

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

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604710A - Night Vision Systems - Eng Dev

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
Total Program Element (PE) Cost	24783	36581	29022	22399	32263	35204	14560	10778	Continuing	Continuing
L67 SOLDIER NIGHT VISION DEVICES	0	7145	9335	9826	14701	17338	0	0	0	58345
L69 HTI 2D GEN FLIR ED	3263	5688	0	0	0	0	0	0	0	15216
L70 NIGHT VISION DEV ED	14234	11577	10446	10362	17562	17866	14560	10778	Continuing	Continuing
L74 LRAS3	769	0	0	0	0	0	0	0	0	27041
L75 PROFILER	5908	6500	4140	0	0	0	0	0	0	21323
L76 LIGHTWEIGHT LASER DESIGNATOR RANGEFINDER UPGRADES	609	5671	5101	2211	0	0	0	0	0	13592

A. Mission Description and Budget Item Justification: This program element provides night vision/reconnaissance, surveillance and target acquisition technologies required for U. S. defense forces to engage enemy forces twenty-four hours a day under conditions of degraded visibility due to darkness, adverse weather, battlefield obscurants, foliage and man-made structures. These developments and improvements to high performance night vision electro-optics, radar, laser, and thermal systems and integration of related multi-sensor suites will enable near to long range target acquisition, identification and engagement to include significant fratricide reduction, which will improve battlefield command and control in "around-the-clock" combat operations. Project L67 focuses on night vision electro-optical, laser, and other target identification and location equipment for a variety of Future Combat System of Systems (FCS) Units of Action/Employment and Objective Force platforms. This project includes the enhanced night vision goggle, modular HTI multi-function laser activities, and thermal upgrades to include an uncooled medium thermal weapon sight. Project L69 focuses on inserting key Horizontal Technology Integration Second Generation and beyond Forward Looking Infrared (FLIR) (HTI SGF) thermal sensor technology into combat and support forces. Project L70 focuses on night vision, reconnaissance, surveillance and target acquisition (RSTA) sensors and suites of sensors to provide well-defined surveillance and targeting capabilities for a variety of Future Combat System of Systems (FCS) Units of Action/Employment and Objective Force platforms. This project includes initiation of standard uncooled thermal sensor packages, initiation of Sense Through The Wall programs, and radar packaging for FCS platforms and other applications. Project L74 focuses on a long-range multi-function target acquisition common sensor system utilizing the HTI SGF thermal sensor and other technologies, for use by U. S. Army forces at ranges beyond the Abrams and Bradley capabilities. The Long Range Advanced Scout Surveillance System (LRAS3) will provide U. S. forces their first reconnaissance and surveillance system with a twenty-four hour, all weather capability that can be used in either mounted or dismounted modes. The current P3I effort supports the development and implementation of an LRAS3 interface with FCB2 (Force XXI Battle Command Brigade and Below), enabling automated handoff of the digital target grid location. Project L75 focuses on the development of Profiler, an upgrade to the capabilities of the current AN/TMQ-41 Meteorological Measuring Set. Profiler will employ remote and local sensing of the atmosphere, mesoscale modeling and enhanced computing capabilities to provide target area and more accurate meteorological data. These enhancements and new capabilities will increase the lethality of field artillery systems such as Multiple Launched Rocket System (MLRS) and towed and self-propelled cannons.

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Project DL76 focuses on the addition of a Laser Designation Module (LDM) to the LRAS3 that will increase the operational capability and survivability of Combat Observation Lasing (COLT) and Fire Support (FIST) teams. The resulting target acquisition common sensor will yield greater lethality from precision and area munitions through precise target location and designation. Upgrades developed under this project will be inserted through ongoing production contracts.

These projects support the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

<u>B. Program Change Summary</u>	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003)	27376	32328	21625	18904
Current Budget (FY 2004/2005 PB)	24783	36581	29022	22399
Total Adjustments	-2593	4253	7397	3495
Congressional program reductions				
Congressional rescissions		-495		
Congressional increases		5950		
Reprogrammings	-1848	-210		
SBIR/STTR Transfer	-745	-992		
Adjustments to Budget Years			7397	3495

Change Summary Explanation:

FY2003: Congressional Add for Avenger 1st Generation FLIR upgrade efforts.

