

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development
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COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	33338	21167	30644	31270	32577	23440	18348	130844	Continuing	Continuing
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	3555	0	11937	12023	13782	6691	0	113000	Continuing	Continuing
DL70 Night Vision Devices Engineering Development	11430	11256	13478	14418	16432	16749	18348	17844	Continuing	Continuing
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	18353	9911	0	0	0	0	0	0	0	35386
DL75 Profiler	0	0	5229	4829	2363	0	0	0	5700	18121

A. Mission Description and Budget Item Justification: This program element provides night vision technologies required for U.S. defense forces to engage enemy forces twenty-four hours a day under conditions with degraded visibility due to darkness, adverse weather and battlefield obscurants. 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 DL69 is focused on inserting key Horizontal Technology Integration Second Generation FLIR (HTI SGF) thermal sensor technology into common battle groups. Project DL70 focuses on night vision electro-optical, laser, and other target identification and location equipment for use by individual soldiers and a variety of platforms. In addition to the Lightweight Laser Designator Rangefinder (a Warfighter Rapid Acquisition Program) this project includes HTI laser evaluation and assessment, and integrates individual sensors into a common architecture. It also funds development and qualification of critical upgrades for Thermal Weapons Sight and Drivers Vision Enhancer production programs, and funds activities associated with image and sensor fusion capabilities. Project DL74 focuses on a long range multi-sensor system utilizing HTI SGF thermal sensor and other technologies, for use by US Army scouts at extended ranges beyond the Abrams and Bradley capabilities. The LRAS3 will provide the scouts with their first reconnaissance and surveillance system with a twenty-four hour, all weather capability which is mounted or man-portable. Project DL75 focuses on development of the Profiler upgrade to the AN/TQM-41 Meteorological Measuring Set by integrating radar and microwave satellite technology to provide “on demand” surface, trajectory, and target area weather conditions. This will increase the accuracy of deep fire weapons.

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B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999 PB</u>)	35052	21311	19022	18992
Appropriated Value	36256	21311		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1204	-144		
b. SBIR / STTR	-861			
c. Omnibus or Other Above Threshold Reductions	-193			
d. Below Threshold Reprogramming	-660			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			11622	12278
Current Budget Submit (<u>FY 2000 / 2001 PB</u>)	33338	21167	30644	31270

Change Summary Explanation: Funding - FY 2000/2001 increases due to initiation of aviation FLIR and Profiler development.

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development				PROJECT DL69			
COST (In Thousands)		FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)		3555	0	11937	12023	13782	6691	0	113000	Continuing	Continuing
<p>A. <u>Mission Description and Justification-</u> Horizontal Technology Integration Second Generation FLIR (HTI SGF) will enable the Army to insert key thermal sensor technology into the highest priority forces [the M2A3/M3A3 Bradley Fighting Vehicle System (BFVS), the Long Range Advanced Scout Surveillance System (LRAS3), the M1A2 System Enhancement Package (SEP) Abrams, and the AH-64 Apache Helicopter.]. The HTI SGF will allow all vehicles in a common battle group to see the same thermal image. The HTI SGF development is in two parts, an "A" kit, which is specific to the vehicle, and includes integration and installation, and a "B" kit, which includes the common FLIR sensor and display. Funds in this project will develop the "B" kit for all weapon systems employing the HTI SGF.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 408 Supported M1A2 System Enhancement Package (SEP) Vehicle Testing • 682 Supported M2A3/M3A3 Vehicle Testing. • 531 Fabricated SGF "B" Kits for LRAS3 test units. • 1934 Finalized Ground SGF "B" Kit Interface Control Document/final specifications and conducted verification tests. <p>Total 3555</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 960 Milestone I/II Approval for HTI Aviation Second Generation FLIR (SGF) • 10977 Initiate design and development of Aviation SGF <p>Total 11937</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 5042 Continue development of Aviation SGF • 6981 Initiate prototype manufacturing <p>Total 12023</p>											
Project DL69				Page 3 of 17 Pages				Exhibit R-2A (PE 0604710A)			

