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

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

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		74347	106831	143631	0	0	0	0	0	0	0
028	GUARDRAIL COMMON SENS/AERIAL COMMON SENS (TIARA)	7104	13160	25873	0	0	0	0	0	0	0
179	CH-47D PRODUCT IMPRV	0	0	506	0	0	0	0	0	0	0
430	IMPR CARGO HELICOPTER	27088	36855	18611	0	0	0	0	0	0	0
504	BLACK HAWK RECAPITALIZATION/MODERNIZATION	9547	29634	58445	0	0	0	0	0	0	0
508	APACHE 2ND GENERATION FLIR	30608	17274	40196	0	0	0	0	0	0	0
50A	APACHE ADVANCED ROTOR AND DRIVE SYSTEM	0	9908	0	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 for development of modifications and improvements for the Guardrail Common Sensor/Aerial Common Sensor, the Improved Cargo Helicopter (ICH), the UH-60A/L Black Hawk Recapitalization/Modernization, and the Apache 2nd Generation Forward Looking Infrared(FLIR) and new FY 2001 project 50A Apache Advanced Rotor and Drive System.

B. Program Change Summary	FY 2000	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2001 PB)	80786	95829	98634	0
Appropriated Value	81644	107829	0	
Adjustments to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	0	0	
b. SBIR / STTR	-2144	0	0	
c. Omnibus or Other Above Threshold Reductions	-329	0	0	
d. Below Threshold Reprogramming	-4295	0	0	
e. Rescissions	-529	-998	0	
Adjustments to Budget Years Since FY2001 PB	0	0	44997	
Current Budget Submit (FY 2002/2003 PB)	74347	106831	143631	0

Changes from previous submission for FY 2002 include increase in funding of $11.2 million for Guardrail Common Sensor/ACS to fund developmentof Aerial Common Sensor System, $12.0 million for Improved Cargo Helicopter to continue development, $19.8 million for Blackhawk modernization, and other miscellaneous minor adjustments.

Changes from previous submission for FY 2003 include increase of $38.2 million to fund development of the Aerial Common Sensor offset, by a decrease of $20.7 million for Apache Second Gen FLIR (SGF) due to Congressional acceleration of this program in FY 00, and other miscellaneous minor adjustments.

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

June 2001

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - OPERATIONAL SYSTEMS DEV	**0203744A - Aircraft Modifications/Product Improvement Prog**	**028**

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
028	GUARDRAIL COMMON SENS/AERIAL COMMON SENS (TIARA)	7104	13160	25873	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification: The Aerial Common Sensor (ACS) and the Guardrail Common Sensor (GRCS) are airborne intelligence collection systems required to provide critical support to U.S.-based early entry, forward deployed forces, and to support the Army's seamless intelligence architecture. ACS is the objective force system that will satisfy the Army's critical need for a worldwide, self-deployable, airborne reconnaissance, intelligence, surveillance and target acquisition (RISTA) capability that can immediately begin operations when arriving in theatre. The ACS will merge the current Airborne Reconnaissance Low (ARL) and Guardrail Common Sensor (GRCS) capabilities into a single airborne system capable of providing a rapid response information dominance capability to Land Component Commanders required in the early 21st Century. ACS will be composed of a family of modular sensors mounted on an airborne platform that is capable of operating independently or remotely via SATCOM or line-of-sight datalinks from a ground processor. ACS will be interoperable within the open Network centric C4ISR architecture and support all combat and combat support functions through the emerging DOD "global infosphere". The primary mission will be standoff Signals Intelligence (SIGINT) collection, with a secondary mission of overflight Imagery Intelligence (IMINT). ACS ground functionality will be an element of the Distributed Common Ground Station-ARMY(DCGS-A). ACS is primarily targeted against threat maneuver forces, logistic areas, rocket and artillery forces, air defense artillery, command control communications and intelligence nodes (C3I); and tactical fixed -wing, rotary wing and unmanned aerial vehicles. ACS/GRVII will satisfy unique Army/Land Force Commander Intelligence, Surveillance and Reconnaissance (ISR) and targeting requirements, and those of the Land Force Component of Joint and Combined Task Forces (JTF and CTF) across the spectrum of Operations.