FY 2004/2005: Increase from SSN KA3500 and K31100 to fund PM Soldier Development efforts in Project L67.

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PROJECT
L67

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
L67 SOLDIER NIGHT VISION DEVICES	0	7145	9335	9826	14701	17338	0	0	0	58345

A. Mission Description and Budget Item Justification: This project develops and improves high performance night vision electro-optics, thermal and laser systems, and systems integration of related multi-sensor suites to enable near to long range target acquisition and engagement as well as improve battlefield command and control in "around-the-clock" combat operations. This project is focusing on immediately improving the capability of the Counter Attack, Containment Forces, and Stryker Brigade Combat Teams (SBCT), to systems supporting transitioning to the Objective Force. All of the devices are candidates, as sub systems, for the Objective Force. The enhanced night vision goggle will be a head/helmet mounted night vision system for the individual soldier. The system will use both image intensifier and uncooled thermal technology to provide a multi-spectral image to the user. The Thermal Weapons Sight (TWS) development establishes competition for an uncooled medium TWS for the Thermal Omnibus II procurement. Other efforts include evaluation of the suitability and technology supporting a common Horizontal Technology Integration (HTI) laser system that could be used in a variety of ground and air platforms. This Project supports the legacy-to-objective transition path of the Transformation Campaign Plan (TCP).

FY04/FY05 funding supports continuation of Night Vision Goggles enhancement, multifunction laser and sensors development and thermal upgrade activities.

<u>Accomplishments/Planned Program</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Continue development of next generation Image Intensifier systems (Enhanced Night Vision Goggles (ENVG)).	0	2000	3620	6748
Continue development of Multi Function Laser System.	0	749	2005	739
Complete Thermal Upgrade activities (prototype test and evaluation) to enhance combat effectiveness of TWS Heavy/Medium/Light.	0	4396	3710	2339
Totals	0	7145	9335	9826

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PROJECT
L67

B. Other Program Funding Summary	<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>	<u>To Compl</u>	<u>Total Cost</u>
AN/PVS-7 Aid (K36400) OPA2	36913	46321	43133	59386	69771	90568	120971	110756	Continuing	Continuing
Thermal Weapon Sight (TWS) (K22900) OPA2	36281	50662	50504	67472	78233	84524	69681	70712	Continuing	Continuing
Lightweight Laser Designator Rangefinder (LLDR) (K31100) OPA2	11210	9693	12302	17431	17495	27233	33145	33839	Continuing	Continuing
Infrared Aiming Light (K35000) OPA2	1087	6257	4847	7384	14091	14263	3922	3894	0	55745

C. Acquisition Strategy: The development programs in this project are currently based on competitive awards.

ARMY RDT&E COST ANALYSIS(R-3)								February 2003				
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev					PROJECT L67			
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 . Enhanced NVG Analysis and Design	C/CP	Various	0	1295	2-4Q	3000	1-4Q	5833	1-4Q	Continue	10128	0
b . Modular HTI Multifunction Laser Activity	C/CP	Insight Technologies, Londonderry, NH & DRS Technologies, Torrence, CA	0	250	2-4Q	1354	1-4Q	739	1-4Q	Continue	2343	0
c . Thermal Upgrades for TWS (Target Location)	C/CP	Ratheon, El Segundo, CA, Various	0	2114	2-4Q	2810	1-4Q	1439	1-4Q	Continue	6363	0
d . SBIR/STTR	TBD	TBD	0	367		0		0		0	367	0
Subtotal:			0	4026		7164		8011		Continue	19201	0

ARMY RDT&E COST ANALYSIS(R-3)								February 2003				
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev						PROJECT L67		
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	0	206	1-2Q	315	1Q	290	1Q	Continue	811	0
Subtotal:			0	206		315		290		Continue	811	0
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 . Test Support	MIPR	Various	0	2578	1-4Q	1428	1-4Q	1050	1-4Q	Continue	5056	0
Subtotal:			0	2578		1428		1050		Continue	5056	0