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL69
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B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
6.4 RDTE 0604710A, "A" Kit LRAS3 (DL74)	18353	9911	0	0	0	0	0	0	0	35386
6.7 RDTE 0203735A, "A" Kit Abrams (D330)	20444	0	0	0	0	0	0	0	0	58597
6.7 RDTE 0203735A, "A" Kit Bradley (D371)	70264	65479	1257	0	0	0	9508	9761	Continue	Continue
OPA2 K38300 LRAS3 "A" & "B" Kit	0	0	43223	47988	45584	50336	51741	53910	Continue	Continue
WTCV G80717 M2A3/M3A3 Bradley "A" Kit	96651	229640	286316	331521	345581	307491	352306	349581	Continue	Continue
WTCV G80717 M2A3/M3A3 Bradley "B" Kit	16072	39850	46917	68476	72109	57426	54680	57314	Continue	Continue
WTCV GA0750 Abrams Upgrade "A" and "B" Kit	84300	92168	65485	54736	52732	34034	7761	0	0	391216
WTCV GA0700 M1A2 SEP "A" & "B" Kit	0	0	0	16813	29233	41054	60229	69216	Continue	Continue
ACFT AA6607 Longbow Apache Mods	0	0	0	0	0	0	65603	86082	Continue	Continue

The 0203735A program element funds the development of the "A" Kit portion of the HTI SGF for the M1A2 SEP Abrams Tank and Bradley Fighting Vehicle System. WTCV funds the production tails for the Bradley and Abrams platforms. ACFT funds the production tail for the Apache FLIR upgrade program.

C. Acquisition Strategy: The common Second Generation FLIR "B" Kit is being developed and fabricated using a competitively awarded cost plus award fee contract.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Initiate M2A3 and M3A3 Vehicle Tests	1Q							
Initiate M1A2 SEP Vehicle Test	3Q							
Award LRAS3 HTI "B" Kit	1Q							
Accept LRAS3 HTI "B" Kit	4Q							
IOT&E *		3Q-4Q						
M/S III **		4Q						
Milestone I/II for Aviation HTI SGF EMD Pgm			2Q					
Conduct EMD Program for Aviation HTI SGF			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
IOT&E for Aviation HTI SGF EMD Program						3Q-4Q		
Milestone III for Aviation HTI SGF						4Q		

* All operational tests are funded by the host platforms.
 ** The HTI SGF program is currently in LRIP and is procurement funded through M/S III.

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ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development					PROJECT DL69		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Producibility Contracts	Various	Various	3876							0	3876	3876
b. EMD Contract	C/CPAF	Texas Instruments, McKinney, TX	62100							0	62100	62100
c. SADA II	C/FP	SBRC, Santa Barbara, CA	2116							0	2116	2116
d. T&M	SS/T&M	Hughes, El Segundo, CA	3556							0	3556	3556
e. LRAS3 "B" Kits	C/CPAF	Texas Instruments, McKinney, TX Hughes, El Segundo, CA	477							0	477	477
f. Trade Studies (3)	C/CP	Various	900							0	900	900
g. Aviation EMD Contract	C/CPAF	To Be Selected				10977	2Q	11056	1Q	Continue	Continue	Continue
Subtotal Product Development:			73025			10977		11056		Continue	Continue	Continue
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ASARC Support	MIPR	CECOM NVESD, Ft. Belvoir, VA	250							0	250	
b. Matrix Support	MIPR	CECOM NVESD	7958			672	1Q	677	1Q	Continue	Continue	
Subtotal Support Costs:			8208			672		677		Continue	Continue	

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL69
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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/OT	Various	To Be Selected										
Subtotal Test and Evaluation:												

Remark: For the HTI SGF ground platforms, technical and qualification tests performed by the contractor and all Operational Tests were funded by the Host Platforms. Testing costs for the SGF Aviation program will commence in FY03 and are expected to be funded by OPTEC and host platform(s).

