

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

June 2001

BUDGET ACTIVITY 7 - OPERATIONAL SYSTEMS DEV				PE NUMBER AND TITLE 0305206A - Airborne Reconnaissance Advanced Development					PROJECT K98	
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
K98 MASINT SENSOR INTEGRATION (JMIP)	4895	4852	6862	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 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. Signals Intelligence (SIGINT), Moving Target Indicator/Synthetic Aperture (MTI/SAR) Radar, Measure and Signature Intelligence (MASINT). Hyperspectral, multi-spectral, interferometric synthetic aperture radar sensors, advanced target and image exploitation software will be developed for imagery intelligence (IMINT) and measurement and signature intelligence (MASINT) applications. The Hyperspectral Longwave Imager for the Tactical Environment (HyLITE) effort is executed by U.S. Army CECOM, Night Vision and Electronic Sensors Directorate. HyLITE 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 development of the MASINT/IMINT technologies for Aerial Common Sensor (ACS). The Interferometric Synthetic Aperture Radar (IFSAR) Program is executed out of the Joint Precision Strike Demonstration 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 (ACTD). Future efforts will be directed toward the development of advanced multi-mode Electrooptic/Infrared (EO/IR), multi-mode MTI/SAR radar, foliage penetration radar, multi-spectral/hyperspectral imageries (MSI/HSI), MASINT on-board fusion and registration, and cueing of the EO/IR/SAR/HSI imaging sensor. FY02 funds complete integration of the HyLITE System into the testbed, data collection demonstrations and analysis. FY02 also funds the development of multi-mode MTI/SAR technologies and MSI/HSI technologies. FY03 continues the development MTI/SAR and MSI/HSI technologies and supports integration of these technologies for system demonstrations.

This system supports the Legacy transition path of the Transformation Campaign Path. (TCP)

FY 2000 Accomplishments

- 3963 -Conducted Critical Design Review (CDR) of the Hyperspectral Longwave Imager for the Tactical Environment (HyLITE) sensor.
- Participated in joint spectral data collection and exercises of various terrain and environmental backgrounds for algorithm development (day only).
- Developed and integrated multiple algorithm exploitation and processing techniques for advanced spectral detection and recognition (day only).

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

June 2001

BUDGET ACTIVITY

7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE

**0305206A - Airborne Reconnaissance Advanced
Development**

PROJECT

K98

FY 2000 Accomplishments (Continued)

- 932 -Integrated Interferometric Synthetic Aperture Radar (IFSAR) sensor system on board a de-Havilland-7 aircraft.
-Demonstrated near real time Digital Terrain Elevation Data (DTED) Level III-V capability.
-Demonstrated very fine resolution geographically accurate IFSAR imagery for 3-D earth-centered targeting.

Total 4895

FY 2001 Planned Program

- 1893 -Complete sensor development and conduct integration of the HyLITE system
-Conduct integration of HyLITE with the NVESD testbed aircraft.
-Conduct integration of the HyLITE with the hyperspectral processor.
-Conduct spectral algorithm development for day/night system.
- 2959 Collect IFSAR data and develop/process high resolution data sets.
Complete evaluation of military utility of IFSAR sensor, data, Rapid Terrain Visualization (RTV) process and products with XVIII ABN and III Corp.

Total 4852

FY 2002 Planned Program

- 1959 -Complete integration of HyLITE system and installation with the algorithm processor and the NVESD testbed aircraft.
-Conduct day and night data collection and real time demonstrations with the HyLITE system.
-Conduct data analysis of advanced day and night hyperspectral sensor utility for future airborne reconnaissance applications.
- 4903 Award technology contract(s)for the development of multi-mode MTI/SAR/MSI/HSI/EO/IR capabilities.

Total 6862

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

June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
**0305206A - Airborne Reconnaissance Advanced
 Development**

PROJECT
K98

<u>B. Program Change Summary</u>	FY 2000	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2001 PB)	4932	4898	6837	0
Appropriated Value	4932	4898	0	0
Adjustments to Appropriated Value	0	0	0	0
a. Congressional General Reductions	0	0	0	0
b. SBIR / STTR	0	0	0	0
c. Omnibus or Other Above Threshold Reductions	0	0	0	0
d. Below Threshold Reprogramming	0	0	0	0
e. Rescissions	-37	-46	0	0
Adjustments to Budget Years Since FY2001 PB	0	0	25	0
Current Budget Submit (FY 2002/2003 PB)	4895	4852	6862	0

<u>C. 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
0305206D00000 DARPA (ASRP)	1150	100	0	0	0	0	0	0	0	0
63734/DT12 Rapid Terrain Visualization	11693	0	0	0	0	0	0	0	0	0
0203744A/D028 ACS	7104	13160	25873	0	0	0	0	0	0	0

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June 2001

BUDGET ACTIVITY
7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE
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PROJECT
K98

D. Acquisition Strategy: The HyLITE system acquisition strategy provides for the award of a 24 month R&D effort which began in FY 1999 under best value full and open competition procedures. Data collection efforts to support analytic studies began in FY1998 using existing sensor and hardware integrated on a NVESD testbed aircraft.

The MTI/SAR/MSI/HSI and multi-sensor technologies to be developed are those that are identified and found critical to the Aerial Common Sensor (ACS) program based upon the ACS Concept Exploration (CE) Phase. The ACS CE phase completes in 1QFY02. It is the intent to competitive solicitation to award a contract(s) for the development of these technologies that will provide yearly demonstration of the technologies and transition into the ACS baseline program.

E. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
XVIII Airborne Corps WFX ; Interferometric Synthetic Aperture Radar (IFSAR)	3Q			0	0	0	0	0
Functional Capability Demo at JPSD IEC (IFSAR)	4Q			0	0	0	0	0
End to End Demonstration (IFSAR)		3Q		0	0	0	0	0
Provide Leave Behind Support (IFSAR)		1-4Q		0	0	0	0	0
Conduct data collections and real-time algorithm operations (ASRP)	1-4Q			0	0	0	0	0
Develop HyLITE	1-4Q	1-4Q	1-2Q	0	0	0	0	0
Algorithm Design and Implementation (day/night)		2-4Q	1-2Q	0	0	0	0	0
Integrate HyLITE onto testbed aircraft		4Q	1-2Q	0	0	0	0	0
Test and Demonstrate HyLITE			2-4Q	0	0	0	0	0
MTI/SAR/MSI/HSI/EO/IR technology contract			2-4Q	0	0	0	0	0
MTI/SAR/MSI/HSI/EO/IR technology demonstrations				0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY 7 - OPERATIONAL SYSTEMS DEV	PE NUMBER AND TITLE 0305206A - Airborne Reconnaissance Advanced Development	PROJECT K98
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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 . Labor; IFSAR	FF/SS/MIPR	Sandia Nat'l Labs	1041	442	1Q	0		0	0	0	0	0
b . Travel; IFSAR	FF/SS/MIPR	Sandia Nat'l Labs	89	38	1Q	0		0	0	0	0	0
c . Systems Management; IFSAR	FF/SS/MIPR	Sandia Nat'l Labs	1395	595	1Q	0		0	0	0	0	0
d . Systems Engineering ; IFSAR	FF/SS/MIPR	Sandia Nat'l Labs	1681	726	1Q	0		0	0	0	0	0
e . Software Engineering ; IFSAR	FF/SS/MIPR	Sandia Nat'l Labs	206	183	1Q	0		0	0	0	0	0
f . Development Support; HyLITE	C/CPFF	BAE Systems, NY	4782	1465	1Q	600	1Q	0	0	0	0	0
g . Technology contract for MTI/SAR/MSI/HSI/EO/IR	C-CPXF	TBD	0	0		4628	1Q	0	0	0	0	Continue
Subtotal:			9194	3449		5228		0		0	0	Continue

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June 2001

BUDGET ACTIVITY

7 - OPERATIONAL SYSTEMS DEV

PE NUMBER AND TITLE

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K98

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 . Systems Engineering IFSAR	MIPR	Sandia Nat'l Labs	400	0		0		0	0	0	0	0
b . Testing Support; IFSAR	MIPR	Sandia Nat'l Labs	75	0		0		0	0	0	0	0
c . Technical Support; IFSAR	MIPR	Sandia Nat'l Labs	15	45	1Q	0		0	0	0	0	0
d . Configuration Mgt.; IFSAR	MIPR	Sandia Nat'l Labs	15	45	1Q	0		0	0	0	0	0
e . Equipment; IFSAR	MIPR	Sandia Nat'l Labs	105	45	1Q	0		0	0	0	0	0
f . System Engineering; HyLITE	C/T&M	EOIR, Fredricksburg VA	840	75	1Q	500	1Q	0	0	0	0	0
g . Technical Support; HyLITE	C/T&M	SAIC Corp, San Diego, CA	150	78	1Q	100	1Q	0	0	0	0	0
h . Technical Support; HyLITE	C/T&M	IDA; Washington, DC	60	100		0		0	0	0	0	0
Subtotal:			1660	388		600		0		0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

June 2001

BUDGET ACTIVITY 7 - OPERATIONAL SYSTEMS DEV	PE NUMBER AND TITLE 0305206A - Airborne Reconnaissance Advanced Development	PROJECT K98
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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
a . Systems Evaluation; IFSAR	MIPR	Sandia Nat'l Labs	980	420	1Q	0		0	0	0	0	0
b . Systems Evaluation: HyLITE	MIPR	BCBL; Ft. Huachuca AZ	10	0		0		0	0	0	0	0
c . Test & Demonstration; HyLITE	MIPR	CECOM; NVSED	142	0		539	1Q	0	0	0	0	0
d . Integration and Demonstration of MTI/SAR/MSI/HSI/EO/IR technologies	Multiple		0	0		0		0	0	0	0	Continue
Subtotal:			1132	420		539		0		0	0	Continue

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June 2001

BUDGET ACTIVITY 7 - OPERATIONAL SYSTEMS DEV	PE NUMBER AND TITLE 0305206A - Airborne Reconnaissance Advanced Development	PROJECT K98
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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; IFSAR	MIPR	Sandia Nat'l Labs	398	70	1Q	0		0	0	0	0	0
b . Government Engineering Support; IFSAR	MIPR	CECOM, NVESD	715	350	1Q	0		0	0	0	0	0
c . Program & Engineering Support; HyLITE	MIPR	CECOM; NVESD	734	175	1Q	220	1Q	0	0	0	0	0
d . Program & Engineering Support; MTI/SAR/MSI/HSI/EO/IR	MIPR	CECOM; I2WD	0	0		275	1Q	0	0	0	0	Continue
Subtotal:			1847	595		495		0		0	0	Continue

Project Total Cost:			13833	4852		6862		0		0	0	Continue
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