

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY

7 - Operational system development

PE NUMBER AND TITLE

0203802A - Other Missile Product Improvement Programs

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	1050	4659	2356	24622	22993	5656	6049	4789	0	105607
785 LONGBOW HELLFIRE PIP	1050	0	0	0	0	0	0	0	0	13279
786 APKWS SIMULATOR UPGRADE	0	4659	4879	5227	5462	5656	6049	4789	0	36721
788 ATACMS PIP	0	0	18681	19395	17531	0	0	0	0	55607

A. Mission Description and Budget Item Justification: The Longbow HELLFIRE missile system provides the Army with a fire-and-forget, anti-armor capability for the Apache Longbow and armed reconnaissance helicopters. The fire-and-forget Longbow HELLFIRE system greatly increases aircraft survivability and dramatically improves target acquisition and engagement capabilities in adverse weather when the battlefield is obscured (smoke, fog, dust), and when the threat is using countermeasures. Evolutionary improvements are required to maintain the current effectiveness of the Longbow HELLFIRE missile against expanding regional power threats. The Longbow HELLFIRE Product Improvement Program (PIP) will improve Home-on-Jam (HOJ)/Anti-Jam (AJ) capabilities for the missile.

The Advanced Precision Kill Weapon System (APKWS) Training Simulator upgrades will consist of the development, testing, and installation of the software/hardware necessary for pilot training. These software upgrades will be developed, tested, and installed on the AH-64 Apache, and armed reconnaissance helicopter simulators. The training simulator upgrades will aid the pilot in the initial and annual training required for firing the APKWS munition. The training simulator upgrades will significantly reduce the number of munitions required for initial and annual training.

The Army Tactical Missile Systems (ATACMS) Quick Reaction Unitary (QRU) is a 24/7 all weather low collateral damage precision strike, artillery missile system. Coupled with the High Mobility Artillery Rocket System (HIMARS) and Multiple Launch Rocket System (MLRS) M270A1 launch platforms, the ATACMS Unitary provides the joint war fighter with unprecedented expeditionary capability as a highly mobile, rapidly deployable, precision guided munition. It is effective against counter fire, air defense, light material, and urban infrastructure targets. During Operation Iraqi Freedom (OIF), 456 ATACMS precision missiles were launched from Multiple Launch Rocket System (MLRS) M270A1 and High Mobility Artillery Rocket System (HIMARS) launchers by the Joint Land Component Commander and Joint Special Operations Command (JSOC) providing critical Operational Shaping/Precision Strike fires. ATACMS Quick Reaction Unitary (QRU) missiles were subsequently used during Operation IVY CYCLONE II against terrorist insurgent hard targets. The following efforts will further develop the ATACMS QRU into the ATACMS Block IA Unitary. These efforts encompass the acquisition of a new warhead, the development and implementation of a tri-mode capable fuze, and Insensitive Munitions (IM) trade studies. The new warhead and multi-mode fuze will provide the capability of point detonation, air burst, and delay. Future technologies and munitions will be assessed for spiral development and potential insertion into ATACMS Block IA Unitary to provide operational flexibility and capability.

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<u>B. Program Change Summary</u>	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	4863	9858	8987
Current Budget (FY 2006/2007 PB)	4659	2356	24622
Total Adjustments	-204	13702	15635
Net of Program/Database Changes			
Congressional Program Reductions	-70		
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-34		
Adjustments to Budget Years		13702	15635

FY 2006 - Project 786 funds realigned to higher Army priority requirements (-\$4,979K)
Project 788 funds increased to initiate ATACMS Product Improvement Program (+\$18,681K)

