

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

## BUDGET ACTIVITY

### 5 - System Development and Demonstration

## PE NUMBER AND TITLE

0604□54A - Artillery Systems - EMD

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	31174	12022	5476	1625	5918	5528	5684	0	0	99068
509 LIGHTWEIGHT 155M HOWITZER	30629	8403	677	0	5918	5528	5684	0	0	82295
516 PALADIN/FAASV	545	3619	4799	1625	0	0	0	0	0	16773

**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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	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	9550	1389	0
Current Budget (FY 2006/2007 PB)	12022	5476	1625
Total Adjustments	2472	4087	1625
Net of Program/Database Changes			
Congressional Program Reductions	-182		
Congressional Rescissions			
Congressional Increases	3000		
Reprogrammings			
SBIR/STTR Transfer	-346		
Adjustments to Budget Years		4087	1625

FY06 (\$4,087,000.) and FY07 (\$1,625,000.) increased to support Paladin/Excalibur Integration.

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PROJECT

**516**

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
516 PALADIN/FAASV	545	3619	4799	1625	0	0	0	0	0	16773

**A. Mission Description and Budget Item Justification:** The Paladin/FAASV project allows for integration of several system improvements which will provide for: development of Battlefield Digitization Trainer software, and development and integration of the EXCALIBUR (XM982) extended Range Projectile requirements into the Paladin Digital Fire Control System (PDFCS). These system improvements provide significantly improved mission effectiveness, increased reliability, maintainability and supportability, as well as reduced life cycle costs and obsolescence (e.g. Battlefield Digitization Trainer software development will modernize the training system to match the current fielded vehicle's fire control system, and Integration of EXCALIBUR (XM982) requirements into the PDFCS allows the Paladin to accept EXCALIBUR (XM982) fire missions.) FY05 funding in the amount of \$3M for EXCALIBUR development and Integration into the PDFCS was a Congressional Plus-Up.

<b>Accomplishments/Planned Program</b>	<b>FY 2004</b>	<b>FY 2005</b>	<b>FY 2006</b>	<b>FY 2007</b>
Develop and integrate the EXCALIBUR (XM982) Extended Range Projectile requirements into the Paladin Digital Fire Control System	0	2800	4497	1519
Program management of Paladin/FAASV program	0	221	302	106
Non Recurring Development Engineering of Government and STS contractor and System Testing for an improved Travel Lock Actuator Device	530	0	0	0
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.	0	598	0	0
Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)	15	0	0	0
<b>Totals</b>	<b>545</b>	<b>3619</b>	<b>4799</b>	<b>1625</b>

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PROJECT

**516**

<b>B. Other Program Funding Summary</b>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
PA, WTCV, GA0400 Paladin	34335	18279	14801	29110	33929	42883	26452	18259	0	218048
PA, WTCV, GA8010 FAASV PIP	10900	7266	6439	0	0	0	0	0	0	24605
OMA, FAASV Recap, MDEP RR17	14248	13960	15090	0	0	0	0	0	0	43298
OMA, FAASV SDO, MDEP RR17	321	149	150	0	0	0	0	0	0	620

**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 2005			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604 54A - Artillery Systems - EMD</b>					PROJECT <b>516</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Component Design and Software Development	ESTS	Northrop Grumman, Carson, CA	4825	1557	2Q	600	2Q	319	2Q	0	7301	6095
b . System Integration	STS	UDLP, York Pa	4304	200	2Q	3000	2Q	0		0	7504	7504
c . TDP Development	MIPR	Other Gov't Agencies	452	0		0		0		0	452	510
d . Software Development & System Integration	MIPR	TACOM-ARDEC, Picatinny, NJ	0	1144	2Q	600	2Q	500	2Q	0	2244	2244
e . Misc Other Gov't Agencies	TBD	Other Gov't Agencies	0	497	2Q	297	2Q	0		0	794	794
Subtotal:			9581	3398		4497		819		0	18295	17147

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604 54A - Artillery Systems - EMD</b>					PROJECT <b>516</b>		
II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Logistics	MIPR	TACOM-ACALA, Moline, IL	229	0		0		0		0	229	370
Subtotal:			229	0		0		0		0	229	370
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Component Level Testing	MIPR	TACOM-ARDEC, Picatinny, NJ	953	0		0		0		0	953	1158
b . System Level Testing	MIPR	Various OGAs	930	0		0		700	3Q	0	1630	4022
Subtotal:			1883	0		0		700		0	2583	5180

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
5 - System Development and Demonstration					0604 □ 54A - Artillery Systems - EMD					516		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . PMO Support	NA	PM Paladin/FAASV, Picatinny, NJ	627	221	1Q	302	1-2Q	106	1Q	0	1256	1215
Subtotal:			627	221		302		106		0	1256	1215
Project Total Cost:			12320	3619		4799		1625		0	22363	23912

# Schedule Profile (R4 Exhibit)

February 2005

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PROJECT

516

Event Name	FY 04				FY 05				FY 06				FY 07				FY 08				FY 09				FY 10				FY 11			
	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				
Recap / Upgrade	Recap 126 FAASVs (Anniston Army Depot)																															
MACS Storage Racks and Block Mod Development & Retrofit	Modular Artillery Charge Sys Paladin/FAASV Field Modifications & Retrofits																															
Paladin Digital Fire Control System Development																																
Paladin Digital Fire Control System Production & Retrofit	PDFCS Computer Upgrades to Fleet																															
18 Production Paladins fielded to PA ARNG																																
System Integration & Eng Support - Paladin Battlefield Digitization Trainer																																
System Integration & Eng Support - Paladin Direct Drive Generator																																
Develop & Integrate Excalibur Req's into Paladin Digital Fire Control Sys																																
Testing of Excalibur Requirements in Paladin Digital Fire Control Sys																																



Schedule Detail (R4a Exhibit)							February 2005	
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>				PE NUMBER AND TITLE <b>0604 54A - Artillery Systems - EMD</b>			PROJECT <b>516</b>	
<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Award Contract for Development of Travel Lock Acuator Device	3Q							
Award Contract for sys integration of Paladin Battlefield Digitization Trainer and Excalibur SW		2Q						
Perform sys integr & engr support of the Paladin Battlefield Digitization Trainer & Excalibur SW		2-4Q						
Award OGA for Software Dev of XM982 requirements into the Paladin Digital Fire Control System			1Q					
Award Contract to Develop and Integrate the XM982 rqmts into the Paladin Digital Fire Control Sys			2Q					
Perform Development and Integration of XM982 requirements into the Paladin Digital Fire Control Sys.			1-4Q					
Award Contract for Integration of XM982 rqmts into the Paladin Digital Fire Control System.				2Q				
Perform Integration of XM982 requirements into Paladin Digital Fire Control System.				1-3Q				
Award OGA for Testing of XM982 requirements in the Paladin Digital Fire Control System.				3Q				
Perform Testing of XM982 requirements in the Paladin Digital Fire Control System.				3-4Q				