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

DATE: February 2000

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0305206A Airborne Reconnaissance

PROJECT: DK98

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DK98 Tactical Reconnaisance Sensors	7224	4895	4898	6837	4879	4837	5200	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project continues development of advanced tactical reconnaissance and surveillance sensor technologies that were developed from the Defense Airborne Reconnaissance Office and develops technology for the on-board fusion of multidiscipline intelligence sensors, i.e. SIGINT, MTI/SAR Radar, MASINT. Hyperspectral, multi-spectral, interferometric synthetic aperture radar sensors, advanced target and image exploitation software will be developed for imaging intelligence (IMINT) and measurement and signature intelligence (MASINT) applications. The adaptive spectral reconnaissance program (ASRP) is a joint DARPA/Army (CECOM) effort funded in this project. ASRP develops the next generation airborne day/night hyperspectral reconnaissance sensor for the detection and identification of camouflaged and concealed targets in all terrain environments. The Signals Warfare Project Office will leverage and continue the development of the MASINT/IMINT technologies for the Aerial Common Sensor. The Interferometric Synthetic Aperture Radar (IFSAR) Program is executed out of the Joint Precision Strike Demonstration Project Office (JPSD PO). IFSAR provides the capability to rapidly generate three-dimensional (3-D) high resolution Digital Terrain Elevation Data (DTED III-V). This data will be used in the generation of high-resolution digital terrain databases to support crisis response and force projection operations within the timelines required by the joint force commander. The IFSAR development supports the Rapid Terrain Visualization (RTV) Advanced Concept Technology Demonstration Future efforts will be directed toward the development of advanced multi-mode EO/IR, multi-mode SAR/MTI radar, foliage penetration radar, multi-spectral/hyperspectral imageries, MASINT on-board fusion, and registered MTI/SIGINT cueing of EO/IR/SAR/HSI imaging sensors.

FY01 Funds completes the development and test of the Long Wave Infrared (LWIR) Hyperspectral sensor (HSS) and the collection, measurement and evaluation of IFSAR data sets. (FY00 and prior this PE was reported under OSD/DARPA)

FY 1999 Accomplishments:

- 3773 -Completed development of near-real time IFSAR
  -Modified deHavilland DHC-7 aircraft for integration of IFSAR system.
- 3451 -Awarded contract for the development of a small lightweight Long Wave Infrared hyperspectral sensor.
  -Demonstrated real time Hyperspectral detection and high resolution imagery cueing of military targets.
  -Participated in joint data collections and exercises.

Total 7224

FY 2000 Planned Program:

- 932 -Demonstrate near real time DTED Level III-IV capability.
  -Demonstrated very fine resolution geographically accurate IFSAR imagery for 3-D earth-centered targeting.
- 3832 -Complete design of LWIR HSS system and initiate integration on testbed aircraft.
  -Develop and integrate multiple algorithm fusion processing techniques of advanced spectral detection software.

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FY 2000 Planned Program: (continued)

-Conduct ASRP data collection activities of various terrain and environmental backgrounds.
-Conduct real time test of fusion algorithms processed Hyperspectral Imaging (HSI) data.

- 131 Small Business Innovative Research/Small Business Technology Transfer Program

Total 4895

FY 2001 Planned Program:

- 2003 -Complete integration and test of the LWIR Hyperspectral Sensor (HSS) system on testbed aircraft for the adaptive spectral reconnaissance program (ASRP)
  -Conduct data collection and real time demonstrations with LWIR HSS testbed aircraft for ASRP
  -Conduct data analysis of advanced HSS utility for future airborne reconnaissance applications.
- 2895 -Collect IFSAR data and develop/process high-resolution data sets
  -Complete evaluation of military utility of IFSAR sensor, data, RTV process and products with XVIII ABN and III Corp

Total 4898

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	7451	4932	4928
Appropriated Value	7500	4932	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-49		
b. SBIR / STTR	-197		
c. Omnibus or Other Above Threshold Reductions		-20	
d. Below Threshold Reprogramming			
e. Rescissions	-30	-17	
Adjustments to Budget Years Since FY 2000/2001 PB			
Current Budget Submit (FY 2001 PB)	7224	4895	4898

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Complete	Total Cost
0305206D00000 DARPA (ASRP)	1150	1150							
63734/DT12 Rapid Terrain Visualization	14082	12016							

