ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE
5 - System Development and Demonstration	**0604710A - Night Vision Systems - Eng Dev**

	COST (In Thousands)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	27753	41161	44619	28795	38163	36954	34200	34700	Continuing	Continuing
L67	SOLDIER NIGHT VISION DEVICES	15090	19655	13302	11489	25347	24747	25200	20000	Continuing	Continuing
L70	NIGHT VISION DEV ED	12663	16908	12433	9041	12816	12207	9000	14700	Continuing	Continuing
L76	Dismounted Fire Support Laser Targeting Systems		4598	18884	8265						31747

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 Future Force soldiers. 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 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 Current, Modular, Future Combat System of Systems (FCS) and Future Force platforms. This project includes night vision sensor acquisition support of FCS core systems, Risk Reduction Demonstration (RRD) of standard uncooled thermal sensor packages, Sense Through The Wall programs, Unattended Ground Sensor systems, common sensor message set management for FCS and other applications, upgrades to existing ground surveillance radars, provides Persistent Surveillance and Dissemination System-of-Systems (PSDS2) enhancements and capability improvements, transitions the 3rd Generation Forward Looking Infrared from an Advanced Technology Objective (ATO), and developes the Driver's Vision Device (DVD). Project DL76 focuses on the engineering development of technologies for insertion into Laser Target Locators and Laser Designators to improve overall performance of those systems and reduce weight. Technologies developed under this project will benefit the Lightweight Laser Designator Rangefinder (LLDR, AN/PED-1), the Mark VII-E Laser Target Locator, and future programs based on emerging Army requirements. Advanced, cooled, InSb, infrared imaging focal plane arrays are now available in 1000 x 1000 pixel (mega-pixel) resolution which, when applied to LLDR, will provide much greater range performance in a package of similar size. With an associated optical redesign, greater LLDR imaging performance can be achieved with an overall reduction in weight. This project will also integrate the next generation uncooled, 17 micron pixel-pitch FLIRs being developed for the Thermal Weapon Sight program into the Mark VII-E, improving its imaging performance with no impact on its weight. New laser designator technology has been developed which will reduce laser designator weight by close to 50% and cut battery usage by a factor of 10. Further reductions can be gained by reducing laser designator output energy levels below currently accepted standards, which initial modeling and testing indicate will not compromise performance of laser guided munitions. A primary focus of this project will be to perform sufficient live-fire and captive-carry range tests over a wide variety of environmental conditions with all current and future laser guided munitions to build the necessary confidence that reduced designator energy levels will not adversely impact the mission. In addition, this line will support improved accuracy (reduced target location error) in support of coordinate seeking weapons, such as JDAM and Excalibur. Prior to FY 2006, the project focused on target acquisition common sensor system that 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).

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5 - System Development and Demonstration

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B. Program Change Summary	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	28980	38821	52227	28688
Current BES/President's Budget (FY 2008/2009)	27753	41161	44619	28795
Total Adjustments	-1227	2340	-7608	107
Congressional Program Reductions		-157		
Congressional Rescissions				
Congressional Increases		2800		
Reprogrammings	-1227	-303		
SBIR/STTR Transfer				
Adjustments to Budget Years			-7608	107

Change Summary Explanation: Funding - FY 2007 Congressional increase for $2.8 Million for DIG Enhancement and Night Vision Wearable Acoustic Targeting Sys. FY 2008 Adjustments for higher priority programs.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604710A - Night Vision Systems - Eng Dev**	**L67**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
L67	SOLDIER NIGHT VISION DEVICES	15090	19655	13302	11489	25347	24747	25200	20000	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project develops, improves and miniaturizes high performance night vision electro-optics, thermal and laser systems. It also provides for systems integration of related multi-sensor suites to enable near to long-range target acquisition and engagement as well as improved battlefield command and control in around-the-clock combat operations. It focuses on technology that can bring improvements to the dismounted Soldiers' equipment. This project develops or enhances equipment that provides the individual Soldier day/night situational awareness and individual targeting capability, sniper fire detection and location capability, and integrates improved target location and self-location capability to eliminate friendly fire incidents. Digital Enhanced Night Vision Goggle (DENVG) 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 Soldier. Other efforts include a miniaturized laser designating system for ground Soldiers and the development of Sense Through The Wall (STTW) technology giving Soldiers the ability to detect threats through walls during Military Operations on Urban Terrain (MOUT), developing fused electro-optical sights and developing focal plane technology increasing product resolution and range.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Continue development of next generation Digital Enhanced Night Vision Goggles (DENVG). The Digital ENVG will provide Soldiers the ability to use both image intensifier and uncooled thermal technologies during day, night, and obscured battlefield conditions.	3921	5794	4802	5000
Completed development of the Small Tactical Optical Rifle Mounted (STORM) micro-Laser Range Finder (mLRF), which provided Soldiers the ability to perform target location while using individual weapons.	482			
Advanced technology to reduce target location error through the development of a non-magnetic compass for the Lightweight Laser Designator Rangefinder (LLDR) and an ultra lightweight designator(ULD) to reduce size and weight of the current laser designator module (LDM).	1920			
Continue development of Sense Through The Wall (STTW) technology, which provides dismounted Soldiers with the capability to detect, locate and identify threats through walls during Military Operations on Urban Terrain (MOUT).	159	2627	2500	2489
Initiate the development of the Fused Weapon Sight (FWS), which is a passive fused electro-optical sight for Special Operations Forces.			1000	2000
Continue the development, testing and evaluation of 17 Micron technology, Focal Plane Arrays (FPA), with improved sensitivity, clarity and range.	5246	5592	4000	
Completes the development of high accuracy Azimuth Vertical Angle Measurement (AVAM) devices for handheld, man-portable target location devices.	412	2627		
Continue the development of sniper fire detection and location technology, using portable sensors on Soldiers to locate gunfire.	2950	1676	1000	2000
Initiate the development of DARPA's MANTIS program developing a helmet-borne vision system and hand-held targeting system for the individual Soldier that combine imagery from multiple sensors using image fusion.		786		

