ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2004

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	**0603774A - Night Vision Systems Advanced Development**	**131**

COST (In Thousands)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
131	NIGHT VISION SYS A/DEV	10984	7005	14047	8407	6792	4991	4147	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program addresses initiatives to develop and transition technologies from the laboratories and industry in order to improve fielded equipment in the current force as well as initiation, development, and engineering/program management support of systems for fielding to the Future Force Units of Action/Employment (FF UA/UE) and Future Combat System (FCS). Efforts include the development of an uncooled infrared imaging "B-Kit" to integrate this technology across many FF systems for lower costs for production, fielding and maintenance. 3rd Gen high performance thermal imaging technology will allow simultaneous operation in the mid and long wavelength infrared bands for significantly improved ranges for acquisition of enemy forces. The addition of laser designation capability to advanced EOIR UAV payloads will give FCS and FF UA/UE the ability for precision engagement of targets without endangering friendly forces. Sense Through The Wall (STTW) technology will improve survivability and lethality of UA/UE troops in urban environments by allowing them to detect motion through buildings and other man-made objects. This effort will be pursued in two realms, Unattended Ground Vehicle mounted for close-in and a manned ground vehicle mounted stand-off mode for infantry and intelligence missions. The Unattended Ground Sensors (UGS) effort was used to support Demonstration/Testing for DARPA's Micro-Internetted UGS program, a Measurement and Signature Intelligence (MASINT) Phenomenology study, and modeling and simulation activities in support of FCS, and development of future technology enhancements through a spiral development process. A major thrust will be to transition technologies to acquisition programs that meet required, advanced sensor capabilities of the FF and FCS requirements documents. This will include the ability for sensors to accomplish foliage penetration (FOPEN), Aided Target Recognition (ATR), and Close Surveillance Support System for 360 degree situational awareness for vehicles. FOPEN will allow UA/UE troops to discern enemy positions under the cover of trees and other natural cover. ATR will provide the FF unprecedented capability in automatic target hand-off. Close Surveillance Support System will allow any future vehicle crew member to see outside the vehicle in day or night without the blind spots created by armor. This will allow much improved maneuvering in urban/complex terrain, tracking of friendly soldiers and vehicles, and detection and engagement of dismounted and vehicular threats to the lighter FCS combat vehicles. FF Theater Support Vessel sensor requirements will include sensor concept studies on its hydrographic survey requirements, allowing ships to detect uncharted obstacles in the waterways and unimproved ports. This also has application to all Army shallow water requirements (fording, bridge placement, riverine) and intratheater movement. Multi-mode Radar (MMR), which has broad applications to the FF including FCS will be ready for concept study beginning in FY06. Capabilities of this type of radar include air traffic control, air defense, fire control and counter battery for missile and artillery on the same platform. Other emerging concepts resulting from ongoing operations will be supported by this program, to include route reconnaissance for road hazards, battle damage assessment including decoy and camouflage detection, detection of threat soldiers carrying RPGs, and identification of Improvised Explosive Devices (IED) and suicide bombers. Division Tactical SIGINT Payload (DTSP) has been renamed to Tactical SIGINT Payload (TSP). TSP is an Unmanned Aerial Vehicle mounted SIGINT/EW sensor that detects enemy and gray radio frequency (RF) emitters. TSP will provide the Land Commander with a deep looking SIGINT/EW system capable of detecting, identifying, locating and geo-locating RF emitters throughout the Area of Operation. The TSP electronic emitter information will be fused with other sensors [i.e., Prophet, Electro-Optical/Infrared (EO/IR), Moving Target Indicator (MTI), Synthetic Aperture Radar (SAR), Aerial Common Sensor (ACS)] to provide precise targeting information in near real time (NRT).

The TSP Component Advanced Development (CAD) phase is focused on demonstrating payloads that could satisfy the objective system requirements and identify which requirements will be pursued during the System Development and Demonstration (SDD) Phase. The TSP is covered under PE/Project 35204/11B beginning in FY04.
This project supports the Current to Future Force transition path of the Transformation Campaign Plan.
FY05 funding supports MMR, continuing STTW, UGS, FOPEN, ATR, and Close Surveillance Support System as well as emerging concepts of route reconnaissance, battle damage assessment, detection of personnel with RPGs, IEDs, and suicide bombers. FY05 funding also supports the Joint Unique Identification program-will be moved to new PE when established.