ARMY RDT&E COST ANALYSIS(R-3)								February 2003				
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev					PROJECT L67			
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 . Project Management	MIPR	PM Multi-Spectrum Sensors	0	335	1-2Q	428	1-2Q	475	1-2Q	Continue	1238	0
			0	335		428		475		Continue	1238	0
Subtotal:												
Project Total Cost:			0	7145		9335		9826		Continue	26306	0

Schedule Profile Detail (R-4a Exhibit)	February 2003
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev	PROJECT L67
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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>
Enhanced Night Vision Goggles (ENVG)		2-4Q	1-4Q	1-4Q	1-4Q	1-4Q		
Develop Prototype Multifunction Eyesafe Tactical HTI Laser for Dismounted Applications		2-4Q	1-4Q	1-4Q				
Thermal Upgrade target location and display capability demonstration and evaluation for TWS		2-4Q	1-4Q	1-4Q	1-4Q	1-4Q		

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BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev					PROJECT L70	
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
L70 NIGHT VISION DEV ED	14234	11577	10446	10362	17562	17866	14560	10778	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project performs System Development and Demonstration (SDD) on high performance night vision reconnaissance, surveillance and target acquisition (RSTA) and other related systems that allow forces to locate and track enemy units in day, night, and all battlefield conditions, and through natural and man-made structures and obscurants. It also develops and integrates suites of these sensors to provide well-defined surveillance and targeting capabilities, as well as architectures for these sensors to communicate automatically. The focus is on meeting the requisite night vision RSTA capabilities required for evolving Future Combat System-of-Systems (FCS), and Objective Force Unit of Action/Unit of Employment systems. Efforts will develop a standard architecture among sensors with the Sensor Link Protocol to allow these sensors to communicate automatically for improved aided target recognition and target hand-off. The Target Acquisition Radar packages for FCS will be reduced in volume and weight to provide this capability for Unit of Action/Unit of Employment and Objective Force systems reconnaissance, surveillance and target acquisition.

This project will also demonstrate the producibility of uncooled thermal focal plane arrays, and develop an uncooled sensor B-Kit family that will result in standardized sensor modules for a variety of applications. By eliminating the requirement for cryogenic coolers, uncooled thermal imagers are inherently smaller, lighter, more reliable and less expensive. Uncooled B-Kits can be used for a variety of FCS and Objective Force systems such as weapon sights, driver's viewers/situational awareness aids, missile seeker sensors, unattended ground sensors/security sensors, and unmanned ground and aerial vehicle payloads.

This project was shared between Project Manager, Night Vision/Reconnaissance, Surveillance and Target Acquisition (PM-NV/RSTA) and Product Manager, Multi-Spectrum Sensors (PM-MSS). In FY03 a new project L67 has been established for the PM-MSS efforts.

This Project supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP).

FY04/FY05 funding supports continuation of Unattended Ground Sensors development, commencing Uncooled B Kit and Sense Through The Wall development efforts, continuing Sensor Link Protocol maintenance and completing Ground Moving Target Indication Radar efforts.

