ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE
5 - System Development and Demonstration	**0604854A - Artillery Systems - EMD**

	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	5222	1632	24221	24073	23978	5900	5600	5400	Continuing	Continuing
509	LIGHTWEIGHT 155M HOWITZER	649		5963	5606	5778					17996
516	PALADIN/FAASV	4573	1632	18258	18467	18200	5900	5600	5400	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element supports the Joint Light Weight 155mm Howitzer (LW155) and the Paladin/FAASV Improvement programs.

The LW155, a joint program with the Marine Corps, provides the replacement for the current 1970's vintage M198, 155mm Towed Howitzer. The LW155 provides significant improvement in strategic and tactical mobility over the M198. The Army portion of the joint development is the Towed Artillery Digitization (TAD). TAD is the digital fire control system for the LW155. TAD provides increased accuracy, survivability, and lethality for Army and USMC 155mm Towed Artillery. The LW155 will be the first towed platform capable of firing the Excalibur precision munition, which will provide precision strike capability out to ranges of 40 kilometers with 10 meter accuracy.

The Paladin/FAASV project integrates several system improvements that provide for: stowage and automated dispensing of M231/M232, Modular Artillery Charge System (MACS) that is displacing the current propelling charges; the Graphical User Interface (GUI) software; the Defense Advanced GPS Receiver (DAGR); and upgrading components of the Paladin Digital Fire Control System (PDFCS) to avoid obsolescence, as well as develop and integrate XM982 Extended Range Projectile requirements in the PDFCS. In addition, other system improvements include the battlefield digitization trainer, the direct drive generator, and development of the Paladin Operations Center Vehicle (Pal OCV). The system improvements provide significantly improved mission effectiveness, increased reliability, maintainability, supportability, and Battle Command on-the-move, as well as reduced life cycle costs.

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BUDGET ACTIVITY	PE NUMBER AND TITLE
5 - System Development and Demonstration	**0604854A - Artillery Systems - EMD**

B. Program Change Summary	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	5397	1650	6009	5616
Current BES/President's Budget (FY 2008/2009)	5222	1632	24221	24073
Total Adjustments	-175	-18	18212	18457
Congressional Program Reductions		-6		
Congressional Rescissions				
Congressional Increases				
Reprogrammings	-175	-12		
SBIR/STTR Transfer				
Adjustments to Budget Years			18212	18457

Change Summary Explanation: Funding: For the Lightweight 155 program, FY08/09 funding increased to support software development and engineering efforts for lethality and survivability enhancements, to include ballistic computation at the weapon system and the addition of a Muzzle Velocity System to increase accuracy.
The Paladin Integrated Management (PIM)Program which will begin in FY08 will take the Paladin product cycle to the next level to address all obsolescence, reliability, maintainability and supportability faced by the Paladin and FAASV today and in the near future to include: Power Train upgrade; Suspension System; Electronic sub-systems to include the next generation fire control system, navigation system , communication/data transfer and Vehicle Health Management system; Improvement Gun Drive System to meet the needs of the future battle field.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604854A - Artillery Systems - EMD**	**509**

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
509 LIGHTWEIGHT 155M HOWITZER	649		5963	5606	5778					17996

A. Mission Description and Budget Item Justification: The Lightweight 155mm (LW155) Towed Howitzer, a jointly managed program with the Marine Corps, will provide the replacement for the M198, 155mm Towed Howitzer. LW155 provides significant strategic and tactical mobility improvements. Project 509 supports Towed Artillery Digitization (TAD) Block II, a software upgrade to the digital fire control system for the M777A1 (LW155). Close coordination with the Excalibur office will ensure that the M777A1 will be capable of firing the Excalibur precision munition in FY07.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Incremental funding for the TAD Block 1 SDD Contract	449			
Funded matrix support personnel for the development of TAD At-Systems Testing hardware and software.	200			
Funds Matrix Support Software Engineers for TAD Block II Software Development			5963	5606
Total	649		5963	5606