Accomplishments/Planned Program	FY 2003	FY 2004	FY 2005
Uncooled B-Kit – Extend uncooled focal plane array technology capability across multiple platforms to allow interchangeable parts for lower cost, weight, power, and volume. FY03 effort began establishment of technical specifications, producibility and timelines across FCS and Future Force systems for a Risk Reduction Demonstration decision in FY04.	1779	1785	0
Advanced EOIR Payload with Laser Designator - conduct markert survey and perform flight evaluation of potential solution for advanced UAV Payloads incorporating Laser Designation capability	0	789	0
Cooled IR Integrated Sensor Suites for Future Combat System of Systems (CIRISS for FCS) – Combine infrared, radar and other sensors for full FCS mast mounted suite. Concept development consisted of transition to FCS and assistance to the LSI with CTD activities.	441	0	0
Sense Through The Wall Technology to sense motion in buildings or behind other small structures from a stand-off distance. This is a concept development effort to address key FCS systems requirements. Effort includes Congressional increase of $1.8M	200	1851	622
Initiate modeling and simulation activities and MASINT Phenomenology Study in support of Future Combat System and monitor technology base efforts for future integration into Unattended Ground Sensors baseline. Transitioned first phase T-UGS to FCS SDD.	1480	250	75
Emerging Concepts – Explore a range of potential technologies for FCS and the Future Force that will enable route reconnaissance, battle damage assessment, and detection of threats such as personnel with RPGs, IEDs, and suicide bombers.	414	405	200
Foliage Penetration (FOPEN) - Technology to sense the presence of personnel and man-made objects under natural foliage. This concept development effort defines technology options, develops alternatives, and refines Army requirements.	0	130	1300
Aided Target Recognition (ATR) - Technology to allow FCS and the Future Force sensors to automatically detect and recognize targets, and cross cue other sensors in a tactical environment. This concept development effort defines technology, develops alternatives, and refines Army requirements.	0	185	450

Accomplishments/Planned Program B(continued)	FY 2003	FY 2004	FY 2005
Close Surveillance Support System - Perform concept development for a vehicle sensor system that provides an unimpeded 360 degree view of the immediate area around the vehicle from any crew position for situational awareness and threat detection.	0	1300	500
Multi Mode Radar - initiate concept development for a mulit-mode radar that can be used for air defense, fire control, counterfire weapon location, or air traffic control.	0	0	150
3rd Gen FLIR - Initiate Concept and Technology Development for 3rd Gen FLIR, the next generation of advanced primary reconnaissance imaging systems for the Future Force to include FCS Unit of Action.	0	0	250
Theater Support Vessel (TSV) - Perform concept studies and systems engineering for sensor systems required to recon, and maneuver in unimproved ports and maintain situational awareness of line of sight land threats by TSVs transporting future ground forces.	0	106	0
Completed TSP CAD which evaluates SIGINT payload design approaches on a UAV	3502	0	0
Conducted demonstration of payload and systems integration	1800	0	0
Establishment of Joint Unique Identification Program, with Army as executive agengy, will be moved to new PE once established.	0	0	10500
Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)	0	204	0
Conducted operational assessment of payload and systems integration and flight demonstrations.	1368	0	0
Totals	10984	7005	14047

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2004

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	**0603774A - Night Vision Systems Advanced Development**	**131**

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004)	11170	5283	5227
Current Budget (FY 2005 PB)	10984	7005	14047
Total Adjustments	-186	1722	8820
Congressional program reductions	-186	-66	
Congressional rescissions			
Congressional increases		1800	
Reprogrammings			
SBIR/STTR Transfer			
Adjustments to Budget Years		-12	8820

Change Summary Explanation:

FY2004: Congressional increase of $1.8M for Dominant Military Operations on Urbanized Terrain Viewer (DMV).
FY2005: Includes an increase of $10.5M for the UID program and will be reprogrammed once new PE has established.

