

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

February 2002

BUDGET ACTIVITY 4 - Demonstration/validation		PE NUMBER AND TITLE 0603774A - Night Vision Systems Advanced Development					PROJECT 131			
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	
131 NIGHT VISION SYS A/DEV	14831	8675	11694	5366	5320	5475	5462	0	65477	

A. Mission Description and Budget Item Justification: This program currently addresses five initiatives: 1) Product improvements to current Night Vision Electro-Optic devices/systems supporting the Interim Brigade Combat Team (IBCT) and the Counteroffensive Force and Counter Attack Force. The improvements to equipment within the BCT will increase the survivability of the host platforms and demonstrate potential candidates for the Objective Force. The efforts are centered around the demonstration of improved stealthiness (sensors on a mast) and improved target acquisition performance through the use of aided target recognition (ATR). 2) Demonstrate the producibility of the new uncooled thermal technology needed for the next generation of night vision equipment and develop a common thermal engine that can be used in multiple platforms. The project is focused on not only improving the performance and sustainability of the Counter Attack, IBCT and Objective Force but also using horizontal technology integration to reduce sensor costs. This technology will provide unmanned platforms (ground and airborne) with an unmatched capability in a small, lightweight, very low power package. Initial applications for uncooled detectors are the Thermal Weapon Sight, head tracked night vision viewers, and the enhanced night vision goggle. Long-term applications are a common EO/IR sensor for the Objective Force networked sensors unmanned platforms. The technical focus is to demonstrate the producibility of these detectors and their ability to withstand laser damage. 3) Demonstration of next generation night vision devices for multiple applications. These technologies will be focused on improving the lethality, survivability and versatility of the IBCT and Objective Forces. FY 02/03 funds will be used to demonstrate "See Thru the Wall (STTW)" systems which will allow units of action in Military Operations in Urban Terrain (MOUT) scenarios to detect objects and personnel in buildings and through walls significantly improving their force effectiveness and survivability. 4) Develop robotic sensor technology strategies to support the emerging Objective Force requirements. 5) Component Advanced Development (CAD) (Milestone A) phase of the Tactical SIGINT (TSP) system. TSP is a Unmanned Aerial Vehicle (UAV) mounted SIGINT/EW sensor that detects enemy and gray radio frequency (RF) emitters. TSP will provide the Land Commander with a deep looking SIGINT/EW system capable of detecting, identifying, locating and geo-locating RF emitters throughout the Area of Operation (AO). The TSP electronic emitter information will be fused with other sensors [i.e., Prophet, Electro-optical/ Infrared (EO/IR), Moving Target Indicator (MTI), Synthetic Aperture Radar (SAR), Corps Aerial Common Sensor (ACS)] to provide precise targeting information in near real time (NRT). The TSP Component Advanced Development (CAD) phase in FY02/03 focuses on demonstrating payloads that could satisfy the objective system requirements and identify which requirements will be pursued during the System Development and Demonstration (SDD) Phase. The TSP System Development and Demonstration efforts are covered under PE/Project 35204/11B beginning in FY04.

This project supports the Legacy to Objective transition path (for Night Vision) and the Objective transition path (for TSP) of the Transformation Campaign Plan.

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Development****131****FY 2001 Accomplishments:**

- 985 Developed and demonstrated advanced capabilities for Second Generation Forward Looking Infrared (FLIR) B-Kit, to include multi-level laser hardening
- 453 Completed Multifunction Laser B Kit and operational functions analysis
- 795 Initiated development of Long Range Advanced Scout Surveillance System (LRAS3) on a telescopic mast
- 439 Conducted analysis and evaluation of the potential for an uncooled FLIR B-Kit for Objective Individual Combat Weapon (OICW) and Objective Crew Served Weapon (OCSW)
- 313 Initiated and completed the development of head tracked commanders thermal sensor
- 2248 Initiated demonstration and evaluation of Enhanced Night Vision Goggle (ENVG) and enabling technologies
- 1752 Initiated demonstration and evaluation of Aviation Night Vision Goggle (ANVG) (14 test units)
- 910 Conducted cost benefit analysis for Tactical Unmanned Aerial Vehicle (TUAV) Payloads
- 935 Prepared for and conducted SSEB to award Component Advanced Development (CAD) contract for Tactical SIGINT Payload (TSP)
- 5401 Awarded CAD Contract for TSP to three contractors to develop varying capability SIGINT payload design approaches on a UAV
- 600 UAV quieting