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<u>Accomplishments/Planned Program</u>	FY 2002	FY 2003	FY 2004	FY 2005
Continue development of next generation Image Intensifier systems (Enhanced Night Vision Goggles (ENVG)).	3360	0	0	0
Continue development of Multi Function Laser System.	3695	0	0	0
Complete Thermal Upgrade activities (prototype test and evaluation) to enhance combat effectiveness of TWS Heavy/Medium/Light.	2615	0	0	0
Continue multisensor upgrade activities for Dismounted Optics.	300	1347	0	0
Conduct System Development and Demonstration (SDD) for Digital RSTA RAPT.	1514	2942	0	0
Complete multisensor upgrade activities, to include LRAS3, LLDR and Light Forward Observer Optics.	1030	0	0	0
Establishment of Sensor Link Protocol (SLP) as part of the DoD Variable Message Format (VMF) standard while maintaining configuration management and modifying application software tools. Sensor Link Protocol (SLP)/Sensor Architecture – A uniform and standard means of describing and coordinating the collection, preprocessing, communication, and fusion of RSTA functions for the Objective Force and FCS. Two man-year effort will develop early architecture and provide SLP maintenance.	439	951	340	340
Develop advanced capabilities for 2nd GEN FLIR B-kit, to include electronic stabilization and self healing focal plane arrays. Electronic Stabilization/Self Healing Standard Advanced Dewar Assembly (SADA) – SDD for technology that stabilizes images and other visual information, and developing a more robust SADA.	1281	500	0	0
Development of "Sense Through The Wall" sensor program. Sense Through The Wall Unmanned/Short Standoff - Technology to sense motion on the other side of a wall, or series of walls for close-in urban settings. This effort supports SDD for this capability in FCS and Objective Force Unattended/Unmanned Ground Vehicle applications.	0	0	1800	1846
Initiate development of the uncooled thermal B-Kit for platform sensors, navigation systems and target acquisition devices. Uncooled B-Kit – Development of a standard uncooled thermal detector B-kit to extend night vision capability across many platforms with interchangeable parts, lower cost, weight and volume. This effort is the SDD for B-Kit development on FCS and Objective Force Systems.	0	0	840	1845
Target Acquisition Radar Repackaging for FCS – effort to reconfigure radar antennas to reduce size in order to allow use within FCS and Objective Force systems.	0	2522	0	0
Ground Moving Target Indicator Radar – Development of automatic/autonomous moving target indicator capability upgrade in ground radar systems for FCS and Objective Force.	0	0	1500	0
Unattended Ground Sensors (UGS) – develop ruggedized/produced imager and field controller; conduct SDD for unattended ground and relocatable sensors for FCS and other applications.	0	3315	5966	6331
Totals	14234	11577	10446	10362

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B. Other Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
Night Vision AN/PVS-7 Aid K36400 OPA2	36913	38499	43133	59386	69771	90568	127971	110756	Continuing	Continuing
Night Vision TWS K22900 OPA2	36281	50662	50504	67472	78233	84524	69681	70712	Continuing	Continuing
Night Vision DVE K31300 OPA2	2102	1883	8899	16448	40088	23336	19194	22097	Continuing	Continuing
Night Vision LLDR K31100 OPA2	11210	9693	12302	17431	17495	27233	33145	33839	Continuing	Continuing
Future Combat System, G86100 WTCV	0	0	0	225289	829206	1638022	3562240	2918987	Continuing	Continuing
Infrared Aiming Light K35000 OPA2	1087	6257	4847	7384	14091	14263	3933	3894	Continuing	Continuing
Digital RSTA K28808 OPA2	0	0	292	4050	4734	0	0	0	0	9076

C. Acquisition Strategy: The development programs in this project are currently based on competitive awards and under cost reimbursement type contracts. The GMTI radar enhancements will be a sole source effort to Syracuse Research.

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BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev						PROJECT L70		
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 . DVE Development	C/CPIF	Various	21831	0		0		0		0	21831	21831
b . Various Prototypes and Studies	C/CPIF	Various	2947	0		0		0		0	2947	2947
c . LLDR Advanced Demonstration System	C/CP	Litton Laser, Apopka, FL	2556	0		0		0		0	2556	2556
d . LLDR RAPT	C/CP	Various	4253	0		0		0		0	4253	4253
e . LLDR EMD	C/CP	Litton Lasers, Apopka, FL	19873	0		0		0		0	19873	19873
f . Sensor Architecture/Digital RSTA/SLP	C/CPIF & C/CP	Various	9498	951	2Q	340	1Q	340	1Q	Continue	11129	Continue
g . HTI Laser Trade Studies	C/CP	Various	1020	0		0		0		0	1020	1020
h . HTI Laser MFS3 design and prototype activities	C/CPIF	Raytheon, Dallas,TX	565	0		0		0		0	565	565
i . Modular HTI Multifunction Laser Activities	C/CP	Insight Technologies, Londonderry, NH & DRS Technologies, Torrence, CA	3868	0		0		0		0	3868	4641
j . AN/TMQ-41 Trade Studies and related activities	C/CP	Various	1232	0		0		0		0	1232	1232