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
Procurement, Marine Corps LW155 Towed Howitzer with TAD Prod, BLIN 218500	170499	94365	92770							357634
Procurement, WTCV, Army, LW155 with TAD G01700	49975	172194	270251	44242	38411	36079	47112	47099	72100	777463

Comment:

C. Acquisition Strategy Towed Artillery Digitization (TAD) is an evolutionary acquisition strategy for the Lightweight 155mm Towed Howitzer (LW155). Block 0 consisted of "glass and iron" optical sights as the weapon's fire control. Block 1 TAD incorporated digitized aiming and pointing which increased accuracy and enabled a battery of howitzers to emplace and engage the enemy within 2 to 3 minutes as opposed to 15 to 20 minutes. Block 1a, which will be fielded in FY07, adds the ability for the LW155 Howitzer to fire the XM982 Excalibur Precision Munition. Funding identified above will be used to upgrade to Block 2, which is the objective TAD configuration. The primary benefit of TAD Block 2 will be the addition of mission processing capability at the platform, enabling enhanced responsiveness and flexibility to the battlefield commander. It will also integrate a Muzzle Velocimeter for increased accuracy.

ARMY RDT&E COST ANALYSIS (R3)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604854A - Artillery Systems - EMD

PROJECT
509

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
Incremental funding for the TAD Block 1 SDD Contract		BAE Systems, United Kingdom		449	4Q								449	
Funded matrix support personnel for the development of TAD At-Systems Testing hardware and software.		ARDEC, Picatinny Arsenal, NJ		196	1Q								196	
Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR				4									4	
Funds Matrix Support Software Engineers for TAD Block II Software Development		ARDEC, Picatinny Arsenal, NJ						5963	1Q	5606	1Q		11569	
Funds Matrix Support Software Engineers for TAD Block II Software Testing and Evaluation		ARDEC, Picatinny Arsenal, NJ										5778	5778	
Develop TAD Block 2 Hardware												14100	14100	
Subtotal:				649				5963		5606		19878	32096	

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
Subtotal:														

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)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604854A - Artillery Systems - EMD**	**509**

Subtotal:														

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
Subtotal:														
Project Total Cost:				**649**				**5963**		**5606**		**19878**	**32096**	

