

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2006

## BUDGET ACTIVITY

## PE NUMBER AND TITLE

**4 - Advanced Component Development and Prototypes**

**0603774A - Night Vision Systems Advanced Development**

COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	17044	6787	5337	3481	2610	5684	5808	Continuing	Continuing
131 NIGHT VISION SYS A/DEV	6980	6787	5337	3481	2610	5684	5808	Continuing	Continuing
U01 UNIQUE IDENTIFICATION (UID)	10064	0	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification:** This program addresses initiatives to develop and transition technologies from the laboratories and industry in order to improve fielded equipment in the current force as well as initiation, development, and engineering/program management support of systems for fielding to the Current, Modular, and Future Forces (FF). Efforts include the development of an uncooled infrared imaging "B-Kit" to integrate this technology across many current and FF systems for lower costs for production, fielding and maintenance. 3rd Generation Forward Looking Infrared (3rd Gen FLIR) high performance thermal imaging technology will allow simultaneous operation in the mid and long wavelength infrared bands for significantly improved ranges for acquisition of enemy forces. A major thrust will be to transition technologies to acquisition programs that meet required, advanced sensor capabilities of the Modular Force, FF, and FCS requirements documents. This will include the ability for sensors to accomplish Advanced UAV Payload missions, Aided Target Recognition (ATR), and Close Surveillance Support System for 360 degree situational awareness for vehicles. Overwatch provides for detecting, classifying, and locating weapons based on firing signatures. ATR will provide the FF unprecedented capability in target detection, recognition, and hand-off. Close Surveillance Support System will allow vehicle occupants to see outside the vehicle in day or night without the blind spots created by armor. This will allow much improved maneuvering in urban/complex terrain, tracking of friendly soldiers and vehicles, and detection and engagement of dismounted and vehicular threats. Other emerging concepts resulting from ongoing operations will be supported by this program, to include route reconnaissance for road hazards, battle damage assessment including decoy and camouflage detection, detection of threat soldiers carrying Rocket Propelled Grenades (RPGs), and identification of Improvised Explosive Devices (IED) and suicide bombers.

FY 2007 funding supports continuing 3rd Gen FLIR, UGS, Overwatch, and UAV Advanced Payloads efforts as well as emerging concepts for route reconnaissance, battle damage assessment, information on the firing of weapons, and detection of personnel with RPGs, IEDs, and suicide bombers.

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	FY 2005	FY 2006	FY 2007	
<b><u>B. Program Change Summary</u></b>				
Previous President's Budget (FY 2006)	17052	6885	5410	
Current BES/President's Budget (FY 2007)	17044	6787	5337	
Total Adjustments	-8	-98	-73	
Congressional Program Reductions		-30		
Congressional Rescissions		-68		
Congressional Increases				
Reprogrammings	-8			
SBIR/STTR Transfer				
Adjustments to Budget Years			-73	

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COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
131 NIGHT VISION SYS A/DEV	6980	6787	5337	3481	2610	5684	5808	Continuing	Continuing
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<b><u>Accomplishments/Planned Program</u></b>						<b><u>FY 2005</u></b>	<b><u>FY 2006</u></b>	<b><u>FY 2007</u></b>	
Uncooled B-Kit - Extend uncooled focal plane array technology capability across multiple platforms to allow interchangeable parts for lower cost, weight, power, and volume. FY06 and beyond supports the expansion of the Uncooled B Kit (UBK) family to include larger and smaller arrays.						0	500	683	
Sense Through The Wall (STTW)- Support development of STTW technology to sense personnel in buildings, behind other small structures or foliage, and from a stand-off distance.						542	0	0	
Emerging Concepts - Explore a range of potential technologies for FCS and the Future Force that will enable route reconnaissance, battle damage assessment, and detection of threats.						553	506	450	
UAV Advanced Payloads - Technology to sense the presence of personnel and man-made objects under natural foliage. Determination of the extent, application and feasibility of integrating current processing technology development into Persistent Surveillance capabilities currently in-theatre and informing the Extended Range/Multi-Purpose (ER/MP) Program.						0	1041	1250	
Aided Target Recognition (ATR) - Technology to allow Current and Future Force to more effectively detect and recognize targets, and cross cue other sensors in a tactical environment. This concept development effort defines technology, develops alternatives, and refines						83	362	0	