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM-NV/RSTA, Fort Belvoir, VA	1790			288	1Q	290	1Q	Continue	Continue	
Subtotal Management Services:			1790			288		290		Continue	Continue	

Project Total Cost:			83023			11937		12023		Continue	Continue	
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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development				PROJECT DL70		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL70 Night Vision Devices Engineering Development	11430	11256	13478	14418	16432	16749	18348	17844	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Night Vision Devices Engineering Development: 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. The Lightweight Laser Designator Rangefinder (LLDR) was approved as a Warfighting Rapid Acquisition Program (WRAP) initiative and entered a thirty month Engineering and Manufacturing Development Phase in FY 1997. LLDR is a day/night manportable modular target location and laser designator system. The target location system combines a state-of-the-art “See Spot” Forward Looking Infrared (FLIR), eyesafe laser rangefinder, compass and vertical angle measurement, and global positioning system (GPS) and required processing capability to export target location data through a digital interface. The modular laser designator will be able to target enemy assets for laser-guided ground and air-launched munitions. LLDR will provide the artillery light forces with the capability to detect, recognize, identify, determine location and either digitally pass this information on to coordinate indirect fire or designate the target for precision destruction by smart munitions. Improvements to the Thermal Weapon Sight (TWS) and the Driver’s Vision Enhancer (DVE) are developed under this project. TWS improvements are focused on the integration of target location and digital data transfer capabilities. DVE improvements focus on achieving a dual wavelength capability, leading to image fusion. Both TWS and DVE will benefit from MANTECH improvements to focal plane array and optics. The architecture for interoperability of sensors [Mini Eye-Safe Laser Infrared Observation Set (MELIOS), LLDR, Lightweight Video Reconnaissance System (LVRS), TWS, DVE, Long Range Advanced Scout Surveillance System (LRAS3), Synthetic Aperture Radar (SAR), Infrared Line Scanner (IRLS), Forward Looking Infrared (FLIR), visible imagers, hyperspectral cameras and Moving Target Indicator (MTI) radars] on the digital battlefield will be developed through an integrated sensor suite program. This will facilitate the merging of existing sensor data for digital distribution within the Joint Technical Architecture-Army. Sensor data distribution activities include the development and promulgation of a common device architecture, and a computer-based system which will test the flow of data from the sensor, through a variety of computing devices and then out over the communications network. The dual wavelength target acquisition capabilities will be developed, evaluated and inserted incrementally into ongoing production efforts. Efforts include Image Intensified photo cathode development in support of an eye-safe laser system, and evaluation of the suitability and technology supporting a common, HTI, laser system which could be used in a variety of ground and air platforms. Manufacturing technology activities in optics and focal plane arrays are also being supported. Targeting aid development will upgrade the AN/TQM-41 Meteorological Measuring Set by integrating radar and microwave satellite technology to provide “on demand” trajectory and target area weather conditions. This will increase the ability of artillery/rocket forces to project accurately lethal munitions further into the battlespace.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 3644 Continued development and integration of ten LLDR EMD models. • 1959 Conducted integration, test and evaluation of the sensor architecture to include data dissemination for multiple applications (USMC Target Location, Designation and Hand-off System (TLDHS), Bradley Fire Support Team (BFIST) and STRIKER). 										
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	
<ul style="list-style-type: none"> 756 Developed and integrated HTI tactical laser, including laser illumination, into multispectral target acquisition capabilities. 		
FY 1998 Accomplishments: (continued)		
<ul style="list-style-type: none"> 965 Conducted Trade Studies to determine alternatives for the upgrade of the AN/TQM-41 (Meteorological Measuring Set). 1303 Conducted thermal systems upgrade activities. 2803 Procurement and integration of LLDR WRAP systems on to HMMWV Striker platforms (TRADOC managed). <p>Total 11430</p>		
FY 1999 Planned Program:		
<ul style="list-style-type: none"> 3547 Complete development of ten EMD models for test/evaluation and conduct technical tests and user operational evaluation. 2217 Conduct integration and technical tests of the sensor architecture on various platforms [USMC TLDHS, BFIST, STRIKER, Future Battlefield Command and Brigade and Below (FBCB2)] including Ft. Bragg demonstration. 2487 Continue development and integration of prototype HTI tactical laser onto Army platforms with focus on performance specifications and interface requirements supporting modular laser design. 1969 Conduct preliminary hardware evaluation and demonstration of Thermal Upgrade activities (TWS Target Location, DVE Dual Wavelength and MANTECH improvements covering both systems). 750 Conduct evaluation of upgrade alternatives for the AN/TQM-41 (MMS) to include program/technical requirements definition. 286 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 11256</p>		
FY 2000 Planned Program:		
<ul style="list-style-type: none"> 1336 Complete LLDR EMD activities, reports and equipment refurbishment for transition of the program into production. 5568 Fabricate prototypes and evaluate Thermal Upgrade activities (TWS Target Location, DVE Dual Wavelength and MANTECH improvements covering both systems). 3700 Continue integration and technical tests of the sensor architecture for a variety of platforms, including efforts leading to participation in the Light Forces Army Warfighting Experiment (AWE). 2874 Conduct modeling and simulation efforts in support of modular laser design; Initiate dismantled application for the HTI tactical laser (i.e. reduced cost, size, weight and power consumption). <p>Total 13478</p>		
FY 2001 Planned Program:		
<ul style="list-style-type: none"> 2639 Continue Thermal Upgrade activities (prototype test and evaluation, eight items) to enhance combat effectiveness of TWS and DVE. 3595 Continue integration and technical tests of the sensor architecture, including implementing results from the Light Forces AWE. 		
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL70
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- 3471 Continue dismounted HTI laser activity to reduce cost, size, weight and power consumption.
- FY 2001 Planned Program: (continued)**
- 4713 Initiate Image Fusion of Image Intensification and Thermal technologies to enhance the effectiveness of combat and combat served platforms.
- Total 14418