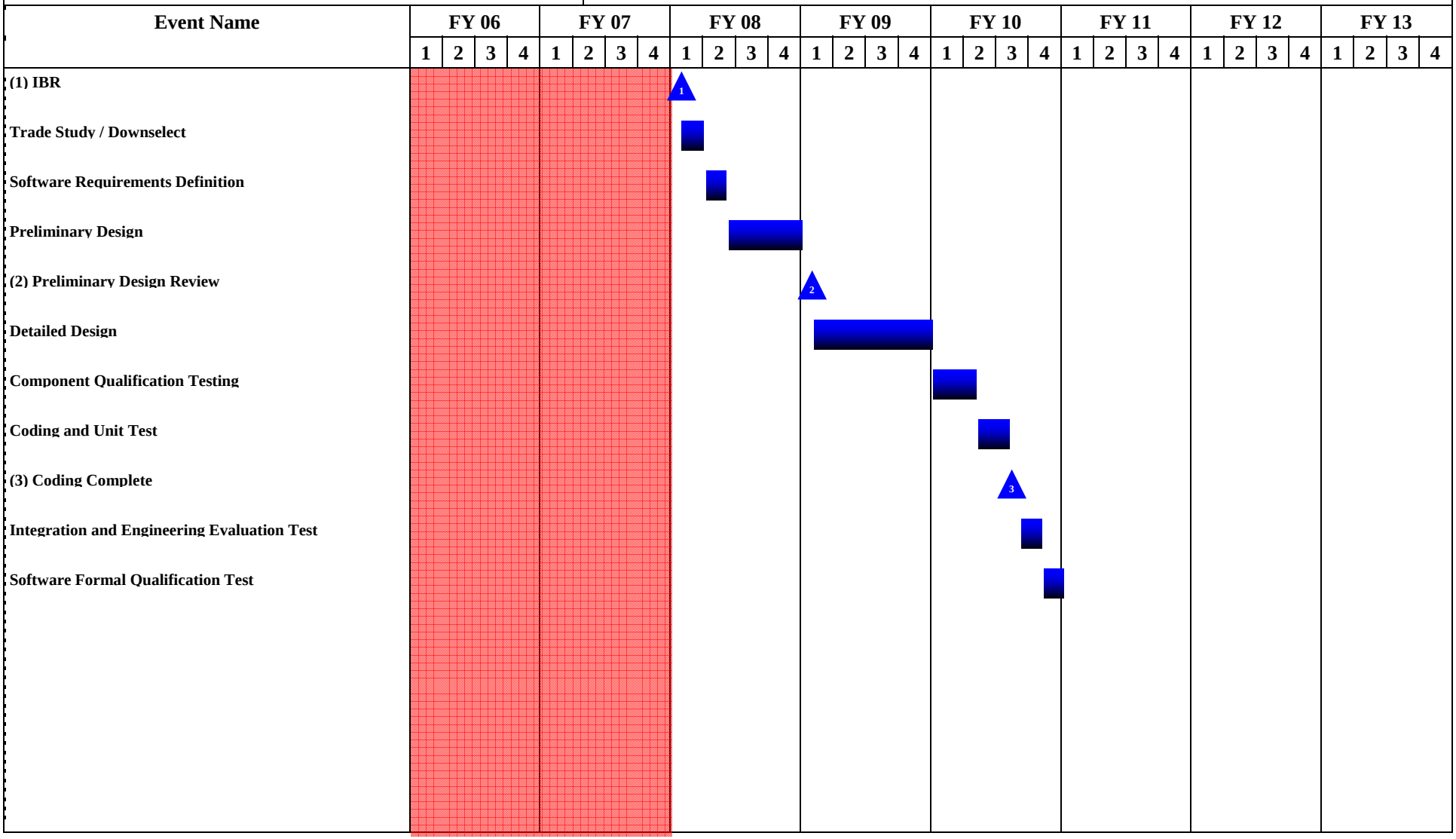
Schedule Profile (R4 Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604854A - Artillery Systems - EMD

PROJECT
509



Schedule Detail (R4a Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604854A - Artillery Systems - EMD

PROJECT
509

Schedule Detail	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
IBR			1Q					
Trade Study / Downselect			1Q					
Software Requirements Definition			2Q					
Preliminary Design			2Q - 4Q					
Preliminary Design Review				1Q				
Detailed Design				1Q - 4Q				
Component Qualification Testing					1Q - 2Q			
Coding and Unit Test					2Q - 3Q			
Coding Complete					3Q			
Integration and Engineering Evaluation Test					3Q - 4Q			
Software Formal Qualification Test					4Q			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604854A - Artillery Systems - EMD**	**516**

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
516 PALADIN/FAASV	4573	1632	18258	18467	18200	5900	5600	5400	Continuing	Continuing