This project is assessing Horizontal Technology Integration (HTI) candidates for the SIGINT mission equipment including the Low Band (LBSS) and High Band (HBSS) subsystems being developed by the Airspace System Command/Reconnaissance Airborne Joint (ASC/RAJ) Program Office. The incorporation of the HBSS/LBSS subsystems would provide compatibility to allow interoperability with the other services SIGINT platforms. A key consideration is the affordability of these subsystems. The National Security Agency's Defense Cryptologic Program (DCP) provides funding to support enhanced SIGINT capabilities.

The FY02 funding completes the Concept Exploration (CE) Phase that identifies an airborne platform recommendation which best supports the multi-mission role of ACS, sensor recommendations, cost performance analysis, performance specifications and development of modeling and simulations tools for evaluating performance and proposals. FY02 and FY03 funding will be used to continue development and risk reduction efforts including Prime Mission Equipment (PME) advanced development and integration efforts. FY02 funding supports decision review to enter into the Component Advanced Development (CAD) Phase and FY03 supports Milestone B and entry into System Development and Demonstration (SDD) Phase. FY02-FY03 funding also supports efforts to maintain currency of the GRCS fielded systems modifying current system software to incorporate additional signals of interest. In addition to the software modifications, an upgrade implementation plan will be developed along with an Interface Control Document (ICD) that describes the connection and interface requirements for integrating GOTS/COTS hardware into the system architecture and host platform. The plan and ICD will provide a pathway to upgrade the fielded systems to intercept, recognize and locate advanced commercial, digital signals.

ACS supports the Objective transition path of the Transformation Campaign Plan.

FY 2000 Accomplishments

- 3810 Awarded agreements for Aerial Common Sensor (ACS) concept exploration (e.g. System design, modeling and simulation).
- 1825 Awarded contracts for the development of operational and evaluation models to visualize the performance/functionality of ACS within the threat environment.
- 1469 Modeling Evaluation Support, Agreement Evaluation Support and Program Office Support

Total 7104

FY 2001 Planned Program

- 3910 Continue initial phase of ACS concept exploration agreements.
- 3194 Complete initial operational performance and evaluation models for ACS.
- 2461 Award contract(s) for Guardrail Common Sensor (GRCS) fielded systems enhancements; upgrade data transport systems and modify system software to incorporate additional signals of interest. Develop implementation plan with an Interface Control Document (ICD) for system upgrades.
- 2000 Provide Tactical Information Broadcast Service (TIBS) capability in GRCS System 2.
- 1595 Modeling and Program Office support.

Total 13160

FY 2002 Planned Program

- 3000 Concept Exploration (CE) agreements/Component Advanced Development (CAD) bridge contract to support Milestone process.
- 360 Component Advanced Development (CAD) performance specification analysis and source selection.
- 16899 ACS CAD contract award(s) will transition virtual system concept and vet it into a system architecture and relevant integration environment.
- 3200 Continue contract(s) for fielded systems enhancements including efforts to productize Defense Cryptologic Program Technologies for GRCS.

FY 2002 Planned Program (Continued)

- 2414 Modeling, Program office, and Decision Review support for entry into CAD.

Total 25873

B. Other Program Funding Summary	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
Defense Cryptologic Program (DCP)	14451	12304	22385	0	0	0	0	0	0	0
Joint Airborne SIGINT family (from ASC/RAJ)	1000	3000	5800	0	0	0	0	0	0	0
0305206/DK98 Tactical Reconnaissance	0	0	4903	0	0	0	0	0	0	0
A02005 Aerial Common Sensor- Aircraft Procurement, Army	0	0	0	0	0	0	0	0	0	0

FY02-FY07 DCP increased to provide funding for technologies to maintain relevancy of GRCS and other legacy systems. FY00-FY03 JASF funding reflects support to ASC, not funding recieved by AF for development of JASF products. Tactical Reconnaissance funds MASINT/IMINT technologies that will be integrated into ACS during SDD Phase.

