

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								February 2003		
BUDGET ACTIVITY <b>4 - Advanced Component Development and Prototypes</b>				PE NUMBER AND TITLE <b>0603774A - Night Vision Systems Advanced Development</b>					PROJECT <b>131</b>	
COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
131 NIGHT VISION SYS A/DEV	10662	11170	5283	5227	5368	5352	3532	2681	0	64106
<p><b><u>A. Mission Description and Budget Item Justification:</u></b> This program addresses initiatives with the focus on developing and transitioning technologies from the laboratories and industry in order to improve fielded equipment as well as initiation and development of systems for fielding to the Objective Force Units of Action/Employment and FCS. Efforts include the development of an uncooled "B-Kit" that will define parameters and timelines to integrate this technology across many Objective Force systems resulting in lower costs for production, fielding and maintenance. Target Acquisition Sensor Suite for Future Combat System of Systems (TASS for FCS) – Combine infrared, radar and other sensors for full FCS mast mounted suite. Sense Through The Wall technology will improve the survivability and lethality of Unit of Action and Unit of Employment troops in urban environments by allowing these troops to detect motion through buildings, walls, and other man-made objects. This effort will be pursued in two realms, Unattended Ground Sensor (UGS)/ Unattended Ground Vehicle (UGV) mounted for close-in, and a stand-off mode for infantry and intelligence missions. A major thrust will be to develop a primary sensor for Objective Force Reconnaissance, Surveillance and Target Acquisition (RSTA) as a single, integrated suite of sensors. This will include the ability for sensors to accomplish foliage penetration (FOPEN) and Aided Target Recognition (ATR). FOPEN will allow Unit of Action and Unit of Employment troops to discern enemy positions under the cover of trees and other natural cover. ATR will provide the Objective Force unprecedented capability in automatic target hand-off for increased lethality and survivability. The Unattended Ground Sensors (UGS) effort will develop specialty sensors for intelligence, surveillance, reconnaissance (ISR) and physical security unattended ground applications. Pre-milestone B effort will develop systems for FCS and Objective Force. Division Tactical SIGINT Payload (DTSP) has been renamed to Tactical SIGINT Payload (TSP). TSP is an 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 follow-on CAD flight demonstrations and System Development and Demonstration efforts are covered under PE/Project 35204/11B beginning in FY04.</p> <p>This project supports the Legacy to Objective transition path for both Night Vision /RSTA and TSP of the Transformation Campaign Plan.</p> <p>FY04/FY05 funding supports completion of Uncooled B Kit prototype efforts, continuing Sense Through The Wall efforts, completing prototype Unattended Ground Sensors efforts, and commencing emerging concepts efforts for Foliage Penetration, Aided Target Recognition and Transparent Armor.</p>										

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<b>Accomplishments/Planned Program</b>		<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>	
Uncooled B-Kit – Extend uncooled focal plane array technology capability across multiple platforms to allow interchangeable parts for lower cost, weight, and volume. FY03 effort will establish technical specifications, producibility and timelines across FCS and Objective Force systems for a Milestone B decision in FY04.		1128	1500	1617	0	
Target Acquisition Sensor Suite for Future Combat System of Systems (TASS for FCS) – Combine infrared, radar and other sensors for full FCS mast mounted suite. Concept development will include evaluation of Future Scout and Cavalry System (FSCS) prototypes and other sensors, and will produce trade-offs.		0	1060	0	0	
Evaluate alternative "through wall" devices to support United States Army Intelligence Center - Operations Requirement Document (USAIC ORD) development and develop thru wall technology strategy. Demonstrate through wall technologies for urban tactical environment. This effort looks at component advanced development, CONOPS development, and integration of this capability onto FCS unmanned systems to support a Milestone B decision in FY04.		925	200	1520	0	
Sense Through The Wall Stand Off-Technology to sense motion in buildings or behind other small structures from a stand-off distance. This is a concept development effort to address key FCS systems requirements.		0	0	550	1807	
Maintained configuration management of Sensor Link Protocol (SLP) software and coordinated distribution to Army and other DoD agencies.		143	0	0	0	
Initiate the common multi-sensor integration of a Robotic Sensors technology strategy to support networked sensors for the Objective Force concept for Unattended Ground Sensors (UGS). UGS is a family of specialty sensors for ISR and physical security unattended ground applications. This Pre-Milestone B effort will develop concepts and technologies for FCS and the Objective Force. UGS will transition to System Development and Demonstration in FY04.		1504	1290	700	0	
Emerging Concepts – Explore a range of potential technologies for FCS and the Objective Force that will enable combat identification (friend or foe), sensor fusion, Aided Target Recognition (ATR), Foliage Penetration (FOPEN) technology, and transparent armor concepts.		0	450	506	450	
Foliage Penetration (FOPEN) - Technology to sense the presence of personnel and man-made objects under natural foliage. This concept development effort defines technology options, develops alternatives, and refines Army requirements.		0	0	130	1300	
Aided Target Recognition (ATR) - Technology to allow FCS and the Objective Force sensors to automatically detect and recognize targets, and cross cue other sensors in a tactical environment. This concept development effort defines technology, develops alternatives, and refines Army requirements.		0	0	260	520	
Transparent Armor - Perform concept development 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.		0	0	0	1150	