C. Other Program Funding Summary	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	ToCompl	TotalCost
PE 0602709A/Night Vision and Electro-Optical Technology	19696	22233	22420	24359	27155	28464	29997	Continue	Continue
PE 0603710A/Night Vision Advanced Development	73609	47088	54635	62227	61928	50942	48330	Continue	Continue
PE 0604710A/Night Vision Devices Engineering Development	36581	29022	24851	33811	35204	34560	10778	Continue	Continue

C. Other Program Funding Summary (continued)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009		
K38300 LRAS3	46577	50953	49176	42293	1734	0	0	0	231408
G80717 M2A3/M3A3 Bradley	45966	0	0	0	0	0	0	0	97408
GA0750 Abrams Upgrade	18741	0	0	0	0	5006	0	0	76669
GA0730 M1A2 SEP	18238	0	0	0	0	16694	21700	Continue	Continue
G86100 Future Combat System	0	0	225289	829206	1638022	3562240	2918987	Continue	Continue
PE 654270 EW Development (Project L12)	25550	22279	2489	11451	14068	10572	11048	Continue	Continue
BA0330 TUAV	84290	108893	62788	184442	186298	0	0	Continue	Continue
W61900 IAV	65294	133996	87886	98705	82593	0	0	Continue	Continue
PE 375204 Tactical SIGINT Payload (TSP) Development (Project 11B)	0	5771	8975	12490	7130	0	0	Continue	Continue
BZ9761 Tactical SIGINT Payload: TSP (JMIP)	0	0	0	0	0	0	0	Continue	Continue

D. Acquisition Strategy: The advances and improvements for cooled and uncooled thermal imaging sensors, radars, Sense Through The Wall systems, and Unattended Ground Sensors activities utilize various cost reimbursement development contracts that were, and will continue to be competitively awarded using best value source selection procedures.

ARMY RDT&E COST ANALYSIS(R3)

February 2004

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603774A - Night Vision Systems Advanced Development

PROJECT
131

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Laser Protection	C/CP, MIPR	DRS, Dallas, TX /SBRC, Santa Barbara, CA; NVESD	2326	0		0		0		0	2326	2326
b . Foliage Penetration efforts	T&M, MIPR	TBS	0	0		130	2Q	976	1Q	Continue	Continue	Continue
c . CIRISS efforts	T&M	Various	0	441	1-4Q	0		0		0	441	441
d . Sensor Link Protocol efforts	MIPR	Various	105	0		0		0		0	105	105
e . Demo of payload & systems integration TSP	SS/CPFF	TRW, Sierra Vista, AZ	0	400	1Q	0		0		0	400	400
f . 3rd Gen FLIR	TBD	TBS	0	0		0		175	3Q	Continue	Continue	Continue
g . Close Surveillance Support System efforts	T&M	TBS	0	0		1101	3Q	950	1Q	Continue	2051	Continue
h . Emerging Concepts efforts	T&M	Various	0	405	1-2Q	394	2Q	100	1Q	Continue	Continue	Continue
i . TUAV Laser Rangefinder	C/CP	Versitron, Santa Rosa, CA	300	0		0		0		0	300	300
j . Land Warrior			3750	0		0		0		0	3750	3750

ARMY RDT&E COST ANALYSIS(R3)

February 2004

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603774A - Night Vision Systems Advanced Development

PROJECT
131

I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
k . Award CAD Contract for TSP	C/CPFF	Applied Science Technologies, Sunnyvale, CA; BAE Nashua, NH	9223	1744	2Q	0		0		0	10967	10967
l . Theater Support Vessel study	TBD	TBS	0	0		106	2Q	0		0	106	106
m . ATR/ATC Activities	MIPR	Various	462	0		0		0		0	462	462
n . Uncooled B-Kit Evolution/Development	C/CP, MIPR	ADC, Newington, VA; Various others	957	1579	1-2Q	1453	2Q	0		0	3989	3989
o . FLIR Develop/Integrate	Various	Various	1938	0		0		0		0	1938	1938
p . UAV Quieting, Etc. TSP	MIPR	TUAV Proj Office, Redstone Arsenal, AL	900	0		0		0		0	900	900
q . LRAS3 /LLDR Telescopic Mast Demo	MIPR	NVESD	685	0		0		0		0	685	685
r . Demo and eval of ENVG technology	Various	Various	1778	0		0		0		0	1778	1778
s . Multifunction Laser Design	C/CP	Raytheon, Dallas, TX	906	0		0		0		0	906	906

ARMY RDT&E COST ANALYSIS(R3)

February 2004

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603774A - Night Vision Systems Advanced Development