A. Mission Description and Budget Item Justification: The current Paladin/Field Artillery Ammunition Vehicle (FAASV) project allows for the integration of several selected system improvements which provide for: development of Battlefield Digitization Trainer software, development and integration of the Excalibur (M982) extended range projectile requirements into the Paladin Digital Fire Control System (PDFCS). These systems improvements improved the Paladin mission effectiveness, increase reliability as well as reduce life cycle costs and address electronic obsolescence with the obsolete Paladin Automatic Fire Control System (AFCS). The Paladin Integrated Management (PIM) Program which will begin in FY08 will take the Paladin product cycle to the next level to address all obsolescence, reliability, maintainability and supportability faced by the Paladin and FAASV today and the near future to include: Power Train upgrade; Suspension system; electronic sub-systems to include the next generation fire control system, navigation system, communication/data transfer and Vehicle Health Management system; Improvement Gun Drive System to meet the needs of the future battle field.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Develop and integrate the EXCALIBUR (XM982) Extended Range Projectile requirements into the Paladin Digital Fire Control System	4162	1511		
Program management of Paladin/FAASV program	50	75		
Develop Battlefield Digitization Trainer software which combines the current Paladin Fire Control PC trainer with the Force XX1 Battle Command Brigade and Below (FBCB2) Digitization trainer. This combined package will allow for realistic classroom training for the First Digitized Corps and the Counter Attack Corps.				
Research and investigate Power Management requirements.	361			
Paladin Integrated Management (PIM)			18258	18467
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)		46		
Total	4573	1632	18258	18467

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
PA, WTCV, GA0400 Paladin	15082	28599	36924	47648	99678	158891	178481	223366	Continuing	Continuing
PA, WTCV, GA8010 FAASV PIP	6335								Continuing	Continuing
OMA, FAASV Recap, MDEP RR17	5671								Continuing	Continuing

Comment:

C. Acquisition Strategy The Paladin/FAASV project will leverage both Government and Contractor capabilities to accomplish the development of the Paladin/FAASV system improvement projects. Government in-house engineering will perform some component level design and system integration. Final System Level Testing will be performed by Other Government Agencies (OGA). Competitive contracts will be used for many of the component level design and hardware fabrication. To the extent possible, maximum use of existing commercial off-the-shelf hardware and software will be utilized.

ARMY RDT&E COST ANALYSIS (R3)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604854A - Artillery Systems - EMD

PROJECT
516

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
Component Design and Software Development	STS/CPFF	Northrop Grumman, Carson, CA	5027										5027	6250
System Integration	STS/CPFF	BAE Systems, York, Pa	4304	265	2Q								4569	7304
TDP Development	MIPR	Other Gov't Agencies	452										452	452
Software Development & System Integration	MIPR	TACOM-ARDEC, Picatinny, NJ	3196	3897	3Q	757	2Q						7850	4136
PIM Development	STS/CPFF	BAE/Northrup Grumman						18258	2Q	18467	2Q		36725	
Generator Power Management	STS/CPFF	BAE Systems, York, PA		361	4Q								361	370
Subtotal:			12979	4523		757		18258		18467			54984	18512

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
Logistics	MIPR	TACOM-ACALA, Moline, IL	229										229	370
Subtotal:			229										229	370

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
Component Level Testing	MIPR	TACOM-ARDEC, Picatinny, NJ	953			200	2Q						1153	1158
System Level Testing	MIPR	Various OGAs	930			600	2Q						1530	4022
Subtotal:			1883			800							2683	5180

ARMY RDT&E COST ANALYSIS (R3)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604854A - Artillery Systems - EMD

PROJECT
516

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
PMO Support	NA	PM Paladin/FAASV, Picatinny, NJ	848	50	2Q	75	2Q						973	995
Subtotal:			848	50		75							973	995
Project Total Cost:			**15939**	**4573**		**1632**		**18258**		**18467**			**58869**	**25057**