C. Acquisition Strategy: The Aerial Common Sensor Concept Exploration Agreements were awarded on a competitive basis using Other Transaction Agreements and shared contractor investment. Requirements are to analyze/recommend an architecture to include an airframe that integrates Signals Intelligence (SIGINT) and non-SIGINT suites, e.g. Moving Target Indicator (MTI)/Synthetic Aperture Radar (SAR), Electro Optic/Infrared (EO/IR), etc. The contractor will be required to provide the integration analysis, modeling and simulation packages and a proposed airframe for a total system recommendation. Following evaluation of the recommendations new limited competitive, contract(s) will be awarded in FY2002 to begin risk reduction efforts. The contractor/s will be required to support the program through a milestone approval of the aircraft and sensor suites. The SIGINT payload for ACS could be comprised of scaled HBSS and LBSS subsystems being developed by the ASC/RAJ under separate action with additional enhancements being funded under the ACS DCP program. The acquisition strategy for the GRCS upgrades will be through task orders against omnibus contracts that team multiple contractors.

D. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
ACS Concept Exploration Agreements	3-4Q	1-4Q	1-2Q	0	0	0	0	0
GRCS upgrade contracts		2-4Q	1-4Q	0	0	0	0	0
Decision Review for ACS Component Advanced Development (CAD)			1Q	0	0	0	0	0
ACS CAD Contract(s)			2-4Q	0	0	0	0	0
Field TIBS capablilty to GRCS System 2			3Q	0	0	0	0	0
ACS Milestone B Decision				0	0	0	0	0
ACS SI Contract				0	0	0	0	0
Field GRCS software modifications				0	0	0	0	0
Flight test GRCS upgrades				0	0	0	0	0
Conduct ACS SI Demonstration				0	0	0	0	0
ACS System Demonstration (SD) Phase Decision Review				0	0	0	0	0
ACS SD Contract				0	0	0	0	0
ACS SD DT/OT				0	0	0	0	0
ACS IOT&E				0	0	0	0	0
ACS MS C, Full Rate Production (FRP) Decision Review				0	0	0	0	0
Begin ACS FRP				0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
028

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 . Concept Evaluation Agreement	C-FP	Raytheon; Greenville, TX	875	1110	2Q	1000	1Q	0	0	0	0	0
b . Concept Evaluation Agreement	C-FP	Lockheed Martin; Palmdale, CA	1535	1800	1-2Q	1000	1Q	0	0	0	0	0
c . Concept Evaluation Agrement	C-FP	Northrup Grumman, Baltimore, MD	1400	1000	1Q	1000	1Q	0	0	0	0	0
d . GRCS Data Transport Contract	SS-CPFF	L3Comm, Salt Lake City, Utah	0	2000	2Q	300	1Q	0	0	0	0	0
e . GRCS Omnibus contract	SS-FP	TRW, Sunnyvale, CA.	0	461	2Q	2900	1Q	0	0	0	0	0
f . TIBS Installation into GRCS System 2	C-CPFF	Mutiple	0	2000	2Q	0		0	0	0	0	0
g . ACS CAD Contract(s)	C-CPXF	TBD	0	0		16899	2Q	0	0	0	0	0
h . ACS System Integration Contract	C-CPXF	TBD	0	0		0		0	0	0	0	Continue
Subtotal:			3810	8371		23099		0		0	0	Continue

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
028

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 . ACS Operational Performance Model	SS-CPFF	Raytheon System Dev. Marlborough, MA	1500	2120	1Q	0		0	0	0	0	0
b . Model Evalution Support		Multiple	325	1074	1Q	450	1Q	0	0	0	0	0
c . ASARC Support	C-CPFF	CSC, Falls Church, VA	50	160	1Q	60	1Q	0	0	0	0	Continue
Subtotal:			1875	3354		510		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 . Engineering Support	C-CPFF	CACI Technologies; Chantilly, VA	600	400	2Q	0		0	0	0	0	0
b . Engineering Support	C-CPFF	Multiple	0	300	2Q	460	1Q	0	0	0	0	Continue
c . AEC Support	C-CPFF	TBD	0	80	2Q	180	1Q	0	0	0	0	Continue
d . Analysis and Evaluation of CAD Products	TBD	TBD	0	0		0		0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
028

III. Test and Evaluation (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:			600	780		640		0		0	0	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 . Program Management	MIPR	PM, Signals Warfare	171	300	2Q	690	1Q	0	0	0	0	Continue
b . Matrix Support	MIPR	HQ, CECOM	648	355	1-2Q	934	1-2Q	0	0	0	0	Continue
Subtotal:			819	655		1624		0		0	0	Continue
Project Total Cost:			7104	13160		25873		0		0	0	Continue