SBIR/STTR		553		
Total	15090	19655	13302	11489

B. Other Program Funding Summary	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
Helmet Mounted Enhanced Vision Devices (K36400) OPA2	281404	228953	231419	321917	408063	435304	324054	108818	Continuing	Continuing
Thermal Weapon Sight (TWS) (K22900) OPA2	180756	208695	230607	209567	182178	186454	81600	70000	Continuing	Continuing
Sniper Night Sight (K41500)	8070	18174	14948	15893	14253	13147	25516	20484	Continuing	Continuing

Comment:

C. Acquisition Strategy The various developmental programs in this project will continue to exercise competitively awarded contracts using best value source selection procedures.

ARMY RDT&E COST ANALYSIS (R3)

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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 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Enhanced Digital NVG Analysis and Design	MIPR	Various	9919	2643	2Q	4120	1-2Q	3578	1-2Q	4726	1-2Q	Cont.	Cont.	
STORM micro-Laser Range Finder Activity	MIPR	NVESD - Fort Belvoir, VA	1595	482	1Q								2077	
Focal Plane Arrays Activity	MIPR	DOI - Washington, DC	1500	5246	2Q	5568	1Q	3976	1-2Q			Cont.	Cont.	
Ultra Lightweight Designator Development Activity	MIPR	NVESD - Fort Belvoir, VA	3051	1920	2Q							Cont.	Cont.	
Sense Through The Wall (STTW) Activity	MIPR	CECOM - Fort Monmouth, NJ		103	2Q	503	1-2Q	1726	1-2Q	1221	1-2Q	Cont.	Cont.	
Fused Electro-Optical Weapon Sight Development	MIPR	TBD								976	1-2Q	Cont.	Cont.	
AVAM Development Activities	C/FP	EOIR - Fredericksburg, VA		412	2Q	1123	1-2Q					Cont.	Cont.	
Sniper Fire Detection and Location Technology Development	C/FP	EOIR - Fredericksburg, VA		2950	2Q	1652	2Q	476		976		Cont.	Cont.	
MANTIS Development Activities	MIPR	DARPA - Arlington, VA				786	3Q						786	
SBIR/STTR						553	1Q						553	
Subtotal:			16065	13756		14305		9756		7899		Cont.	Cont.	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	Various	379	56	2Q	120	2Q	96	2Q	96	2Q	Cont.	Cont.	
Subtotal:			379	56		120		96		96		Cont.	Cont.	