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BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev						PROJECT L70		
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 . MANTECH Focal Plane Array and optics	C/CP	Raytheon, Dallas, TX	1500	0		0		0		0	1500	1500
l . Thermal Upgrades for TWS (target location)	C/CP	Raytheon, El Segundo, CA, Various	5811	0		0		0		0	5811	7050
m . Thermal Upgrades for DVE (Dual wavelength) and competition	C/CP	Kaiser Electric San Diego, CA, Various	3608	0		0		0		0	3608	5811
n . Image Fusion for DVE	C/CP	To Be Selected	1274	0		0		0		0	1274	1274
o . LLDR Vehicle applications	C/CP	Litton Laser, Apopka, FL Various	3487	0		0		0		0	3487	3362
p . Digital MELIOS Design & Fabrication	C/FP	Litton Lasers, Inc.	1000	0		0		0		0	1000	1000
q . Enhanced NVG Analysis & Design	C/CP	Various	4782	0		0		0		Continue	4782	Continue
r . Uncooled B-Kit	C/CP	To Be Selected	0	0		840	2Q	1845	1Q	Continue	2685	Continue
s . FLIR develop/integrate	Various	Various	1281	500	1-2Q	0		0		0	1781	1769
t . Digital RSTA SDD	C/CP	To Be Selected	1514	2602	2Q	0		0		0	4116	3182

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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
u . Ground MTI Radar effort	SS T&M	Syracuse Research, Syracuse, NY	0	0		1500		0		0	Continue	Continue
v . Light Forward Observer Optics	C/CP	Various	300	958	2Q	0		0		0	1258	0
w . Target Acquisition Radar Repackaging	SS/CP	Northrop Grumman, Baltimore, MD	0	2522	2Q	0		0		0	2522	0
x . UGS	C/CP	To Be Selected	0	3315	2Q	5291	1Q	5656	1Q	Continue	14262	0
y . Sense Through The Wall	C/CP	To Be Selected	0	0		1800	2Q	1846	1Q	Continue	3646	0
Subtotal:			92200	10848		9771		9687		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	12940	304	1Q	250	1Q	250	1Q	Continue	13744	Continue
Subtotal:			12940	304		250		250		Continue	13744	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 . DT/IOT&E*	MIPR	A TEC	8769	0		0		0		0	8769	8769
b . Other Test Support*	MIPR	Various	3966	250	2Q	250	2Q	250	2Q	Continue	Continue	Continue
Subtotal:			12735	250		250		250		Continue	Continue	Continue

Remarks: * Includes TWS, DVE, LLDR and other sensor test and evaluation activities

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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 . Project Management	In house support	PM, NV/RSTA, Fort Belvoir, VA	4283	175	1Q	175	1Q	175	1Q	Continue	Continue	Continue
Subtotal:			4283	175		175		175		Continue	Continue	Continue
Project Total Cost:			122158	11577		10446		10362		Continue	Continue	Continue

Schedule Profile Detail (R-4a Exhibit)

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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>
Develop Prototype Multifunction Eyesafe Tactical HTI Laser for Dismounted Application	2-4Q							
Enhanced NVG	1-4Q							
Light Forward Observer Optics application	2-4Q	2-4Q	1-4Q	1-4Q	1-4Q	1-4Q		
Thermal Upgrade target location and display capability demonstration and evaluation for TWS	1-4Q							
Thermal Upgrade dual wavelength capability demonstration and evaluation and competition for DVE	1-4Q							
DRSTA Milestone B		1Q						
DRSTA Milestone C			4Q					
Tactical Unattended Ground Sensors (UGS) MS B for FCS UA		3Q						
Uncooled B-Kit MS B			2Q					
Sense Through the Wall Unmanned (STTW) MS B for FCS		3Q						
Edge Penetration (FOPEN) MS B for FCS Block II					2Q			
Transparent Armor MS B					4Q			
3rd Gen FLIR MS B							4Q	
Sense Through the Wall Stand-off (STTW) MS B				4Q				

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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	
L75 PROFILER	5908	6500	4140	0	0	0	0	0	0	21323	

A. Mission Description and Budget Item Justification: Profiler will employ remote and local sensing of the atmosphere, mesoscale modeling and enhanced computing capabilities to provide target area and more timely meteorological data. By providing more accurate meteorological data messages, Profiler will enable supported cannon and rocket systems to decrease miss distances, which will increase fire effectiveness. These capabilities will increase the lethality of artillery systems such as Multiple Launch Rocket Systems, towed and self-propelled cannons. This System Development and Demonstration (SDD) effort will increase the accuracy of a wide range of deep fire weapons and munitions and ultimately reduce total cost of ownership to the Army. Four SDD systems will be delivered and tested through Developmental Testing. Profiler will replace the current AN/TMQ-41 Meteorological Measuring Set (MMS).