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

June 2001

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - OPERATIONAL SYSTEMS DEV	**0203744A - Aircraft Modifications/Product Improvement Prog**	**430**

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
430 IMPR CARGO HELICOPTER	27088	36855	18611	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification: The Improved Cargo Helicopter (ICH) is a recapitalization program to extend the useful life of the CH-47D Cargo helicopter. This funding will assure heavy lift capability into the 21st century. This program awarded a contract for Engineering Manufacturing Development (EMD) which includes decreasing operation and support costs through vibration reduction/airframe stiffening, incorporating a new electronics/architecture system for compatibility with the digital battlefield and structural modifications as necessary to extend the life of the airframe. This program will be the basis for establishing remanufacture, modernization, and upgrade program to meet the readiness needs of the future for heavy lift capability. The ICH Program will include testing of the two engineering development models plus component testing for Live Fire. This system supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP).

FY 2000 Accomplishments

- 23840 Continue Engineering Manufacture Development (EMD)
- 1411 Continue In-house and program management administration
- 1837 Continue Government Test & Evaluation

Total 27088

FY 2001 Planned Program

- 28074 Continue Engineering Manufacture Development (EMD)
- 1506 Continue In-house and program management administration
- 5675 Continue Government Test & Evaluation; 2 EMD Models delivered for Testing
- 1600 Total Operating Cost Reduction (TOCR) Initiative

Total 36855

FY 2002 Planned Program

- 14389 Continue Engineering Manufacture Development (EMD)
- 326 Continue In-house and program management administration
- 3896 Continue Government Test & Evaluation

Total 18611

B. Other Program Funding Summary	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
APA, SSN AA0254, CH-47 ICH	0	83061	0	0	0	0	0	0	0	0
APA, SSN AA0252, CH-47 CARGO HELICOPTER MODS (MYP)	0	0	138673	0	0	0	0	0	0	0

Increase in FY04-07 for recapitalization

C. Acquisition Strategy: The ICH will recapitalize aging fleet and bridge the gap until the development of a follow-on aircraft. This will be achieved in a cost effective manner as the ICH program will be based on a four-pronged recapitalization approach which will include rebuilding the airframe, recapitalizing dynamic components, improving mission capability, and reducing vibrations to provide for longer term O&S cost reductions. There will be two Low Rate Initial Production (LRIP) lots to ramp up full rate production.

D. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
EMD Contract & Funding Increments	1Q	2Q	1Q	0	0	0	0	0
Critical Design Review (CDR)	1Q			0	0	0	0	0
IPF		3Q		0	0	0	0	0
LL/LRIP I Award			1Q	0	0	0	0	0
Initial Oper Test & Eval (IOTE)			2Q	0	0	0	0	0
LRIP II Award				0	0	0	0	0
MS III				0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
430

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 . EMD	CPIF	Various	73569	28074	2Q	14389	1Q	0	0	0	0	0
b . TOCR	CPIF	Various	0	1600	3Q	0		0	0	0	0	0
Subtotal:			73569	29674		14389		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 . PMO/OGA	Reimbursable	Various government	9982	1506		326		0	0	0	0	0
Subtotal:			9982	1506		326		0		0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
430

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 . DT/OT	Reimbursable	Various government	3784	2875		2621		0	0	0	0	0
b . Live Fire Test & Eval	Reimbursable	Contract/Govt	2243	2750		1275		0	0	0	0	0
c . Live Fire Test & Eval	Contract		0	50	2Q	0		0	0	0	0	0
Subtotal:			6027	5675		3896		0		0	0	0

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 . CAMBER/Westar	SS/FP	Huntsville, AL	3901	0		0		0	0	0	0	0
Subtotal:			3901	0		0		0		0	0	0
Project Total Cost:			93479	36855		18611		0		0	0	0

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

June 2001

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - OPERATIONAL SYSTEMS DEV	**0203744A - Aircraft Modifications/Product Improvement Prog**	**504**