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Army requirements.									
Close Surveillance Support System - Perform concept development and demonstrations for a vehicle sensor system that provides an unimpeded 360 degree view of the immediate area around the vehicle from any crew position for situational awareness and threat detection. FY05/06 procures a demonstrator/test bed and further refines Operational concepts of employment. FY07 activities include system design and vehicle integration assessment, demonstration testing, and preparation for a Decision Milestone. Industry Rodeo to be conducted in 3QFY06 to evaluate Commercial Off The Shelf (COTS) state of the art.				1020		961		887	
3rd Gen FLIR - Initiate Concept and Technology Development for 3rd Gen FLIR, the next generation of advanced primary reconnaissance imaging systems for the Modular and Future Force, to include Future Combat System (FCS). FY05 supported the fabrication, integration and demonstration of 3rd Gen FLIR prototypes from the 3rd Gen FLIR Advanced Technology Objective (ATO) into a Long Range Advanced Scout Surveillance System (LRAS3). Demonstration is scheduled for 3QFY06. FY06/07 efforts will 'productize' an assembly for use in ground and aerial, manned and unmanned applications (as a common component) and establish specs and interfaces with objective systems.				896		1590		835	
Overwatch - Transition OVERWATCH Advanced Concepts Technology Demonstration (ACTD) technology into current and future systems applications.				0		344		522	
Family of Integrated Rapid Response Equipment (FIRRE) - FY05 efforts define the sensor requirements and procure the sensors to support demonstration of an integrated capability which could be quickly fielded.				3588		0		0	
Common Remote Stabilized Sensor System (CRS3) - Demonstration and testing of CRS3.				298		0		0	
Unattended Ground Sensors. REMBASS II Ground Sensor Radars no longer being fielded to Army. Initiate a study to determine the extent to which Camouflaged Long Endurance Nano Sensors (CLENS) capability demonstrating a light-weight, long endurance sensor network for providing persistent reconnaissance and surveillance through foliage can be adapted to cave environments. Demonstrate UGS functionality in support of UGV mission and CONOP.				0		296		0	
Mini Synthetic Aperture Radar (SAR) Demo. Conduct a solicitation and/or demonstration of Mini SAR technologies to characterize current industry capabilities. This effort will inform the TUAV objective requirement and has the potential to enhance current SHADOW capabilities in use in theater.				0		671		710	
Data Comms Package on Rapid Aerostat Initial Deployment (RAID). FY06 effort integrates and demonstrates a data communications relay on the existing RAID towers and aerostats to improve communications.				0		516		0	
Total				6980		6787		5337	
<b><u>B. Other Program Funding Summary</u></b>	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
PE 0602709A/Night Vision and Electro-Optical Technology	26393	31664	23907	24904	26310	27655	27877	CONT	CONT
PE 0603710A/Night Vision Advanced Development	102002	101690	44307	35808	41685	47849	48309	CONT	CONT
PE 0604710A/Night Vision Devices Engineering Development	34107	28980	38821	52227	28688	23163	22544	CONT	CONT
K38300 LRAS3	102625	41769	179594	168279	201498	161935	103041	CONT	CONT

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G86100 Future Combat System	0	0	0	170104	334124	1545296	3682551	CONT	CONT
BA0330 TUAV	305569	160974	36098	43359	216943	218854	32679	CONT	CONT
W61900 IAV	255179	255274	160060	129708	80270	73290	22757	CONT	CONT
PE 654645 FCS (UGS)	2098130	2745716	3310477	3283408	3118477	3014482	2633249	CONT	CONT
<p><b>C. Acquisition Strategy</b> The advances and improvements for cooled and uncooled thermal imaging sensors, radars, Sense Through The Wall systems, and Unattended Ground Sensors utilize various cost reimbursement development type contracts that were, and will continue to be, competitively awarded using best value source selection procedures.</p>									

