-House, TBD	1202	75	2Q	108	1Q	0	0	0	0	0
f . CEMS (Corrosive Envmt Mtr)	CA	Honeywell; Minneapolis, MN	641	342	1Q	0		0	0	0	0	0
g . UMARK	MIPR	In-house; ATTC, Fort Rucker, AL	1700	359	1Q	0		0	0	0	0	0
h . BDAR	C/CPFF	TBD	0	0		239	1Q	0	0	0	0	0
i . On-Board Diagnostics	C/CPFF	Sikorsky; Stratford, CT	613	327	2Q	0		0	0	0	0	0
j . Advanced Lightweight GPU	C/CPFF	TBD	0	0		227	3Q	0	0	0	0	0
k . Priority AGSE Needs	C/CPFF	TBD	0	0		0		0	0	0	0	0

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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
l. Modern Technology Aircraft Tug	C/CPFF	TBD	0	0		0		0	0	0	0	0
m. Advanced Ground Support Equipment	C/CPFF	TBD	0	0		390	3Q	0	0	0	0	0
n. Digital Aircraft Weight Scales	MIPR	AATD	0	0		125	2Q	0	0	0	0	0
Subtotal:			10004	2037		2096		0		0	0	0

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	0	0	0	0	0
Subtotal:			0	560		582		0		0	0	0

Remarks: None

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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
Subtotal:			0	0		0		0		0	0	0

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	C/FP	TBD	0	128	2Q	160	2Q	0	0	0	0	0
b . Program Management In-House			0	0		158		0	0	0	0	0
c . SBIR/STTR			0	63		0		0	0	0	0	0
Subtotal:			0	191		318		0		0	0	0

Remarks: None

Project Total Cost:			10004	2788		2996		0		0	0	0
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COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	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	2864	3963	2677	0	0	0	0	0	0	0

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, microclimatic 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).

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FY 2000 Accomplishments

- 2864 Continued Virtual Cockpit Optimization Program (VCOP) Program Definition and Risk Reduction (PDRR) simulation effort.

Total 2864

FY 2001 Planned Program

- 3845 Continue Virtual Cockpit Optimization Program PDRR integrated technologies simulation and demonstration.
- 118 Small Business Innovative Research and Small Business Technology Transfer Program

Total 3963

FY 2002 Planned Program

- 2677 Begin advanced development of Air Warrior preplanned Block 2 improvements.

Total 2677

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

June 2001

BUDGET ACTIVITY
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0603801A - Aviation Advanced Development

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<u>B. Other Program Funding Summary</u>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
RDTE, A PE 0604801A PROJ DC45 - ACIS EMD	13811	11993	2263	0	0	0	0	0	0	0
Aircraft Procurement, Army SSN AZ3110 - ACIS	17167	10294	10253	0	0	0	0	0	0	0

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 will be 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>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Air Warrior System Preliminary Design Review	4Q			0	0	0	0	0
Air Warrior System Critical Design Review		2Q		0	0	0	0	0
Begin Air Warrior System Test		3Q		0	0	0	0	0
Begin Air Warrior System Operational Test			1Q	0	0	0	0	0
Begin Air Warrior nonrecurring production engineering integration into aircraft platforms			2Q	0	0	0	0	0
Air Warrior basic ensemble Milestone III				0	0	0	0	0
Advanced Development of Air Warrior Block improvements			1Q	0	0	0	0	0
Engineering Manufacturing Development of Air Warrior Block improvements				0	0	0	0	0
VCOP components demonstration in Advanced Prototyping Engineering Experimentation (APEX) simulator	4Q	3Q		0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

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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	SS-CPFF	Various	0	0		2157	2Q	0	0	0	0	Continue
b . Virtual Cockpit Optimization Program Advanced Development	SS-CPFF	Microvision, Seattle, WA	3902	2978	2Q	0		0	0	0	0	0
c . Small Business Innovation Research and Small Business Technology Transfer Program			0	118		0		0	0	0	0	0
Subtotal:			3902	3096		2157		0		0	0	Continue

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
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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	807	1-4Q	100	1-4Q	0	0	0	0	Continue
Subtotal:			1119	807		100		0		0	0	Continue

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		300	3Q	0	0	0	0	Continue
b . Virtual Retinal Display Demonstration and Validation	MIPR	Various Government Agencies	512	0		0		0	0	0	0	0
c . VCOP			90	0		0		0	0	0	0	0
Subtotal:			685	0		300		0		0	0	Continue

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
4 - DEM/VAL

PE NUMBER AND TITLE
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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	120	1-4Q	0	0	0	0	Continue
Subtotal:			30	60		120		0		0	0	Continue
Project Total Cost:			5736	3963		2677		0		0	0	Continue