PROJECT
131

I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
t . SR2P	MIPR	NVESD	658	0		0		0		0	658	658
u . Demo and eval of ANVG	Various	Various	1320	0		0		0		0	1320	1320
v . Head Tracked Commander's Sight	C/CP	Various	223	0		0		0		0	223	223
w . Advanced EOIR UAV Payload with Laser Designation	MIPR	NVESD	0	0		0		150	2Q	Continue	Continue	Continue
x . Large Format Array Uncooled Thermal Sight	C/CP	(Soldier effort)	400	0		0		0		0	400	400
y . Unattended Ground Sensors	Various	Various	1497	1261	1-2Q	212	2Q	75	1Q	0	3045	3045
z . SBIR/STTR			0	0		204		0		0	204	193
aa. Sense Through the wall Unmanned/Stand-Off	Various	Various	400	200	2Q	1807	2Q	452	1Q	0	2859	2867
bb. Multi-mode Radar	Various	Various	0	0		789	2Q	0		0	789	789
cc. Aided Target Recognition efforts	T&M	TBS	0	0		260	2Q	200	1Q	0	460	460

ARMY RDT&E COST ANALYSIS(R3)

February 2004

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603774A - Night Vision Systems Advanced Development

PROJECT
131

I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
dd. Cost Benefit Analysis TUAV	MIPR and C/FP	TRAC-WSMR, NM and TBE, Huntsville, AL	910	0		0		0		0	910	910
ee. Defer to ABO			0	0		0		10000		0	10000	10000
Subtotal:			28738	6030		6456		13078		Continue	Continue	Continue

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Matrix Support	MIPR	Various	1075	172	1Q	178	2Q	185	1Q	Continue	Continue	Continue
b . Engineering Support	FFP	CSC, Falls Church, VA	0	0		0		370	2Q	Continue	Continue	Continue
c . Matrix Support	MIPR	CECOM Fort Monmouth, NJ	920	1080	2Q	0		0		0	2000	2000
d . Engineering Support	FFP	MITRE; McLean, VA	856	360	2Q	0		0		0	1216	1216
e . Engineering Support	FFP	CACI, Fort Monmouth, NJ	1406	950	2Q	0		0		0	2356	2356
Subtotal:			4257	2562		178		555		Continue	Continue	Continue

ARMY RDT&E COST ANALYSIS(R3)

February 2004

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603774A - Night Vision Systems Advanced Development

PROJECT
131

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Multispectral Eval	MIPR	WSMR	308	0		0		0		0	308	308
b . FLIR Demos and Evals	MIPR	Various	836	0		0		0		0	836	836
c . ENVG Demos and Evals	MIPR	Various	105	0		0		0		0	105	105
d . HT Command Site Eval	MIPR	Various	90	0		0		0		0	90	90
e . ANVG Test Plan and Flight Support	MIPR	Various	480	0		0		0		0	480	480
f . ANVG Simulation/Field Eval	MIPR	Various	100	0		0		0		0	100	100
g . STTW/UGS	MIPR	Various	525	232	2-3Q	0		0		0	757	757
h . Operational Assessment of TSP Flight Demos	MIPR	AEC, APG, MD	0	350	1-4Q	0		0		0	350	350
i . Payload Demo and Emitter Spt Assessment	MIPR	EPG, Ft Huachuca, AZ	0	1165	1-4Q	0		0		0	1165	1165

ARMY RDT&E COST ANALYSIS(R3)

February 2004

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603774A - Night Vision Systems Advanced Development

PROJECT
131

III. Test and Evaluation (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			2444	1747		0		0		0	4191	4191

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Management		PM-NV/RSTA, Ft.Belvoir, VA	260	24	1-4Q	371	1-4Q	414	1-4Q	Continue	Continue	Continue
b . Program Management		PM, Signals Warfare, Fort Monmouth NJ	600	621	1-4Q	0		0		0	1221	1221
Subtotal:			860	645		371		414		Continue	Continue	Continue
Project Total Cost:			36299	10984		7005		14047		Continue	Continue	Continue