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## BUDGET ACTIVITY

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## PROJECT

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### Accomplishments/Planned Program (continued)

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete TSP CAD which evaluates SIGINT payload design approaches on a UAV	0	3502	0	0
Conduct demonstration of payload and systems integration	1444	1800	0	0
Conduct operational assessment of payload and systems integration and flight demonstrations	0	1368	0	0
Continued TSP CAD development of varying capability SIGINT payload design approaches on a UAV by contractors	5518	0	0	0
Totals	10662	11170	5283	5227

### B. Program Change Summary

	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003)	8675	11694	5366	5320
Current Budget (FY 2004/2005 PB)	10662	11170	5283	5227
Total Adjustments	1987	-524	-83	-93
Congressional program reductions				
Congressional rescissions	-42	-129		
Congressional increases				
Reprogrammings	2029	-73		
SBIR/STTR Transfer		-322		
Adjustments to Budget Years			-83	-93

### Change Summary Explanation:

FY2002: Funding reprogrammed to support higher priority Tactical Sigint Program (TSP higher priority efforts.

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C. Other Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
PE 0602709A/Night Vision and Electro-Optical Technology	22172	19696	22233	22420	24359	27155	28464	29997	Continue	Continue
PE 0603710A/Night Vision Advanced Development	54913	73609	47088	54635	62227	61928	50942	48330	Continue	Continue
PE 0604710A/Night Vision Devices Engineering Development	24783	36581	29022	22399	32263	35204	14560	10778	Continue	Continue
K38300 LRAS3	40675	48577	50125	49548	42344	1734	0	0	0	233003
G80717 M2A3/M3A3 Bradley	51442	45966	0	0	0	0	0	0	0	97408
GA0750 Abrams Upgrade	52922	18741	0	0	0	0	5006	0	0	76669
GA0730 M1A2 SEP	12359	18238	0	0	0	0	16694	21700	Continue	Continue
G86100 Future Combat System	0	0	0	225289	829206	1638022	3562240	2918987	Continue	Continue
PE 654270 EW Development (Project L12)	3723	25562	22266	9479	11459	14311	10403	10807	Continue	Continue
BA0330 TUAV	56860	84290	108893	62788	184442	186298	0	0	Continue	Continue
W61900 IAV	74090	65294	133996	87886	98705	82593	0	0	Continue	Continue
PE 375204 Tactial SIGINT Payload (TSP) Development (Project 11B)	0	0	5771	5898	19714	21409	10906	11302	Continue	Continue
BZ9761 Tactical SIGINT Payload: TSP (JMIP)	0	0	0	0	0	0	16247	28027	Continue	Continue
<p><b>D. Acquisition Strategy:</b> The advances and improvements for uncooled B-Kit, Sense Through The Wall, Target Acquisition Sensor Suite for FCS, and Unattended Ground Sensors activities utilize various cost reimbursement development contracts that were, and will continue to be competitively awarded using best value source selection procedures.</p>										

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes					PE NUMBER AND TITLE 0603774A - Night Vision Systems Advanced Development					PROJECT 131		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 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	2326	0		0		0		0	2326	2326
b . ATR/ATC Activities	MIPR	Various	462	0		0		0		0	462	462
c . TUAV Laser Rangefinder	C/CP	Versitron, Santa Rosa, CA	300	0		0		0		0	300	300
d . Large Format Array Uncooled Thermal Sight	C/CP	To Be Selected	400	0		0		0		0	400	360
e . LRAS3 /LLDR Telescopic Mast Demo	MIPR	NVESD	685	0		0		0		0	685	1781
f . Uncooled B-Kit Evolution/Development	C/CP	ADC, Newington, VA	957	1450	1-2Q	1617	1Q	0		0	4024	894
g . Head Tracked Commander's Sight	C/CP	Various	223	0		0		0		0	223	223
h . Demo and eval of ENVG technology	Various	Various	1778	0		0		0		0	1778	1778
i . Demo and eval of ANVG	Various	Various	1320	0		0		0		0	1320	1320
j . Cost Benefit Analysis TUAV	MIPR and C/FP	TRAC-WSMR, NM and TBE, Huntsville, AL	910	0		0		0		0	910	910