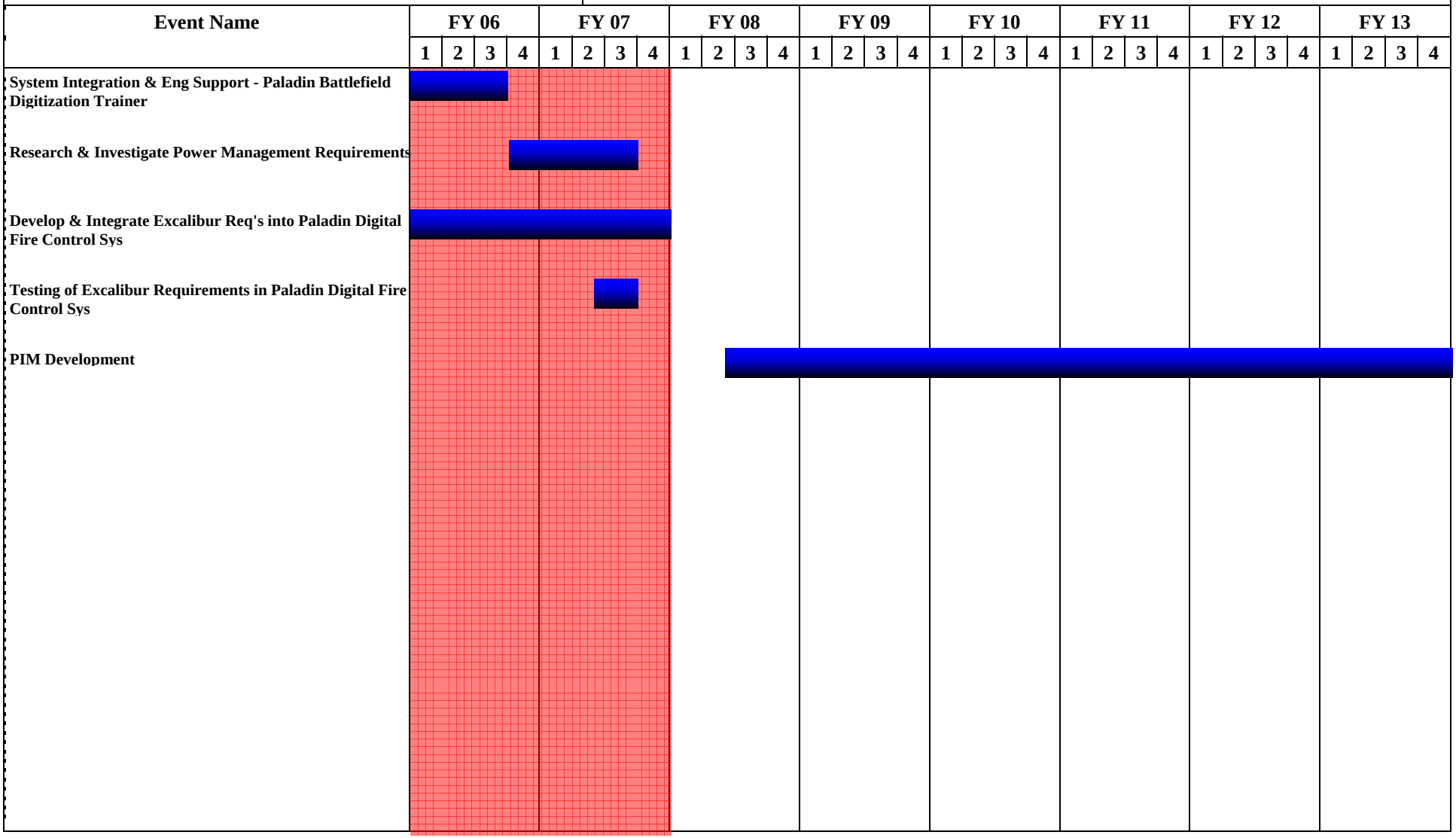
Schedule Profile (R4 Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604854A - Artillery Systems - EMD

PROJECT
516



Schedule Detail (R4a Exhibit)

February 2007

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604854A - Artillery Systems - EMD

PROJECT
516

Schedule Detail	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
System Integration & Eng Support - Paladin Battlefield Digitization Trainer	1Q - 3Q							
Research & Investigate Power Management Requirements	4Q	1Q - 3Q						
Develop & Integrate Excalibur Req's into Paladin Digital Fire Control Sys	1Q - 4Q	1Q - 4Q						
Testing of Excalibur Requirements in Paladin Digital Fire Control Sys		2Q - 3Q						
PIM Development			2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q