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
Night Vision AN/PVS-7 Aid K36400 OPA2	37351	37532	19017	26953	27977	27172	32096	42708	Continue	Continue
Infrared Aiming Light K35000	16398	5984	1960						0	24342
Lightweight Video Recon Sys K30800 OPA2	4757	8341	3436	1207	1345	1385	1364	2747	Continue	Continue
Night Vision TWS K22900 OPA2	40774	36110	35901	35603	35332	37154	36889	49233	Continue	Continue
Night Vision DVE K31300 OPA2	0	0	0	1957	1953	1951	24847	29010	Continue	Continue
Night Vision LLDR K31100 OPA2	0	0	6262	7145	7099	7280	9940	15402	Continue	Continue

A. Acquisition Strategy: The development programs in this project are currently all based on competitive awards and under cost reimbursement type contract. A dual source/approach will be pursued for the DVE image fusion effort scheduled for FY 2001.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete HTI Laser Trade Studies	1Q							
HTI laser prototype design, modeling and simulation	4Q	1Q-4Q	1Q-3Q					
Develop Prototype Multifunction Tactical HTI Laser for Dismounted Application			2Q-4Q	1Q-4Q				
HTI Laser Demo on Dismounted Platform				4Q	1Q			
HTI Laser Milestone I/II					2Q			
HTI Laser EMD Program for Dismounted Platform					2Q-4Q	1Q-4Q		
HTI Laser Development Test/Operational Test						4Q	1Q	
HTI Laser Milestone III							2Q	
LLDR Vehicle Integration effort conducted	2Q-4Q	1Q-4Q						
LLDR Technical Test		2Q						

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development			PROJECT DL70	
D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
LLDR User Operational Tests		3Q-4Q						
LLDR Milestone III			2Q					
Sensor Architecture Interoperability Implementation on individual platform	2Q							
Sensor Architecture Interoperability Integration between multiple platforms	3Q-4Q							
Sensor Architecture platform demonstration and evaluation		2Q-4Q	1Q-3Q					
Sensor Architecture Validation/Test (LLDR)		3Q						
Sensor Architecture demonstration for Light Forces AWE			4Q					
Sensor Architecture integration based on AWE results				1Q-4Q				
AN/TQM-41 Upgrade Trade Studies	2Q-3Q							
AN/TQM-41 Upgrade Alternatives Evaluation and Requirements Definition		2Q-4Q						
Thermal Upgrade MANTECH for Focal Plane Array and optics		1Q-4Q	1Q-3Q					
Thermal Upgrade target location capability demonstration and evaluation for TWS		2Q-4Q	1Q-4Q	1Q				
Thermal Upgrade dual wavelength capability demonstration and evaluation for DVE		3Q-4Q	1Q-4Q	1Q				
Image Fusion Activities for DVE				1Q-4Q	1Q-4Q			
Image Fusion Activities for soldier carried systems					1Q-4Q	1Q-4Q		
Sensor Fusion Activities for Driving and Soldier carried systems						1Q-4Q	1Q-4Q	1Q-4Q