ARMY RDT&E COST ANALYSIS (R3)										February 2006		
BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
4 - Advanced Component Development and Prototypes			0603774A - Night Vision Systems Advanced Development								131	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Laser Protection	C/CP, MIPR	DRS, Dallas, TX /SBRC, Santa Barbara, CA; NVESD	2326	0		0		0		0	2326	0
UAV Advanced Payloads	T&M, MIPR	Various	130	0		860	3Q	738	2Q	Continue	Continue	0
CIRISS efforts	T&M	Various	441	0		0		0		0	441	0
Sensor Link Protocol efforts	MIPR	Various	105	0		0		0		0	105	0
Demo of payload & systems integration TSP	SS/CPFF	TRW, Sierra Vista, AZ	400	0		0		0		0	400	0
3rd Gen FLIR	MIPR	NVESD	0	696	2Q	1158	2-3Q	705	2Q	Continue	Continue	0
Close Surveillance Support System efforts	T&M	Various	1101	974	2Q	521	2Q	507	2Q	Continue	Continue	0
Emerging Concepts efforts	T&M	Various	799	453	1Q	298	2Q	360	2Q	Continue	Continue	0
TUAV Laser Rangefinder	C/CP	Versitron, Santa Rosa, CA	300	0		0		0		0	300	0
Land Warrior			3750	0		0		0		0	3750	0
Award CAD Contract for TSP	C/CPFF	Applied Science Technologies, Sunnyvale, CA; BAE Nashua, NH	10967	0		0		0		0	10967	0
Theater Support Vessel study	MIPR	NVESD	106	0		0		0		0	106	0
ATR/ATC Activities	MIPR	Various	462	0		282	2Q	0		0	744	0
Uncooled B-Kit Evolution/Development	C/CP, MIPR	ADC, Newington, VA; Various others	3989	0		322	3Q	528	2Q	Continue	Continue	0
FLIR Develop/Integrate	Various	Various	1938	0		0		0		0	1938	0
UAV Quieting, Etc. TSP	MIPR	TUAV Proj Office, Redstone Arsenal, AL	900	0		0		0		0	900	0
LRAS3 /LLDR Telescopic Mast Demo	MIPR	NVESD	685	0		0		0		0	685	0
Demo and eval of ENVG	Various	Various	1778	0		0		0		0	1778	0

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technology (Tx to DL67)												
Multifunction Laser Design (Tx to DL67)	C/CP	Raytheon, Dallas, TX	906	0		0		0		0	906	0
SR2P	MIPR	NVESD	658	0		0		0		0	658	0
Demo and eval of ANVG (Tx to DL67)	Various	Various	1320	0		0		0		0	1320	0
Head Tracked Commander's Sight	C/CP	Various	223	0		0		0		0	223	0
Large Format Array Uncooled Thermal Sight	C/CP	(Soldier effort)	400	0		0		0		0	400	0
Unattended Ground Sensors	Various	Various	2970	0		0		0		0	2970	0
Sense Through the wall Unmanned/Stand-Off			2357	377		0		0		0	2734	0
Multi-mode Radar	Various	Various	789	0		0		0		0	789	0
Aided Target Recognition efforts	T&M	NVESD	160	83	1Q	0		0		0	243	0
Cost Benefit Analysis TUAV	MIPR and C/FP	TRAC-WSMR, NM and TBE, Huntsville, AL	910	0		0		0		0	910	0
CRS3 Testing	MIPR	RTTC, Huntsville, AL	0	238	2Q	0		0		0	238	0
FIRRE Efforts	TBD	TBS	0	3178	2-3Q	0		0		0	3178	0
UGS/CLENS	C/CP	TBS	0	0		183	3Q	0		0	183	0
Mini SAR Demo	CPFF	Various	0	0		573	3Q	270	1Q	Continue	Continue	0
Data Comms Package on RAID	T&M	Raytheon	0	0		404	3Q	0		0	404	0
Overwatch efforts	MIPR and C/CP	Various	0	0		284	2Q	447	2Q	Continue	Continue	0
Subtotal:			40870	5999		4885		3555		Continue	Continue	0
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	Various	1425	265	1Q	529	2Q	497	2Q	Continue	Continue	0
Engineering Support	FFP	CSC, Falls Church, VA	0	521	2Q	0		0		0	521	0