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
504	BLACK HAWK RECAPITALIZATION/MODERNIZATION	9547	29634	58445	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification: The UH-60 Black Hawk will serve as the Army's utility helicopter in the Objective Force. It is used for air assault, general support, aeromedical evacuation (MEDEVAC), and command and control in active and reserve component theater, corps, division, and table of distribution and allowances units. The UH-60A entered service in fiscal year 1978 (FY78), and the newer model UH-60L in FY89. The Army continues to procure UH-60L helicopters today. The Army has established a recapitalization goal for its systems of maintaining the fleet's average age at the design half-life or less. The UH-60 was designed for a 20 year service life. The oldest UH-60As are now over 23 years old, and the average age of the UH-60A fleet is 18 years old. The increased operational tempo, coupled with the technological age of the basic airframe, components, and systems, is having an adverse impact on the operational readiness (OR) and operating and support (O&S) costs of the over 1500 aircraft UH-60 fleet. In addition, the UH-60A/L helicopters lack the necessary digital avionics architecture to meet current and future Army and Joint Service interoperability communication requirements. The Army has determined that a recapitalization/upgrade program is required to address these issues. An Operational Requirements Document (ORD) for recapitalization of the Black Hawk fleet was approved by the Joint Requirements Oversight Council in March, 2001. The ORD describes an evolutionary, block approach to transform the utility helicopter force to one that is more deployable, responsive, and less expensive to operate. Block 1 recapitalizes the oldest UH-60A Black Hawks to the UH-60M configuration. The UH-60M selected upgrade includes airframe service life extension, structural improvements, upgrade of the propulsion system (UH-60A T700-GE-700 engine and drive train to UH-60L T700-GE-701C engine and drive train), and a digital cockpit. The UH-60M provides a common platform for the modernized air ambulance MEDEVAC medical mission equipment package (MEP). RDTE funds are required to develop, integrate, test and qualify the UH-60M configuration. This effort supports the Legacy-to-Objective path of the Transformation Campaign Plan.

FY 2000 Accomplishments

- 543 Initiated Depot Partnership Study by Sikorsky Aircraft Company to determine optimal work mix between Sikorsky, the depots and other concerns.
- 2293 Initiated more than 40 Trade Studies and supported Cost As An Independent Variable (CAIV). Trade studies include new versus remanufactured cabin and 2 versus 4 multifunctional displays.
- 774 Initiated Software (SW) Development, i.e., Joint Technical Compliance Matrix - Army, Software Development Plan and software requirements specifications.

FY 2000 Accomplishments (Continued)

- 4813 Performed Risk Reduction activities, i.e., initiated earned value management, executed risk management planning and assessments, development of Integrated Master Schedule.
- 1124 Initiated preparation of the Master Test Program Plan and detailed test schedule. Began planning for execution of Early User Demonstration #1.

Total 9547

FY 2001 Planned Program

- 5908 Initiate assessment and design activities required for recapitalization/upgrade of UH-60M airframe, avionics and power plant.
- 542 Initiate Producibility Engineering and Planning (PEP) to validate production processes and methods.
- 15411 Initiate Test Article Induction, Preparation/Teardown and Fabrication (4 test articles: UH-60A to UH-60M, L to M, A to MEDEVAC, New Production UH-60M) to include airframe and system System Requirements Review and airframe Preliminary Design Review.
- 371 Initiate Training Course preparation to include Training Program Structure Document, Staff Planners Course and operator's training and maintenance training.
- 2942 Test Planning and Execution - Initiate plans; prepare and conduct Early User Demonstration #1 and #2; begin software integration at Systems Integration Lab (SIL); Qualification of Component/Subsystems; live fire planning & begin Component Live Fire Test.
- 1148 Begin implementation of Continuous Acquisition and Life-Cycle Support (CALS)/Contractor Integrated Technical Information System (CITIS) and delivery of technical drawings and Interface Control Documents (ICDs).
- 163 Deliver initial Depot Partnership Study Report.
- 2268 Continue Software (SW) development - update software requirements specifications and multiplex interface control documents and prepare software design descriptions.
- 881 Small Business Innovative Research/Small Business Technology Transfer Program

Total 29634

FY 2002 Planned Program

- 16285 Complete design of airframe, avionics and powerplant to include airframe Critical Design Review.
- 6310 Continue Producibility Engineering and Planning (PEP) as well as manufacturing planning and control.
- 12760 Complete build and delivery of four test articles to support Development Testing.
- 2090 Preparation of training documentation for Logistics Demonstration Familarization Course, Government Test Pilot Familiarization Course and Test Players Training Course.
- 12570 Initiate Development Testing; complete Component/Subsystem live fire phase 1.
- 460 Deliver CALS/CITIS technical drawings and interface control documentation updates to the allocated baseline specifications.
- 410 Continue Depot Partnership Study data collection for midyear update to reflect input from test article build.
- 7560 Continue software development to include failure modes and effects criticality analysis and preliminary software design descriptions. Continue development and qualification testing of mission critical computer resources.