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ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL70
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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DVE Development	C/CPIF	Various	19845	0		0		0		0	19845	19845
b. Various Prototypes and Studies	C/CPIF	Various	2947	0		0		0		0	2947	2947
c. LLDR Engineering Development	C/CP	Litton Laser, Apopka, FL	2556	0		0		0		0	2556	2556
d. LLDR WRAP	C/CP	Various	4253	0		0		0		0	4253	4253
e. LLDR EMD	C/CP	Litton Lasers, Apopka FL	10600	2787	1Q	880	1Q	0		0	14267	14030
f. Sensor Architecture and integration	C/CPIF & C/CP	Various	5492	1927	1Q-2Q	3395	1Q	2948	1Q	Continue	13762	Continue
g. HTI Laser Trade Studies (3)	C/CP	Various	1020	0		0		0		0	1020	1020
h. HTI Laser MFS3 design and prototype activities	C/CPIF	Raytheon, Dallas,TX	270	1650	1Q	0		0		0	1920	1920
i. Eyesafe Laser Upgrade	C/CP	To Be Selected	0	0		2647	2Q	3056	1Q	Continue	5703	Continue
j. AN/TQM-41 Trade Studies and related activities	C/CP	Various	600	750	1Q-2Q	0		0		0	1350	1350
k. MANTECH Focal Plane Array and optics	C/CP	To Be Selected	0	1000	1Q	500	1Q			0	1500	1500
l. Thermal Upgrades for TWS (target location)	OT	To Be Selected	0	570	2Q	2575	1Q	1312	1Q	0	4457	4457
m. Thermal Upgrades for DVE (Dual wavelength)	OT	To Be Selected		300	3Q	1780	1Q	850	1Q	0	2930	2930
n. Image Fusion for DVE	OT	To Be Selected	0	0		0		2500	2Q	Continue	2500	Continue
o. Image Fusion for DVE	OT	To Be Selected	0	0		0		2150	2Q	Continue	2150	Continue
p. SBIR/STTR	Various	To Be Selected		286	2Q						286	286
Subtotal Product Development:			47583	9270		11777		12816			81446	Continue

Remark: "OT" refers to National Defense Authorization Act, Section 845 Other Transaction Authority

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ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development					PROJECT DL70		
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	Various	9718	581	1Q	753	1Q	786	1Q	Continue	11838	
Subtotal Support Costs:			9718	581		753		786			11838	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/IOT&E	MIPR	OPTEC	6048	783	2Q	365	2Q	247	2Q	Continue	7443	
b. Other Test Support	MIPR	Various	2636	297	2Q	245	2Q	187	2Q	Continue	3365	
Subtotal Test and Evaluation:			8684	1080		610		434			10808	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Mgmt			3180	325	1Q	338	1Q	382	1Q	Continue	4225	
Subtotal Management Services:			3180	325		338		382			4225	
Project Total Cost:			69165	11256		13478		14418			108317	

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development				PROJECT DL74		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	18353	9911	0	0	0	0	0	0	0	35386
<p>A. <u>Mission Description and Justification</u> Project DL74 - Long Range Advanced Scout Surveillance System (LRAS3): This project will develop the Long Range Advanced Scout Surveillance System (LRAS3), a long range multi-sensor system for US Army scouts which will provide the capability to detect, recognize, identify, range and determine the location of potential targets. Currently, US Army scouts do not have the necessary equipment to perform these functions “around the clock.” LRAS3 will utilize the Horizontal Technology Integration Second Generation FLIR (HTI SGF) thermal sensor and will enable scouts to function “around the clock” in adverse weather and penetrate battlefield obscurants.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 17445 Continued EMD contract Development, Fabrication (seven systems), integration and test of LRAS3. • 908 Initiated development of enhanced Built In Test (BIT) development <p>Total 18353</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 6972 Complete EMD contract and Fabrication (six systems), integration and test of LRAS3. • 754 Conduct and complete Developmental Tests. • 957 Conduct and complete Operational Test. • 969 Completion of enhanced Built In Test (BIT) development. • 259 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 9911</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p>										
Project DL74			Page 13 of 17 Pages				Exhibit R-2A (PE 0604710A)			