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D. Acquisition Strategy: ASRP has established sensor development as a major thrust towards understanding the technical underpinnings of spectral technology for military applications. This DARPA managed program, which began in FY 1997 includes cooperation from multi-services including US Army, CECOM, NVESD for execution of data collections and the LWIR HSS system development. The LWIR HSS system acquisition strategy provides for the award of a 24-month effort to begin in FY 1999 under best value full and open competition procedures. Data collection efforts to support analytic studies began in FY 1998 using existing sensor and hardware integrated on an NVESD testbed aircraft.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
DTED III – IV Demonstration (IFSAR)	2Q						
DTED V – Demonstration (IFSAR)	4Q						
XVIII Airborne Corps WFX (IFSAR)		3Q					
Functional Capability Demo at JPSD IEC (IFSAR)		4Q					
End to End Demonstration (IFSAR)			3Q				
Provide Leave Behind Support (IFSAR)			1-4Q				
Conduct data collections and real-time algorithm operations (ASRP)	1-4Q	1-4Q					
Develop LWIR HSS	3-4Q	1-4Q	1Q				
Demonstrate LWIR HSS			3Q				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 7 - Operational System Development

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PROJECT: DK98

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Labor [1]	FF/SS/MIPR	Sandia Nat'l Labs	294	600	2Q	147	1Q	442	1Q	Continue	Continue	
b. Travel [1]	FF/SS/MIPR	Sandia Nat'l Labs	26	50	2Q	13	1Q	38	1Q	Continue	Continue	
c. Systems Management [1]	FF/SS/MIPR	Sandia Nat'l Labs	397	800	2Q	198	1Q	595	1Q	Continue	Continue	
d. Systems Engineering [1]	FF/SS/MIPR	Sandia Nat'l Labs	499	1000	2Q	182	1Q	749	1Q	Continue	Continue	
e. Software Engineering [1]	FF/SS/MIPR	Sandia Nat'l Labs	64	110	2Q	32	1Q	96	1Q	Continue	Continue	
f. Development Support [2]	C/CPFF	Lockheed Martin Fairchild Systems, NY		2030	3Q	3007	1Q	1553	1Q	Continue	Continue	
g. SBIR/STTR						131				Continue	Continue	
Subtotal Product Development:			1280	4590		3710		3473		Continue	Continue	

Remark: Note: 1. IFSAR Project
2. ASRP Project
*Program funded in DOD PE 035206D in prior years

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering [1]	MIPR	Sandia Nat'l Labs	400	0		0					400	
b. Testing Support [1]	MIPR	Sandia Nat'l Labs		60	2Q	15	1Q	0	1Q	Continue	Continue	
c. Technical Support [1]	MIPR	Sandia Nat'l Labs		60	2Q	15	1Q	45	1Q	Continue	Continue	
d. Configuration Mgt. [1]	MIPR	Sandia Nat'l Labs		60	2Q	15	1Q	45	1Q	Continue	Continue	
e. Equipment [1]	MIPR	Sandia Nat'l Labs		420	2Q	105	1Q	45	1Q	Continue	Continue	
f. System Engineering [2]	C/T&M	EOIR, Fredricksburg VA		704	1Q	300	1Q	300	1Q	Continue	Continue	
g. Technical Support [2]	C/T&M	SAIC Corp, San Diego, CA		150	1Q	150	1Q	150	1Q	Continue	Continue	
Subtotal Support Costs:			400	1454		600		585		Continue	Continue	

Remark: Note: 1. IFSAR Project
2. ASRP Project
*Program funded in DOD PE 035206D in prior years

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Evaluation	MIPR	Sandia Nat'l Labs	280	560	1Q	140	1Q	420	1Q	Continue	Continue	
Subtotal Test and Evaluation:			280	560		140		420		Continue	Continue	

Remark: IFSAR Project
*Program funded in DOD PE 035206D in prior years

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management	MIPR	Sandia Nat'l Labs	48	280	1Q	70	1Q	70	1Q	Continue	Continue	
b. Government Engineering Support	MIPR	CECOM, NVESD		340	1Q	375	1Q	350	1Q	Continue	Continue	
Subtotal Management Services:			48	620		445		420		Continue	Continue	

Remark: IFSAR Project
*Program funded in DOD PE 035206D in prior years

Project Total Cost:			2008	7224		4895		4898		Continue	Continue	

Program funded in DOD PE 035206D in prior years