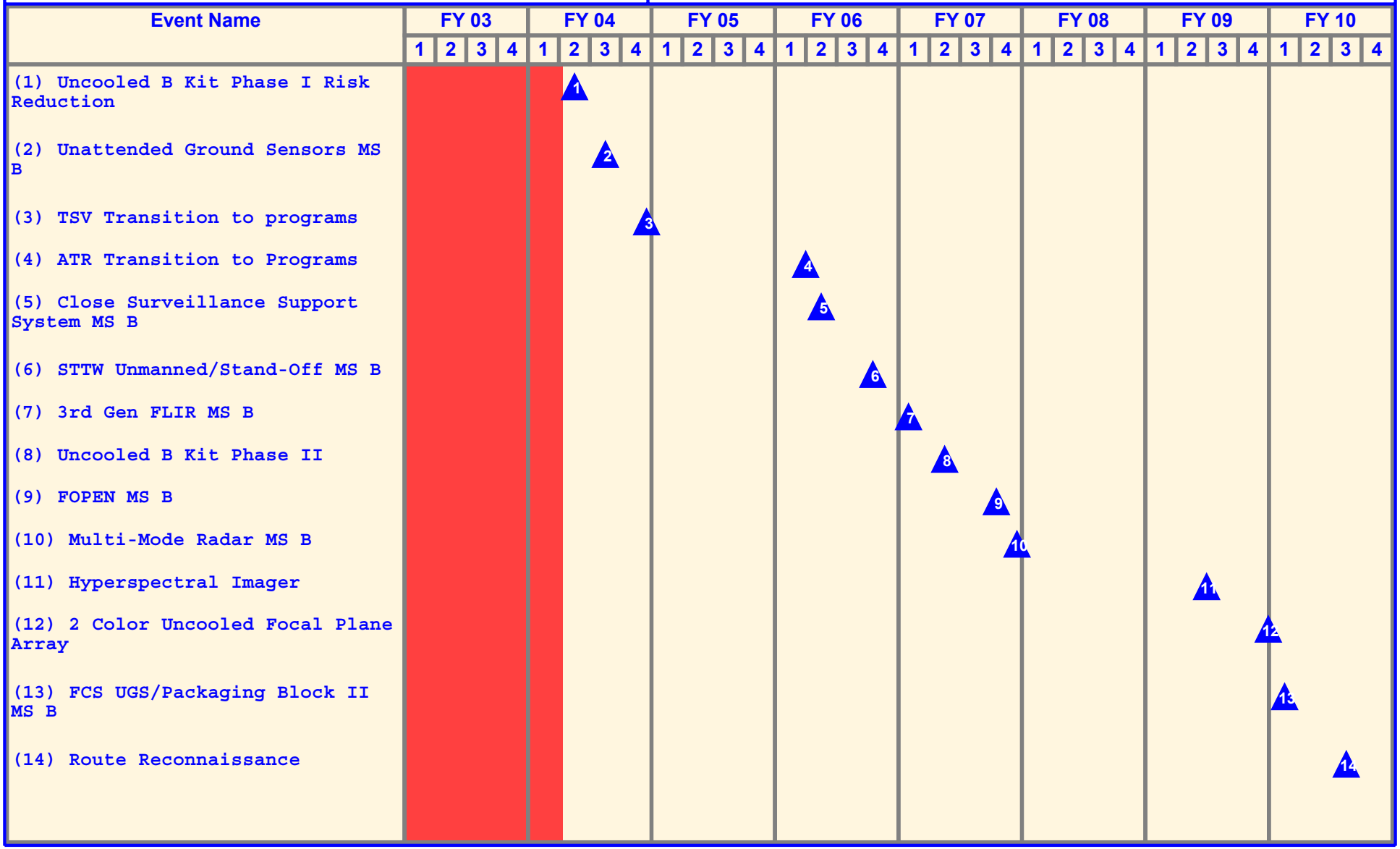
Schedule Profile (R4 Exhibit)

February 2004

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603774A - Night Vision Systems Advanced Development

PROJECT
131



Schedule Detail (R4a Exhibit)

February 2004

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	**0603774A - Night Vision Systems Advanced Development**	**131**

Schedule Detail	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
CIRISS Block I for FCS UA	3Q						
Uncooled B Kit		2Q					
Sense Through the Wall Unmanned MS B for FCS UA				3Q			
Unattended Ground Sensors Milestone B for FCS UA	3Q						
Unattended Ground Sensors MS B for PEO-IEW&S		3Q					
Foliage Penetration Milestone B for Block II FCS					4Q		
Close Surveillance Support System Milestone B				2Q			
3rd Gen FLIR Milestone B					1Q		