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL74
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B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
0603774A D131 Budget Activity 4	2152	2664	3188	4036	4790	4773	5424	5395	Continue	Continue
6.4 RDTE 0604710A, B Kit (DL69)	3555	0	11937	12023	13782	6691	0	113000	Continue	Continue
LRAS-3 K38300 OPA2	0	0	43223	47988	45584	50336	51741	53910	Continue	Continue

C. Acquisition Strategy: This project was awarded via competitive acquisition utilizing oral presentations and Cost as An Independent Variable (CAIV) for the Engineering and Manufacturing Development contract. The current objective for the production contract is to competitively award on a fixed price basis utilizing CAIV.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Fabrication, integration and test of LRAS3	2Q-4Q	1Q-2Q						
Conduct Development Test *		1-2Q, 4Q						
Conduct Operational Test **		3Q-4Q						
Milestone III IPR			1Q					
Award Production Contract			1Q					

* Development test in 4QFY99 is remaining destructive testing.
 ** OPTEC is directly funded for the majority of costs for IOT&E.

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development				PROJECT DL75		
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL75 Profiler	0	0	5229	4829	2363	0	0	0	5700	18121
<p>A. <u>Mission Description and Budget Item Justification:</u> Profiler is an upgrade of the AN/TQM-41 Meteorological Measuring Set (MMS) by integrating radar and microwave satellite technology to provide "on demand" information on surface, trajectory, and target area weather conditions. This Engineering and Manufacturing Development (EMD) effort will increase the accuracy of a wide range of deep fire weapons and munitions.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 5229 Initiate MMS Profiler (MMS-P) EMD upgrade effort, including hardware for two prototype units for both technical tests and operational evaluation and conduct design reviews. <p>Total 5229</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 4829 Continue MMS-P EMD upgrade effort and conduct technical and operational testing <p>Total 4829</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
6.4 RDTE, Night Vision Devices Engineering Development 0604710A, (DL70)	11430	11256	13478	14418	16432	16749	18348	17844	Continue	Continue
Profiler K27900 OPA2	0	0	0	0	11136	15710	18125	37575	Continue	Continue
<p>C. <u>Acquisition Strategy:</u> The AN/TQM-41 MMS Profiler development and production contracts will be awarded competitively. EMD contract type will be Cost Plus Award Fee (CPAF) and the production contract will be Firm Fixed Price. The formal solicitations will include requirements for oral presentations and cost as an</p>										
Project DL75			Page 15 of 17 Pages				Exhibit R-2A (PE 0604710A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL75
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independent variable (CAIV). If the EMD contractor meets CAIV and technical Key Performance Parameters, the intent is to award the production contract to the developer.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Milestone I/II			1Q					
Award EMD Contract			1Q					
Begin System Fabrication			3Q					
Conduct Technical Testing				3Q-4Q				
Conduct Operational Test				4Q				
Milestone III					1Q			
Award Production Contract					1Q			
First Unit Equipped (FUE)						3Q-4Q		
Initial Operational Capability (IOC)							1Q	

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ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development					PROJECT DL75		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EMD Contract	C/CPAF	To Be Selected				4733	1Q	4284	1Q	6138	15155	15155
Subtotal Product Development:						4733		4284		6138	15155	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	CECOM IEWD, ARL, WSMR, NOAA				371	1Q	343	1Q	1028	1742	
Subtotal Support Costs:						371		343		1028	1742	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test Planning and Preparation	MIPR	OPTEC				72	1Q				72	
b. DT/OT	MIPR	OPTEC						153	1Q	852	1005	
Subtotal Test and Evaluation:						72		153		852	1077	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management		PM-NV/RSTA, Ft. Belvoir, VA				53		49		45	147	
Subtotal Management Services:						53		49		45	147	
Project Total Cost:						0		5229		4829	8063	18121

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