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Matrix Support	MIPR	CECOM Fort Monmouth, NJ	2000	0		0		0		0	2000	0
Engineering Support	FFP	MITRE; McLean, VA	1216	0		0		0		0	1216	0
Engineering Support	FFP	CACI, Fort Monmouth, NJ	2356	0		0		0		0	2356	0
Engineering Support	T&M	Various	0	0		724	2-3Q	378	2Q	Continue	Continue	0
Subtotal:			6997	786		1253		875		Continue	Continue	0
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Multispectral Eval	MIPR	WSMR	308	0		0		0		0	308	0
FLIR Demos and Evals	MIPR	Various	836	0		0		0		0	836	0
ENVG Demos and Evals	MIPR	Various	105	0		0		0		0	105	0
HT Command Site Eval	MIPR	Various	90	0		0		0		0	90	0
ANVG Test Plan and Flight Support	MIPR	Various	480	0		0		0		0	480	0
ANVG Simulation/Field Eval	MIPR	Various	100	0		0		0		0	100	0
UGS			757	0		0		0		0	757	0
Operational Assessment of TSP Flight Demos	MIPR	AEC, APG, MD	350	0		0		0		0	350	0
Payload Demo and Emitter Spt Assessment	MIPR	EPG, Ft Huachuca, AZ	1165	0		0		0		0	1165	0
Uncooled B Kit Eval	MIPR	TBD	0	0		0		90	3Q	0	90	0
UAV Advanced Payloads Eval	MIPR	TBD	0	0		0		180	3Q	0	180	0
CS3	MIPR	TBD	0	0		175	4Q	90	3Q	0	265	0
UGS/CLENS	MIPR	TBD	0	0		30	4Q	0		0	30	0
Mini SAR Demo	MIPR	TBD	0	0		0		285	3Q	0	285	0
Data Comms Package on RAID Demo		TBD	0	0		65	4Q	0		0	65	0
ATR	MIPR	TBD	0	0		10	4Q	0		0	10	0



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3rd Gen FLIR	MIPR	TBD	0	0		40	3Q	0		0	40	0
Transition Overwatch	MIPR	TBD	0	0		0		20	3Q	0	20	0
Subtotal:			4191	0		320		665		0	5176	0
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management		PM-NV/RSTA, Ft.Belvoir, VA	655	195	1-4Q	329	1-4Q	242	1-4Q	Continue	Continue	0
Subtotal:			655	195		329		242		Continue	Continue	0
Project Total Cost:			52713	6980		6787		5337		Continue	Continue	0

Schedule Profile (R4 Exhibit)																			February 2006													
BUDGET ACTIVITY					PE NUMBER AND TITLE																			PROJECT								
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Event Name					FY 05				FY 06				FY 07				FY 08				FY 09				FY 10				FY 11			
					1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Unattended Ground Sensors MS B (FCS MS B update)																																
ATR Transition to Programs																																
(2) Uncooled B Kit Phase II MS B																																
Initiate Hyperspectral Imager/2 Color Uncooled Focal Plane Array/Route Reco																																
Overwatch MS B/ Transition and prep																																
CS3 Industry Rodeo																																
CS3 Decision Milestone/Develop Veh Integration & Test																																
(3) Mini SAR Demonstration																																
Data Comms Package on RAID Demo																																
Uncooled B Kit Spiral Development																																
UAV Advanced Pavloads Development																																
3rd GEN FLIR Development																																

Schedule Detail (R4a Exhibit)						February 2006	
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<u>Schedule Detail</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>
Uncooled B Kit Spiral Development		2-4Q	1-4Q				
UAV Advanced Payloads Development		3-4Q	1-4Q	1-2Q			
3rd Gen FLIR Development	1-4Q	1-4Q	1-4Q	1-4Q			
FCS UA MS B Update to include Unattended Ground Sensors (UGS)		2Q					
Aided Target Recognition (ATR) Development/Transition	4Q	1-4Q					
Hyperspectral Imager					2-4Q	1-4Q	1-4Q
2 Color Uncooled Focal Plane Array					4Q	1-4Q	1-4Q
Route Reconnaissance						3-4Q	1-4Q
Overwatch Transition		2-4Q					
Overwatch MS B Preparation			1-3Q				
CS3 Proof of Concept Development	2-4Q	1-4Q					
CS3 Vehicle Integration and Testing			1-3Q				
Data Comms. Package on RAID Development		2-4Q					
FOPEN Efforts				2-4Q	1-4Q	1-3Q	
Mini SAR Efforts		3-4Q	1-4Q				