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BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
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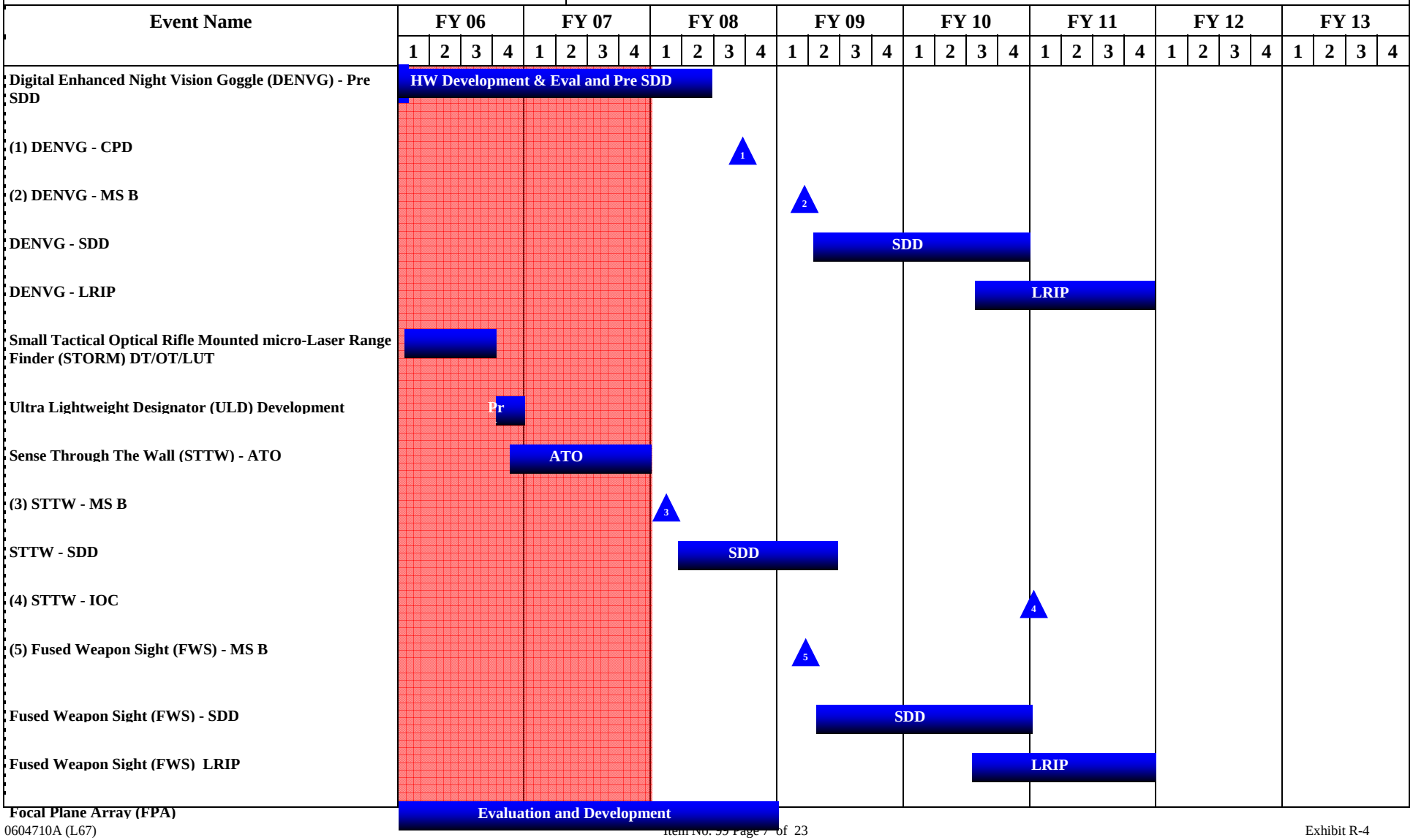
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government Test Support Activity	MIPR	Various	6897	1278	1-3Q	5230	1-2Q	3450	1-2Q	3494	1-2Q	Cont.	Cont.	
Subtotal:			6897	1278		5230		3450		3494		Cont.	Cont.	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Project Management	MIPR	PM Sensors and Lasers	591		1-4Q		1-4Q					Cont.	Cont.	
Subtotal:			591									Cont.	Cont.	
Project Total Cost:			**23932**	**15090**		**19655**		**13302**		**11489**		**Cont.**	**Cont.**	

Schedule Profile (R4 Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604710A - Night Vision Systems - Eng Dev	L67



Schedule Profile (R4 Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

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

PROJECT
L67

Event Name	FY 06				FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13			
	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	2	3	4
AVAM - System Development & Technology Insertion																																
(6) Gun/Sniper Fire Detection System (GFDS)	6																															

Schedule Detail (R4a Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

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

PROJECT
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Schedule Detail	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Digital Enhanced Night Vision Goggle (DENVG) - Pre SDD	1Q - 4Q	1Q - 4Q	1Q - 2Q					
DENVG - CPD			3Q					
DENVG - MS B				1Q				
DENVG - SDD				2Q - 4Q	1Q - 4Q			
DENVG - LRIP					3Q - 4Q	1Q - 4Q		
Small Tactical Optical Rifle Mounted micro-Laser Range Finder (STORM) DT/OT/LUT	1Q - 4Q							
Ultra Lightweight Designator (ULD) Development	4Q							
Sense Through The Wall (STTW) - ATO	4Q	1Q - 4Q						
STTW - MS B			1Q					
STTW - SDD			1Q - 4Q	1Q - 2Q				
STTW - IOC						1Q		
Fused Weapon Sight (FWS) - MS B				1Q				
Fused Weapon Sight (FWS) - SDD				2Q - 4Q	1Q - 4Q			
Fused Weapon Sight (FWS) LRIP					3Q - 4Q	1Q - 4Q		
Focal Plane Array (FPA)	1Q - 4Q	1Q - 4Q	1Q - 4Q					
AVAM - System Development & Technology Insertion		1Q - 4Q						
Gun/Sniper Fire Detection System (GFDS)	2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
TWS Size Weight and Power (SWR) Reduction						1Q - 4Q	1Q - 4Q	1Q - 4Q
FWS SWR Reduction						1Q - 4Q	1Q - 4Q	1Q - 4Q
DENVG SWR Reduction						1Q - 4Q	1Q - 4Q	1Q - 4Q
Soldier Hit Avoidance Development						1Q - 4Q	1Q - 4Q	1Q - 4Q

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604710A - Night Vision Systems - Eng Dev**	**L70**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
L70	NIGHT VISION DEV ED	12663	16908	12433	9041	12816	12207	9000	14700	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) systems 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 and RSTA capabilities required for evolving Current Force, Modular Force, and Future Force systems. Efforts will continue to refine a standard architecture among sensors with the Sensor Link Protocol (evolving to a joint message set called Sensor Data Link) to allow these sensors to communicate in a plug and play manner for improved force level sensor data fusion, aided target recognition and target hand-off.