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BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes					PE NUMBER AND TITLE 0603774A - Night Vision Systems Advanced Development					PROJECT 131		
I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
k . Sense Through the wall unmanned	Various	Various	400	200	1-2Q	1420	1Q	0		0	2020	1156
l . Sense Through The Wall Stand-Off	TBD	TBS	0	0		550	1Q	1757	1Q	0	2307	0
m . Develop Robotic Sensor technology strategies/UGS	TBD	TBS	1497	1190	1-2Q	700	1Q	0		0	3387	900
n . Sensor Link Protocol efforts	MIPR	Various	105	0		0		0		0	105	0
o . Emerging Concepts efforts	TBD	TBS	0	404	1-2Q	404	1Q	400	1Q	Continue	Continue	0
p . Foliage Penetration efforts	TBD	TBS	0	0		130	1Q	1191	1Q	0	1321	0
q . Aided Target Recognition efforts	TBD	TBS	0	0		260	1Q	520	1Q	0	780	0
r . Transparent Armor efforts	TBD	TBS	0	0		0		1150	1Q	Continue	Continue	0
s . Target Acquisition Sensor Suite efforts	TBD	TBS	0	1060	1-2Q	0		0		0	1060	Continue

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I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
t . Award CAD Contract for TSP	C/CPFF	Applied Science Technologies, Sunnyvale, CA; BAE Nashua, NH	9223	1744	2Q	0		0		0	10967	12199
u . UAV Quieting, Etc. TSP	MIPR	TUAV Proj Office, Redstone Arsenal, AL	900	0		0		0		0	900	900
v . Demo of payload & systems integration TSP	SS/CPFF	TRW, Sierra Vista, AZ	0	400	1Q	0		0		0	400	1085
w . Land Warrior			3750	0		0		0		0	3750	3750
x . SR2P	MIPR	NVESD	658	0		0		0		0	658	658
y . FLIR Develop/Integrate	Various	Various	1938	0		0		0		0	1938	1938
z . Multifunction Laser Design	C/CP	Raytheon, Dallas, TX	906	0		0		0		0	906	906
Subtotal:			28738	6448		5081		5018		Continue	Continue	Continue

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II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Matrix Support	MIPR	Various	1075	172	1Q	178	1Q	185	1Q	Continue	Continue	Continue
b . Matrix Support	MIPR	CECOM Fort Monmouth, NJ	920	1080	2Q	0		0		Continue	2000	Continue
c . Engineering Support	FFP	MITRE; McLean, VA	856	360	2Q	0		0		Continue	Continue	Continue
d . Engineering Support	FFP	CACI, Fort Monmouth, NJ	1406	950	2Q	0		0		0	2356	0
Subtotal:			4257	2562		178		185		Continue	Continue	Continue
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 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	105	0		0		0		0	105	105
d . HT Command Site Eval	MIPR	Various	90	0		0		0		0	90	90
e . ANVG Test Plan and Flight Support	MIPR	Various	480	0		0		0		0	480	480



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III. Test and Evaluation (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
f . ANVG Simulation/Field Eval	MIPR	Various	100	0		0		0		0	100	100
g . STTW EUT&E	MIPR	Various	525	0		0		0		0	525	0
h . Operational Assessment of TSP Flight Demos	MIPR	AEC, APG, MD	0	350	1-4Q	0		0		0	350	900
i . Payload Demo and Emitter Spt Assessment	MIPR	EPG, Ft Huachuca, AZ	0	1165	1-4Q	0		0		0	1165	0
Subtotal:			2444	1515		0		0		0	3959	2819

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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Management		PM-NV/RSTA, Ft.Belvoir, VA	260	24	1-4Q	24	1-4Q	24	1-4Q	Continue	Continue	Continue
b . Program Management		PM, Signals Warfare, Fort Monmouth NJ	600	621	1-4Q	0		0		0	1221	1221
Subtotal:			860	645		24		24		Continue	Continue	Continue
Project Total Cost:			36299	11170		5283		5227		Continue	Continue	Continue

Schedule Profile Detail (R-4a Exhibit)							February 2003	
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<u>Schedule Detail</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>	<u>FY 2008</u>	<u>FY 2009</u>
TSP CAD Contract	1-4Q	1-4Q						
Conduct TSP Rooftop Demonstrations	4Q	1Q						
Conduct TSP Flight Demonstrations		3-4Q						
Conduct IPR for TSP/FCS Development Alignment		2Q						
TSP MS B Decision for FCS		3Q						
Target Acquisition Sensor Suite Studies Block I for FCS UA		3Q						
Uncooled B Kit MS B			2Q					
Sense Through the Wall Unmanned Milestone B for FCS UA		3Q						
Sense Through The Wall Stand-off Milestone B				4Q				
Unattended Ground Sensors Milestone B for FCS UA		3Q						
Foliage Penetration Milestone B for Block II FCS					2Q			
Aided Target Recognition Milestone B for Block II FCS					2Q			
Transparent Armor Milestone B					4Q			
3rd Gen FLIR Milestone B							4Q	