Total 58445

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

June 2001

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - OPERATIONAL SYSTEMS DEV	**0203744A - Aircraft Modifications/Product Improvement Prog**	**504**

B. Other Program Funding Summary	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
AA0492 UH-60 MODS	12654	23305	52269	0	0	0	0	0	0	0

C. Acquisition Strategy:: The UH-60 Black Hawk will serve as the Army's utility helicopter in the Objective Force. The recapitalization/upgrade of the legacy UH-60 fleet for the interim/objective force will be accomplished using an evolutionary, block approach to transform the system. The Block 1 program will selectively upgrade the UH-60A/L fleet to the UH-60M configuration. This includes airframe structural improvements, a propulsion upgrade, and a digital cockpit that will meet lift, range, survivability, and interoperability requirements while decreasing O&S costs. This will extend the useful life of these aircraft another 20 years, or through the FY25 time frame. These improvements will be accomplished through integration of existing technologies, by upgrading the UH-60A propulsion system to that currently in the UH-60L, and by adding the UH-60Q advanced MEDEVAC medical equipment package (MEP) to the air ambulance fleet. This program addresses current UH-60 fleet aging problems such as decreasing operational readiness (OR) and increasing O&S costs, including all top-ten cost drivers, and provides a common, modernized platform for the UH-60 utility and MEDEVAC fleet of the future. The program will be executed over four phases: pre-System Development/Demonstration Phase (FY00-01), System Development/Demonstration Phase (FY01-03), Production/Readiness Phase (FY03-05), and Operations and Sustainment Phase (FY05-FY25).

D. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Depot Partnership Study	4Q	1-4Q	1-4Q	0	0	0	0	0
Milestone B		2Q		0	0	0	0	0
Depot Partnership Prove-Out				0	0	0	0	0
Test Article Delivery for Testing			3-4Q	0	0	0	0	0
Integration/Qualification (I/Q) Contract Award		3Q		0	0	0	0	0
System Critical Design Review (CDR)			1Q	0	0	0	0	0
Milestone C				0	0	0	0	0
LRIP Lot I Contract Award				0	0	0	0	0
LRIP Lot 2 Contract Award				0	0	0	0	0
Full Rate Production IPR				0	0	0	0	0
First Unit Equipped (FUE)				0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
504

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 . Design, Integration & Qualification Contract	SS/CPAF	Sikorsky Aircraft Co 30 Moffitt Street Stratford, CT 06601	8379	23136	3Q	50668	1Q	0	0	0	0	0
b . Development Support - Organic	WR	UH PMO/matrix	872	2589	1-4Q	3007	1-4Q	0	0	0	0	0
c . Development Support - Contractor	C/FP	O2K Contractors	0	1763	1-4Q	667	1-3Q	0	0	0	0	0
Subtotal:			9251	27488		54342		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 . Cost Analysis Support	WR	AMCOM Matrix	160	210	1-4Q	0		0	0	0	0	0
Subtotal:			160	210		0		0		0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
504

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 . Test Planning, Test and Evaluation	MIPR	Various Activities	45	395	1-3Q	1226	1-4Q	0	0	0	0	0
Subtotal:			45	395		1226		0		0	0	0

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 Support - Organic		UH PMO/matrix	91	272	1-4Q	1666	1-4Q	0	0	0	0	0
b . PM Support - Contract	C/FP	O2K Contractor	0	388	1-3Q	1211	1-3Q	0	0	0	0	0
c . SBIR/STIR			0	881		0		0	0	0	0	0
Subtotal:			91	1541		2877		0		0	0	0
Project Total Cost:			9547	29634		58445		0		0	0	0

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

June 2001

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - OPERATIONAL SYSTEMS DEV	**0203744A - Aircraft Modifications/Product Improvement Prog**	**508**