This system supports the Legacy-to-Objective transition path of the Transformation Campaign Plan and will replace the legacy force MMS systems in the Objective Force.

FY04 funding completes the System Development and Demonstration (SDD) phase and conduct of IOT&E for the Profiler program.

<u>Accomplishments/Planned Program</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Continue MMS-P SDD development effort, including software & hardware integration, and fabrication of four units for contractor testing.	5710	5890	1880	0
Evaluate alternative technologies to reduce reliance on balloon-borne radiosondes, improve accuracy, establish a government developmental lab, provide better/more data input to the Mesoscale Model, and provide broadband datalink capabilities.	198	150	100	0
Conduct Developmental Test (DT) for system meteorological accuracy.	0	340	480	0
Conduct Initial Operational Test & Evaluation (IOT&E) activities.	0	0	1500	0
Conduct ballistics and meteorology simulations to support accuracy requirements.	0	120	180	0
Totals	5908	6500	4140	0

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

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

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B. Other Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
Profiler K27900 OPA2	0	4743	12591	11627	16912	17970	13603	9168	9500	96114

C. Acquisition Strategy: The MMS Profiler program awarded a competitive Cost Plus Incentive Fee (CPIF) contract in Sep 00 to Smiths Detection (formerly ETG) for the development of four System Development and Demonstration (SDD) units. The contract included Firm Fixed Price production options. A Milestone C decision for LRIP will be held in FY03 with a FRP decision in FY04.

ARMY RDT&E COST ANALYSIS(R-3)								February 2003				
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev					PROJECT L75			
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 . EMD Contract	C/CPIF	Smiths Detection, Edgewood, MD	8862	4420	1-2Q	918	1Q	0		0	14200	14200
b . EMD Studies	C/T&M	Smiths Detection, Edgewood, MD	0	0		500	1Q	0		0	500	0
c . Studies and Simulations	MIPR	Army Research Lab	239	90	1Q	120	1Q	0		0	449	0
d . Government Furnished Equipment	MIPR	HQCP SQ/ZJ, San Antonio, TX	120	0		0		0		0	120	0
Subtotal:			9221	4510		1538		0		0	15269	14200
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	CECOM, Fort Monmouth NJ	1724	514	1Q	390	1Q	0		0	2628	0
b . Sys Engr/Tech Assist	C/T&M	Various	1011	331	1-2Q	230	1Q	0		0	1572	0
c . OGA	MIPR	Various	1089	205	1-2Q	0		0		0	1294	0

ARMY RDT&E COST ANALYSIS(R-3)	February 2003
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev	PROJECT L75
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II. Support Cost (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
Subtotal:			3824	1050		620		0		0	5494	0

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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 . Test Planning and Preparation	MIPR	ATEC, Various	65	180	1-2Q	255	1Q	0		0	500	0
b . Developmental Testing	MIPR	ATEC, Various	0	200	2-3Q	327	1Q	0		0	527	0
c . Initial Operational Test & Evaluation	MIPR	ATEC, Various	0	0		1200	1-3Q	0		0	1200	0
Subtotal:			65	380		1782		0		0	2227	0

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ARMY RDT&E COST ANALYSIS(R-3)	February 2003
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev	PROJECT L75
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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 . Project Management	In house support	PM Nav/Sys, Fort Monmouth NJ	623	560	1-4Q	200	1-4Q	0		0	1383	0
Subtotal:			623	560		200		0		0	1383	0
Project Total Cost:			13733	6500		4140		0		0	24373	14200

Schedule Profile Detail (R-4a Exhibit)

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BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604710A - Night Vision Systems - Eng Dev