This project will also demonstrate the producibility of interchangeable uncooled thermal focal plane arrays, and develop an uncooled infrared imaging B-Kit sensor 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, use less power, and are less expensive. Uncooled B-Kits can be used for a variety of Current Force, Modular Force, Future Combat System (FCS), and Future 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 transitions 3rd Gen Forward Looking Infrared (3rd Gen FLIR) technology from the 3rd Gen Infrared Advanced Technology Objective (ATO), developing a 3rd Gen FLIR engine for use in Current Force and Future Force systems. 3rd Gen FLIR provides a dual band, large format Infrared (IR) detector and image processor which enables high performance target detection algorithms and target identification at detection ranges.

This project continues Unattended Ground Sensors (UGS) hardware development, demonstration and test for a family of UGS systems for Intelligence, Surveillance and Reconnaissance (ISR). This will provide FCS and the Army a remotely employable Unattended Ground Sensor capability for ISR and physical security.

This project further developed the Persistent Surveillance and Dissemination System-of-Systems (PSDS2), a system-of-systems which linked numerous sensors (currently in theater) together, providing theater commanders with a single coordinated picture of the battlefield and the capability to quickly disseminate this "actionable information" to responders.

This project develops, integrates, and tests an upgrade to the long Range Advanced Scout Surveillance System (LRAS3) system, making it capable of digitizing, compressing and transmitting target information and imagery across the battlefield Network using Standard Army Radios. This enables the Current Force and Modular Force with the ability to cross-cue sensors that are linked to the network as well as share/exploit imagery and data from networked sensors on the battlefield.

This project develops the Driver's Vision Device (DVD) - leveraging Commercial Off-The-Shelf (COTS) available hardware to demonstrate and qualify a "Low Cost, lower Performance" configuration of the Driver's Vision Enhancer (DVE).

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FY 2008 funding supports continuation of efforts for: Third Generation FLIR, Unattended Ground Sensor and Unmanned Air Vehicle (UAV) Electro-Optical/Infrared/Laser Designator (EO/IR/LD) Payloads developments; spirals in RSTA technologies from FCS into the Current Force; continues evolution of Sensor Link Protocol, and completes the LRAS3 Pre-Planned Product Improvement (P3I) effort.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Continue Sensor Link Protocol (SLP) as part of the DoD Joint Variable Message Format (JVMF) 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 Future Force and FCS. FY06 established control link for EO/IR and service based architecture for Sensor Data Link (SDL) interface to Distributed Common Ground Station - Army (DCGS-A). FY07 plan is to extend control to additional sensors and make available through DCGS-A.	434	478	787	787
Uncooled B-Kit (UBK)- Continues development of the uncooled thermal B-Kit for platform sensors, navigation systems and target acquisition devices. Funds the Risk Reduction Demonstration (RRD) for B-Kit development on the first UBK configuration. FY06 accepted delivery of two units for qualification and verification assessment. FY07 will accept delivery of four additional units to complete the RRD phase and qualify the UBK.	2085	913		
Unattended Ground Sensors (UGS) - Develop ISR, Chemical, Biological, Radiological, Nuclear (CBRN) and Urban UGS for FCS and other Army customers. Funds continue spiral integration efforts to include sensor systems remote employment capabilities. Demonstrate viability and technical feasibility of remotely employing a networked Unattended Ground Sensors (UGS) system from a UAV delivery platform. Supported successful Preliminary Design Review (PDR). Current focus is in support of the FCS Spin-Out 1. For FY07, support program Critical Design Review (CDR), test events and deliver initial UGS systems.	1294	825	866	910
Third Generation FLIR (3rd Gen FLIR) System Development and Demonstration (SDD) of 3rd Gen FLIR. FY07 initiates development and qualification of a 3rd Gen FLIR engine (or "B-Kit") for use in current and Future Force high performance RSTA systems for: the Long Range Advanced Scout Surveillance System (LRAS3), the Stryker Mast Mounted Sensor, the Armed Reconnaissance Helicopter (ARH), the FCS Medium and Long Range Sensors, and other RSTA applications.		4309	6110	6794
Development of payloads for the Army's UAV in accordance with TRADOC priorities and in support of FCS. This effort provides an EO/IR payload with an integrated laser designator for use in FCS Class III and IV UAVs. This effort is a joint program with PM Close Combat Support (CCS), expanding the capability of the Airborne Surveillance Target Acquisition and Minefield Detection System (ASTAMIDS) by adding the designator. Successfully completed PDR in FY06. FY07 plan to accept seven (7) prototype units.	908	1750	1250	550
Persistent Surveillance and Dissemination System-of-Systems (PSDS2) is operational in OIF. Efforts entailed integrating improvements: developed interoperability with DCGS and CRAM programs; improved architecture; improved dissemination of video and imagery; acquired Central Technical Support Facility (CTSF) validation; made multiple types of UAV data available to the warfighter; ensured Army Battlefield Command System (ABCS) 6.4 compliance; and, integrated Rapid Aerostat Initial Deployment (RAID) system high definition cameras. Efforts completed in FY06.	4603			
LRAS3 Netted Sensor - Development, integration, and testing of hardware and software that supports digital compression, transmission and display of imagery and data to/from the battlefield network. This provides the Current Force and Modular Force with the ability to	2889	7744	3420	