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
508	APACHE 2ND GENERATION FLIR	30608	17274	40196	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification: Apache Second Generation Forward Looking Infrared (FLIR) is a U.S. Army program to develop, test, integrate and produce a Second Generation FLIR (SGF) for the Army's entire fleet of AH-64A and AH-64D aircraft. The FLIR system enables for pilotage of the aircraft and the engagement of targets during night operations and adverse weather conditions. The Apache SGF project will leverage technology already invested in electronics, sensors and optics to provide the best sensor available at the lowest cost. The SGF enhancements, over the present Apache FLIR, include increased range for detection, recognition and identification of targets; higher resolution and improved sensitivity for improved safety and pilotage performance, especially in adverse weather; increased capability to identify friend versus foe during hostilities; and increased reliability with a corresponding reduction in O&S costs. These enhancements will improve the overall warfighting capability of the Apache aircraft by: 1) significantly enhancing the pilot's visibility and safety while improving target designation and acquisition; 2) providing improved clarity and ability to fly and navigate using advanced FLIR imagery; 3) improving aircraft survivability with increased standoff ranges; and 4) reducing the risk of fratricide.
This system supports the Legacy ("L") transition path of the Transformation Campaign Plan (TCP).

FY 2000 Accomplishments

- 22802 Engineering & Manufacturing Development (EMD) Contract
- 4406 Standard Advanced Dewar Assembly (SADA1) Contract
- 3400 In-house & Program Management Administration/Complete Source Selection Evaluation (SSEB) for EMD Program.

Total 30608

FY 2001 Planned Program

•	9300	Continue EMD Contract for 2nd Generation FLIR Development/PDR/CDR/First Prototype Delivery/T&E
•	3874	SADA1 Contract/Spt
•	2000	Test and Evaluation - Government
•	2100	Continue In-house and Program Management Administration
Total	17274	

FY 2002 Planned Program

•	20100	Continue EMD Contract for 2nd Generation FLIR Development/Prototype Deliveries/T&E
•	18096	Test and Evaluation - Government (Qualification Testing -Air Worthiness Release - Operational Testing)
•	2000	Continue in-house and Program Management Administration
Total	40196	

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

June 2001

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - OPERATIONAL SYSTEMS DEV	**0203744A - Aircraft Modifications/Product Improvement Prog**	**508**

B. Other Program Funding Summary	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
APA, BA 2, AA6606, AA6607, AA0978, AA6608, Mods; RDTE, BA 7, Proj #50A PE 2374A	849339	813572	957937	0	0	0	0	0	0	0

C. Acquisition Strategy: A cost plus incentive fee (CPIF) type EMD contract was awarded to Team Apache Systems (TAS) on 18 Oct 00. Six prototypes will be designed, developed and tested. The program will culminate with qualification flight testing on the Apache Attack Helicopter. The design will be compatible with both the A and D model Apache helicopters.

D. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
SSEB	2-4Q			0	0	0	0	0
Receive Proposals	2Q			0	0	0	0	0
Contract Award		1Q		0	0	0	0	0
PDR/CDR		2-3Q		0	0	0	0	0
Prototype Deliveries		4Q	1-2Q	0	0	0	0	0
Qual Testing			2Q	0	0	0	0	0
Air Worthiness Release			2Q	0	0	0	0	0
Flight Testing			3Q	0	0	0	0	0
Follow-up Testing				0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
508

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 . EMD Contract -- 2nd Gen FLIR (SGF)	C, CPIF	Team Apache Systems (TAS), Orlando, FL	22802	9300	1Q	20100	1Q	0	0	0	0	0
b . SADA1 Contract/Spt	SS, CPIF	DRS Infrared Tech, L.D.; CECOM, N.J	4406	3874	2Q	0		0	0	0	0	0
Subtotal:			27208	13174		20100		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 . NONE			0	0		0		0	0	0	0	0
Subtotal:			0	0		0		0		0	0	0

Remarks: None

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
0203744A - Aircraft Modifications/Product Improvement Prog

PROJECT
508

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 . GOV'T Qual, Air Worth, Demo, Follow-On Testing		ATTC	0	2000		18096		0	0	0	0	0
Subtotal:			0	2000		18096		0		0	0	0

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 . In-House Prog Mgt & Admin, SSEB	NA	PEO AVN REDSTONE ARSENAL, AL	3400	2100		2000		0	0	0	0	0
Subtotal:			3400	2100		2000		0		0	0	0
Project Total Cost:			30608	17274		40196		0		0	0	0