PROJECT
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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>
Continued SDD phase.	1-4Q							
Continued HW/SW development phase.	1-4Q							
Met Accuracy Testing on Target Hardware.		1Q						
MS C LRIP Decision.		3Q						
Conduct Initial Operational Test & Evaluation.			3Q					
Full Rate Production (FRP) Decision.			4Q					

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

February 2003

BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604710A - Night Vision Systems - Eng Dev					PROJECT L76	
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
L76 LIGHTWEIGHT LASER DESIGNATOR RANGEFINDER UPGRADES	609	5671	5101	2211	0	0	0	0	0	13592

A. Mission Description and Budget Item Justification: The Army's mounted Fire Support and Combat Observation Lasing Teams require a day/night targeting sensor that can detect, observe, and pinpoint the locations of threats for attack. The sensor must be able to determine the precise target location of the target and digitally transfer this information, or laser designate the target for precision engagement by laser-guided munitions.

This target acquisition common sensor system will combine the long-range surveillance and targeting capabilities of the Army's Long Range Advanced Scout Surveillance System (LRAS3) with the laser designation capabilities of the Lightweight Laser Designator Rangefinder's Laser Designation Module (LDM). RDT&E funding is required to integrate the physical, electronic and data interfaces of the LRAS3 and LDM, as well as to integrate the system to the physical, electronic and data interfaces of the Stryker Brigade Combat Team (SBCT) Fire Support Vehicle's and Knight's M707 Mission Equipment Package. In addition to the design activities, sufficient prototype systems will be produced to support testing and other pre-production activities. The system significantly increases the observation and target engagement capabilities over that provided by the current first generation equipment, AN/TAS-4 Night Sight and Ground/Vehicular Laser Locator Designator (G/VLLD).

The FY 2004/2005 funds are for FS3 testing and initiation of initial fielding corrective actions.

This system supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP).

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
Design the modifications necessary to integrate the LDM with the LRAS3.	609	2141	0	0
Fabricate six prototype target acquisition common sensors.	0	2430	320	0
Conduct contractor prototype qualifications.	0	377	720	0
Conduct system/platform Integration and Test (I&T).	0	523	875	0
Conduct Government Development Test and User Excursion.	0	200	2636	0
Implement corrective actions and update documentation.	0	0	550	2211
Totals	609	5671	5101	2211

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

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BUDGET ACTIVITY
5 - System Development and Demonstration

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B. Other Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
TACS K38303 OPA2 (TBD)	0	0	0	0	0	0	0	0	0	0

C. Acquisition Strategy: The target acquisition common sensor integration will be implemented via new tasks executed under an existing contract with Raytheon. This effort will integrate the LRAS3 and the LLDR Laser Designator Module (LDM).

ARMY RDT&E COST ANALYSIS(R-3)

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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 . Contract	CPIF	Raytheon Inc., McKinney TX	561	4760	1Q	2501	1Q	1736	1Q	0	9558	10316
b . SBIR/STTR	TBD	TBD	0	163		0		0		0	163	0
Subtotal:			561	4923		2501		1736		0	9721	10316

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	NVESD, CECOM, Other	13	225	1Q	325	1Q	225	1Q	0	788	0
Subtotal:			13	225		325		225		0	788	0

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
5 - System Development and Demonstration					0604710A - Night Vision Systems - Eng Dev					L76		
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 . Test Planning and Preparation	MIPR	ATEC	0	0		225	1Q	0		0	225	0
b . Government Development and Operational Tests	MIPR	ATEC	0	0		1525	1Q	0		0	1525	0
Subtotal:			0	0		1750		0		0	1750	0
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 . Project Management	PM-NV/RSTA		35	523	1Q	525	1Q	250	1Q	0	1333	0
Subtotal:			35	523		525		250		0	1333	0
Project Total Cost:			609	5671		5101		2211		0	13592	10316

Schedule Profile Detail (R-4a Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604710A - Night Vision Systems - Eng Dev

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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>
Award Integration Task	4Q							
Design Activities	4Q	1-4Q						
Prototype Fabrication Activities		2-4Q	1Q					
Qualification Testing		4Q	1Q					
Conduct DT and UE		4Q	1-2Q					
Production cut-in			1-4Q					
First fielding			3-4Q					
Implement corrective actions			3-4Q	1-2Q				