Total 14831

FY 2002 Planned Program

- 702 Evaluate alternative "thru wall" devices to support USAIC ORD development and develop thru wall technology strategy
- 1969 Develop laser protection and assess production and performance issues for uncooled detectors
- 742 Complete analysis and evaluation of the potential for an uncooled FLIR B-Kit for multiple manned and unmanned platform applications.
- 203 Initiate the common multi sensor fusion (acoustic, seismic, EO/IR) Robotic Sensors technology strategy to support network sensors for the Objective Force concept
- 1096 Complete development and demonstrate Long Range Advanced Scout Surveillance System/Lightweight Laser Designator Rangefinder (LRAS3/LLDR) on a telescopic mast (and interface with available Aided Target Recognition (ATR)) to support demonstration of LRAS3 P3I and IAV P3I
- 3963 Continue TSP CAD development of varying capability SIGINT payload design approaches on a UAV by contractors

Total 8675

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FY 2003 Planned Program

- 501 Demonstrate thru-wall technologies for urban tactical environment
- 3509 Continue development laser protection and assess production and performance issues for uncooled detectors
- 700 Develop Robotic Sensors technology strategy to support Objective Force organic sensor strategy.
- 3515 Complete TSP CAD which evaluates SIGINT payload design approaches on a UAV
- 1085 Conduct demonstration of payload and systems integration
- 1434 Conduct operational assessment of payload and systems integration and flight demonstration/s
- 950 Prepare for and conduct Source Selection Evaluation Board (SSEB) for Tactical SIGINT Payload Mile Stone B System Development and Demonstration (SDD) contract

Total 11694

<u>B. Program Change Summary</u>	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY02 PB)	14831	12756	11721
Appropriated Value	14968	8756	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reductions	0	-81	0
b. SBIR / STTR	0	0	0
c. Omnibus or Other Above Threshold Reprogramming	0	0	0
d. Below Threshold Reprogramming	0	0	0
e. Rescissions	-137	0	0
Adjustments to Budget Years Since FY2002 PB	0	0	-27
Current Budget Submit (FY 2003 PB)	14831	8675	11694

Change Summary Explanation:

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FY 2002 Congressional cut of \$4M from TSP efforts; \$0.081M General Congressional Reduction.

<u>C. Other Program Funding Summary</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
PE 0602709A/Night Vision and Electro-Optical Technology RDTE	24935	22993	22333	22434	23718	23594	24585	Continue	Continue
PE 0603710A/Night Vision Advanced Development RDTE, A Budget	41598	49389	36494	39336	36831	37170	39910	Continue	Continue
PE 0604710A/Night Vision Devices Engineering Development RDTE	28722	27376	32328	21625	18904	18013	18336	Continue	Continue
OPA2 K38300 LRAS3	45733	44193	49927	51194	51068	43341	1776	40000	372269
WTCV G80717 M2A3/M3A3 Bradley	55473	58223	46426	42641	46671	31765	32824	0	359299
WTCV GA0750 Abrams Upgrade	49160	52922	18741	0	0	0	0	0	186019
WTCV GA0730 M1A2 SEP	26828	12450	18421	25246	33145	53870	63263	Continue	Continue
RDTE (PE 64270 L12) - (includes Prophet funding in FY 00-03)	2939	1731	9289	23133	10180	12122	15067	Continue	Continue
OPA2 BA0330 TUAV	47441	56860	84290	108893	62788	184442	186298	Continue	Continue
OPA2 W61900 IAV	72225	74090	65294	133996	87886	98705	82593	Continue	Continue
RDTE (PE 35204 11B) - Tactial SIGINT Payload (TSP) Development	0	0	0	5868	23711	20107	11850	Continue	Continue

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D. Acquisition Strategy: The advances and improvements for Second Generation FLIR (SGF), ANVG, ENVG and Multifunction Laser activities utilize various cost reimbursement development contracts that were and will continue to be competitively awarded using best value source selection procedures. Tactical SIGINT Payload (TSP) Component Advanced Development phase has been competitively awarded contracts to three contractors. Based on rooftop demonstration, one or more of the contractor's options will be exercised for flight demonstration.

<u>E. 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>
Tactical SIGINT Payload (TSP) CAD Decision Review	1Q						
TSP CAD Contract	3-4Q	1-4Q	1-4Q				
Conduct TSP Rooftop Demonstrations		4Q	1Q				
Conduct TSP Flight Demonstrations			3-4Q				
TSP MS B Decision				2Q			
Multi Sensor B Kit efforts		2-4Q	1-4Q	1-4Q	1Q		
Multi Sensor B Kit Milestone B					2Q		
Common Thermal Engine efforts		2-4Q	1-4Q	1-4Q	1-4Q	1Q	
Common Thermal Engine Milestone B						2Q	
Short Range Thru Wall Efforts		2-4Q	1-4Q	1Q			
Short Range Thru Wall Milestone B				2Q			
Imaging Thru Wall Technology efforts			1-4Q	1-4Q	1Q		
Imaging Thru Wall Technology Milestone B					2Q		
Long Range Imaging Thru Wall Technology efforts				1-4Q	1-4Q	1Q	
Long Range Imaging Thru Wall Technology Milestone B						2Q	
Unmanned Ground Vehicle Thru Wall Technology efforts				1-4Q	1-4Q	1-4Q	1Q
Unmanned Ground Vehicle Thru Wall Technology Milestone B							2Q