cross-cue sensors that are linked to the network as well as share/exploit imagery and data from networked sensors on the battlefield. FY06 awarded phase 1 developmental contract for initial prototyping (8 units). FY07/08 phase 2 full scale development and implementation of hardware and software, 8 units, for P3I to LRAS3.				
Driver's Vision Device (DVD) - The effort leverages Commercial Off-The-Shelf (COTS) available hardware to demonstrate a "Low Cost, lower Performance" configuration of the Driver's Vision Enhancer (DVE). FY06 conducted market surveys and requests for information and evaluated state of industry. Operational requirements were formulated and used to characterize COTS capabilities. FY07 effort will document DVD required capability.	450	434		
Small Business Innovative Research / Small Business Technology Transfer Program		455		
Total	12663	16908	12433	9041

B. Other Program Funding Summary	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
Night Vision DVE K31300 OPA2	27080	42868	3000						Continuing	Continuing
Future Combat System, G86100 WTCV			7948	155838	149367	683788	2194625	5795292	Continuing	Continuing
Advanced TUAV Payloads B00302 OPA2		33328	57915	67535	68617	59635	46244	38585	Continuing	Continuing

Comment:

C. Acquisition Strategy The development programs in this project are currently based on competitive awards and under cost reimbursement type contracts.

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
DVE Development	C/CPIF	Various	21831										21831	
Modular HTI Multifunction Laser Activities	C/CP	Insight Technologies, Londonderry, NH & DRS Technologies, Torrence, CA	3868										3868	
LLDR RAPT	C/CP	Various	4253										4253	
Light Forward Observer Optics	C/CP	Various	1258										1258	
Thermal Upgrades for DVE (Dual wavelength) and competition	C/CP	Kaiser Electric San Diego, CA, Various	3608										3608	
LLDR Advanced Demonstration System	C/CP	Litton Laser, Apopka, FL	2556										2556	
Sensor Architecture/Digital RSTA/SLP	C/CPIF & C/CP	Various	11188	434	2Q	340	1Q	340	1-2Q	340	1-2Q	Cont.	Cont.	
Various Prototypes and Studies	C/CPIF	Various	2947										2947	
Thermal Upgrades for TWS (target location)	C/CP	Raytheon, El Segundo, CA, Various	5811										5811	
HTI Laser Trade Studies	C/CP	Various	1020										1020	
Enhanced NVG Analysis & Design (TX to DL67)	C/CP	Various	4782										4782	
HTI Laser MFS3 design and prototype activities	C/CPIF	Raytheon, Dallas,TX	565										565	
MANTECH Focal Plane Array and optics	C/CP	Raytheon, Dallas, TX	1500										1500	
Digital MELIOS Design & Fabrication	C/FP	Litton Lasers, Inc.	1000										1000	
AN/TMQ-41 Trade Studies and related activities	C/CP	Various	1232										1232	
Image Fusion for DVE	C/CP	Raytheon, Dallas, TX	1274										1274	
Digital RSTA SDD	C/CP	Booz-Allen Hamilton,	2190										2190	

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PROJECT
L70

		Tysons Corner, VA												
CIRISS Efforts	C/CP	Various	1500										1500	
LLDR Vehicle applications	C/CP	Litton Laser, Apopka, FL Various	3487										3487	
FLIR develop/integrate	Various	Various	1731										1731	
Uncooled B-Kit	Various	Various	6744	1674	2Q	419	1Q					Cont.	Cont.	
EO/IR/LD UAV Payloads	C/CP	Lockheed Martin	1783	712	2Q	1505	1Q	1000	1Q	500	1Q	Cont.	Cont.	
LLDR EMD	C/CP	Litton Lasers, Apopka, FL	19873										19873	
GMTI Radar	C/FP & CP	General Atomics	2792										2792	
UGS	CP/FFP	Various	708										708	
FCS UGS / UGS	C/CP	FCS Boeing/Textron/Various /TBD	3707	690	2Q	702	2Q	766	2Q	810	2Q	Cont.	Cont.	
PSDS2 Efforts	C/CPFF	Various	8070	3681	2Q								11751	
LRAS 3	SS/CP	Network Centrics, McKinney Texas		2271	3Q	6444	2-3Q	3325	2Q				12040	
DVD (DVE Light)	C/CP	CACI		238	3Q	334	3Q					Cont.	572	
3rd Gen FLIR	C/CPFF	Various				3112	3Q	4423	1Q	5150	1Q	Cont.	Cont.	
SBIR/STTR						455							455	
Subtotal:			121278	9700		13311		9854		6800		Cont.	Cont.	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	Various	15348	1803	1-2Q	2753	1-2Q	1814	1-2Q	1812	1-2Q	Cont.	Cont.	
Matrix Support	MIPR	NVESD	720										720	
Matrix Support	MIPR	TRADOC	400										400	
Matrix Support	MIPR	Various	231										231	
Subtotal:			16699	1803		2753		1814		1812		Cont.	Cont.	

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BUDGET ACTIVITY
5 - System Development and Demonstration

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III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
DT/IOT&E*	MIPR	ATEC	8769										8769	
Other Test Support*	MIPR	Various	5211	735	3Q	405	2Q	325	3Q			Cont.	6676	
Subtotal:			13980	735		405		325				Cont.	15445	

Remarks: * Includes PSDS2, UGS, STTW, 3GF and other sensor test and evaluation activities.
Includes PSDS2 and FCS UGS test and evaluation.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Project Management	In house support	PM, NV/RSTA, Fort Belvoir, VA & Ft. Monmouth, NJ	5495	425	1-4Q	439	1-4Q	440	1-4Q	429	1-4Q	Cont.	Cont.	
Subtotal:			5495	425		439		440		429		Cont.	Cont.	
Project Total Cost:			**157452**	**12663**		**16908**		**12433**		**9041**		**Cont.**	**Cont.**	

Schedule Profile (R4 Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

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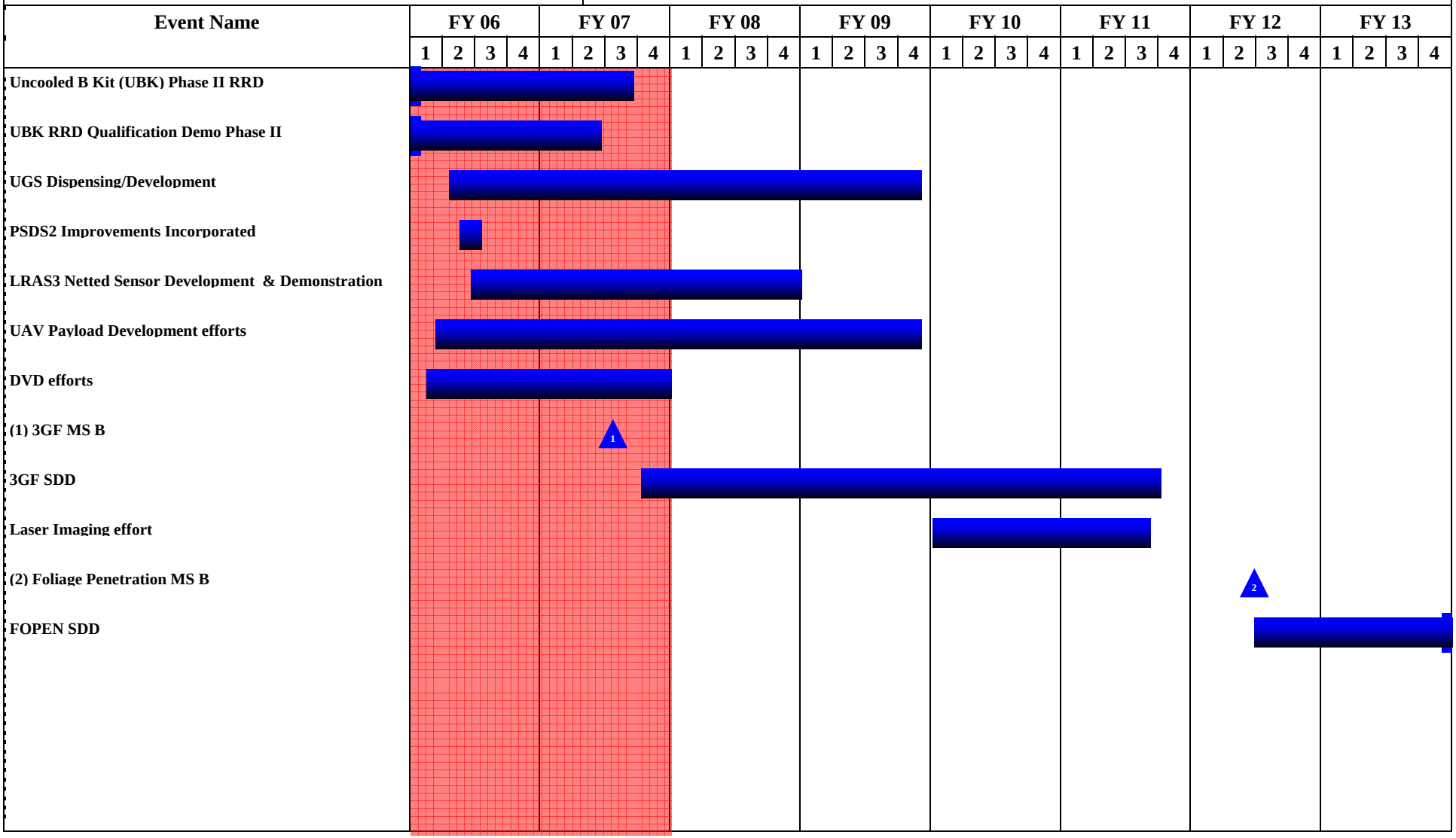