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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 . Laser Protection	C/CP, MIPR	DRS, Dallas, TX /SBRC, Santa Barbara, CA; NVESD	1341	985	1-2Q	0		0		0	2326	2326
b . SR2P	MIPR	NVESD	658	0		0		0		0	658	658
c . FLIR Develop/Integrate	Various	Various	1938	0		0		0		0	1938	1938
d . Multifunction Laser Design	C/CP	Raytheon, Dallas, TX	687	219	2Q	0		0		0	906	906
e . ATR/ATC Activities	MIPR	Various	462	0		0		0		0	462	462
f . TUAV Laser Rangefinder	C/CP	Versitron, Santa Rosa, CA	300	0		0		0		0	300	300
g . Large Format Array Uncooled Thermal Sight	C/CP	To Be Selected	0	0		360	2Q	0		0	360	360
h . LRAS3 /LLDR Telescopic Mast Demo	MIPR	NVESD	0	685	1-2Q	1096	1-2Q	0		0	1781	1781
i . Uncooled B-Kit Evolution	C/CP	ADC, Newington, VA	0	372	1-2Q	322	1-2Q	0		0	694	894
j . Head Tracked Commander's Sight	C/CP	Various	0	223	1-2Q	0		0		0	223	223

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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
k . Demo and eval of ENVG technology	Various	Various	0	1778	2-3Q	0		0		0	1778	1778
l . Demo and eval of ANVG	Various	Various	0	1320	2-3Q	0		0		0	1320	1320
m . Cost Benefit Analysis TUAV	MIPR and C/FP	TRAC-WSMR, NM and TBE, Huntsville, AL	0	910	2-3Q	0		0		0	910	910
n . Thru-wall technology demonstration	TBD	TBS	0	0		655	1-2Q	501	1-2Q	0	1156	1156
o . Develop Robotic Sensor technology strategies	TBD	TBS	0	0		200	1-2Q	700	1-2Q	0	900	900
p . Laser protection and uncooled detectors	TBD	TBS	0	0		1706	2Q	3145	1Q	Continue	Continue	Continue
q . Award CAD Contract for TSP	C/CPFF	Applied Science Technologies, BAE, and Raytheon	0	4736	3-4Q	3963	2Q	3500	1Q	0	12199	12199
r . UAV Quieting, Etc. TSP	MIPR	TUAV Proj Office, Redstone Arsenal, AL	0	900	4Q	0		0		0	900	900
s . Demo of payload & systems integration TSP	TBD	TBS	0	0		0		1085	1Q	0	1085	1085

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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
t . Land Warrior			3750	0		0		0		0	3750	3750
Subtotal:			9136	12128		8302		8931		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	424	508	1Q	347	1Q	340	1Q	Continue	Continue	Continue
b . Matrix Support	MIPR	HQ, CECOM	0	400	1Q	0		700	1Q	Continue	Continue	Continue
c . Engineering Support	FFP	MITRE; McLean, VA	0	500	1Q	0		265	1Q	Continue	Continue	Continue
Subtotal:			424	1408		347		1305		Continue	Continue	Continue

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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 . Multispectral Eval	MIPR	WSMR	308	0		0		0		0	308	308
b . FLIR Demos and Evals	MIPR	Various	836	0		0		0		0	836	836
c . ENVG Demos and Evals	MIPR	Various	0	105	2-3Q	0		0		0	105	105
d . HT Command Site Eval	MIPR	Various	0	90	2Q	0		0		0	90	90
e . ANVG Test Plan and Flight Support	MIPR	Various	0	480	2Q	0		0		0	480	480
f . ANVG Simulation/Field Eval	MIPR	Various	0	100	2Q	0		0		0	100	100
g . Operational Assessment of TSP Rooftop & Flight Demo/s	MIPR	To Be Selected	0	0		0		900	1-3Q	0	900	900
Subtotal:			1144	775		0		900		0	2819	2819

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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		PM-NV/RSTA, Ft.Belvoir, VA	102	120	1Q	26	1Q	24	1Q	Continue	Continue	Continue
b . Program Management		PM, Signals Warfare	0	400	1Q	0		534	1Q	Continue	Continue	Continue
Subtotal:			102	520		26		558		Continue	Continue	Continue
Project Total Cost:			10806	14831		8675		11694		Continue	Continue	Continue