Schedule Detail (R4a Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

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Schedule Detail	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Uncooled B Kit (UBK) Phase II RRD	1Q - 4Q	1Q - 3Q						
UBK RRD Qualification Demo Phase II	1Q - 4Q	1Q - 2Q						
UGS Dispensing/Development	2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
PSDS2 Improvements Incorporated	3Q - 2Q							
LRAS3 Netted Sensor Development & Demonstration	2Q - 4Q	1Q - 4Q	1Q - 4Q					
UAV Payload Development efforts	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
DVD efforts	1Q - 4Q	1Q - 4Q						
3GF MS B		3Q						
3GF SDD		4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 3Q		
Laser Imaging effort					1Q - 4Q	1Q - 3Q		
Foliage Penetration MS B							2Q	
FOPEN SDD							2Q - 4Q	1Q - 4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604710A - Night Vision Systems - Eng Dev**	**L76**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
L76	Dismounted Fire Support Laser Targeting Systems		4598	18884	8265						31747

A. Mission Description and Budget Item Justification: This project develops technologies for insertion into Laser Target Locators and Laser Designators to improve overall performance of those systems and reduce weight. Technologies developed under this project will benefit the Lightweight Laser Designator Rangefinder (LLDR, AN/PED-1), the Mark VII-E Laser Target Locator, and future programs based on emerging Army requirements. Advanced, cooled, InSb, infrared imaging focal plane arrays are now available in 1000 x 1000 pixel (mega-pixel) resolution which, when applied to LLDR, will provide much greater range performance in a package of similar size. With an associated optical redesign, greater LLDR imaging performance can be achieved with an overall reduction in weight. This project will also integrate the next generation uncooled, 17 micron pixel-pitch FLIRs being developed for the Thermal Weapon Sight program into the Mark VII-E, improving its imaging performance with no impact on its weight. New laser designator technology has been developed which will reduce laser designator weight by close to 50% and cut battery usage by a factor of 10. Further reductions can be gained by reducing laser designator output energy levels below currently accepted standards, which initial modeling and testing indicate will not compromise performance of laser guided munitions. A primary focus of this project will be to peform sufficient live-fire and captive-carry range tests over a wide variety of environmental conditions with all current and future laser guided munitions to build the necessary confidence that reduced designator energy levels will not adversely impact the mission. In addition, this line will support improved accuracy (reduced target location error) in support of coordinate seeking weapons, such as JDAM and Excalibur.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Initiate analysis of alternatives for laser targeting systems.		1340	340	340
Initiate design and development of cooled, mega-pixel Foward Looking Infra-Red (FLIR) and optics for FLIR.		410	4572	
Initiate MARK VII-E Advanced uncooled FLIR integration.			2818	4002
Initiate Ultra-lightweight Laser Designator development and testing.		2718	1500	
Initiate fabrication of 11 prototypes.			9654	3923
Small Business Innovative Research / Small Business Technology Transfer Program		130		
Total		4598	18884	8265

B. Other Program Funding Summary	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
Lightweight Laser Desingator Rangefinder (LLDR) (K31100) OPA2	106728	49959	93986	77414	80130	62086	63452	64848	Continuing	Continuing
Laser Target Locating System (LTLS) (B53800) OPA2	174346	3801							Continuing	Continuing

Comment:

C. Acquisition Strategy Development efforts targeted for LLDR and Mark VII-E are planned to be sole-source, cost plus fixed fee contracts with the prime vendors. Other efforts in this project will be perfomred through omnibus contracts.

ARMY RDT&E COST ANALYSIS (R3)

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5 - System Development and Demonstration

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Analysis and Technical Evaluation	MIPR	Navy, Johns Hopkins University, MD				976	2-3Q	340	2Q	340	2Q		1656	
LLDR Mega-pixel FLIR	SS/CPFF	Northrop Grumman, Apopka, FL				410	2-3Q	4115	2Q				4525	
MARK VII-E Advanced Uncooling FLIR	MIPR	Night Vision Electro Sensor Directorate (NVESD), Ft. Belvoir, VA						2671	2Q	2911	2Q		5582	
Ultra Lightweight Designator	MIPR	Night Vision Electro Sensor Directorate, Ft. Belvoir VA				1941	2-3Q	1364	2Q				3305	
Target Location Accuracy Improvements	TBD	TBD					2Q	7470	2Q	2863	2Q	Cont.	Cont.	
SBIR/STTR						130							130	
Subtotal:						3457		15960		6114		Cont.	Cont.	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	NVESD, CECOM, Other				238	2-3Q	245	1-4Q	245	1-4Q		728	
Subtotal:						238		245		245			728	

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract

ARMY RDT&E COST ANALYSIS (R3)

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BUDGET ACTIVITY
5 - System Development and Demonstration

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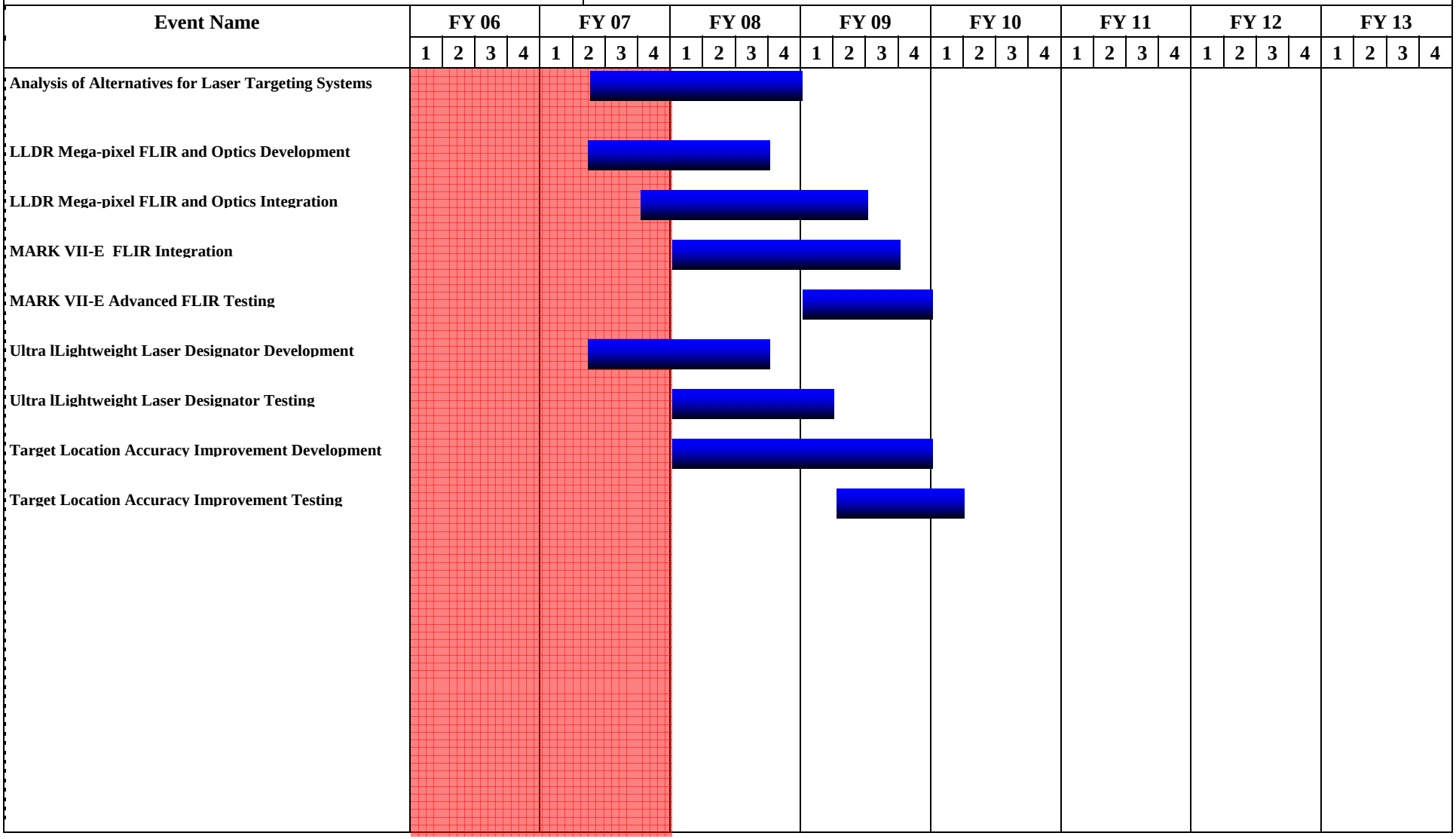
Government Test Support Activity	MIPR	Various				777	2-4Q	2550	1-4Q	1773	1-4Q		5100	
Subtotal:						777		2550		1773			5100	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Project Management	In House	PM Soldier Sensors and Lasers, Ft. Belvoir, VA				126	2-4Q	129	1-4Q	133	1-4Q		388	
Subtotal:						126		129		133			388	
Project Total Cost:						**4598**		**18884**		**8265**		**Cont.**	**Cont.**	

Schedule Profile (R4 Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604710A - Night Vision Systems - Eng Dev**	**L76**



Schedule Detail (R4a Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

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

PROJECT
L76

Schedule Detail	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Analysis of Alternatives for Laser Targeting Systems		2Q - 4Q	1Q - 4Q					
LLDR Mega-pixel FLIR and Optics Development		2Q - 4Q	1Q - 3Q					
LLDR Mega-pixel FLIR and Optics Integration		4Q	1Q - 4Q	1Q - 2Q				
MARK VII-E FLIR Integration			1Q - 4Q	1Q - 3Q				
MARK VII-E Advanced FLIR Testing				1Q - 4Q				
Ultra lLightweight Laser Designator Development		2Q - 4Q	1Q - 3Q					
Ultra lLightweight Laser Designator Testing			1Q - 4Q	1Q				
Target Location Accuracy Improvement Development			1Q - 4Q	1Q - 4Q				
Target Location Accuracy Improvement Testing				2Q - 4Q	1Q			