FY 2007 - Project 786 funds realigned to higher Army priority requirements (-\$3,760K)
Project 788 funds increased for ATACMS Product Improvement Program (+\$19,395K)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)							February 2005			
BUDGET ACTIVITY 7 - Operational system development				PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs				PROJECT 785		
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
785 LONGBOW HELLFIRE PIP	1050	0	0	0	0	0	0	0	0	13279
<p><u>A. Mission Description and Budget Item Justification:</u> The Longbow HELLFIRE missile system provides the Army with a fire-and-forget, anti-armor capability for the Apache Longbow and armed reconnaissance helicopters. The fire-and-forget Longbow HELLFIRE system greatly increases aircraft survivability and dramatically improves target acquisition and engagement capabilities in adverse weather when the battlefield is obscured (smoke, fog, dust), and when the threat is using countermeasures. Evolutionary improvements are required to maintain the current effectiveness of the Longbow HELLFIRE missile against expanding regional power threats. The Longbow HELLFIRE Product Improvement Program (PIP) will improve Home-on-Jam (HOJ)/Anti-Jam (AJ) capabilities for the missile.</p>										
<u>Accomplishments/Planned Program</u>							FY 2004	FY 2005	FY 2006	FY 2007
Implement design changes; formal hardware qualification; hardware in the loop; complete critical/final design; complete guidance section and rocket ball design evaluation.							1050	0	0	0
Totals							1050	0	0	0

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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0203802A - Other Missile Product Improvement Programs
PROJECT
785

B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
C70300 Longbow Hellfire/LBHF	24875	15575	2519	0	0	0			0	1667879
C71500 HELLFIRE Modifications	0	9770	0	0	0	0			0	9770

C. Acquisition Strategy: Development of the Longbow HELLFIRE HOJ/AJ will be sole source to the prime contractor, Longbow Limited Liability Company (LLLC). The U.S. Army Aviation and Missile Command (AMCOM) laboratories will provide assistance/technical expertise during the development effort. A sole source contract was awarded to the LLLC for development and qualification of HOJ/AJ.

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February 2005

BUDGET ACTIVITY
7 - Operational system development

PE NUMBER AND TITLE
0203802A - Other Missile Product Improvement Programs
PROJECT
786

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
786 APKWS SIMULATOR UPGRADE	0	4659	4879	5227	5462	5656	6049	4789	0	36721

A. Mission Description and Budget Item Justification: The Advanced Precision Kill Weapon System (APKWS) Simulator Upgrade program develops upgrades for new and existing aircraft flight simulators and combat mission simulators. These simulator upgrades are required to enable combat aircrews to train with APKWS. The APKWS Simulator Upgrade funding will develop, test, qualify, and integrate the software/hardware required for AH-64D flight simulators and combat mission simulators. The use of both flight simulators and combat mission simulators for training is an integral part of the APKWS program. Extensive use of simulators will reduce the number of APKWS rounds required for annual live fire training.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Develop system requirements for training simulator hardware and software.	0	1142	634	584
Develop simulator software upgrades.	0	2954	1609	2176
Validation and verification of software upgrades.	0	175	823	203
APKWS software devices integration.	0	0	1414	1853
Perform government engineering support.	0	388	399	411
Totals	0	4659	4879	5227

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PROJECT
786

B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
PE 604802/705 Advanced Precision Kill Weapon System (APKWS) SD&ED	45224	15296	10779	8696	17483	15966	5803	0	0	119247

C. Acquisition Strategy: Development and qualification of APKWS training simulator hardware/software will be accomplished via full and open competition. The U.S. Army Aviation and Missile Command (AMCOM) will provide assistance and technical expertise during the development effort.

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 7 - Operational system development					PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs					PROJECT 786		
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 . Prime Contract	Cost Plus Incentive Fee/Award Fee (CPIF/AF)	To Be Decided (TBD)	0	3509	2Q	2973	1Q	3109	1Q	12824	22415	0
b . Support Contracts	Various	Various	0	125	2-4Q	391	1-4Q	412	1-4Q	1699	2627	0
c . Developmental Engineering	Various	Various	0	425	2-4Q	678	1-4Q	746	1-4Q	3107	4956	0
Subtotal:			0	4059		4042		4267		17630	29998	0
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
Subtotal:			0	0		0		0		0	0	0

ARMY RDT&E COST ANALYSIS(R3)									February 2005			
BUDGET ACTIVITY 7 - Operational system development					PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs					PROJECT 786		
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 . Test Support	Various	Various	0	212	2Q	441	1Q	549	1Q	2462	2604	0
Subtotal:			0	212		441		549		2462	2604	0
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 . In-House Support	Various	Various	0	388	2-4Q	396	1-4Q	411	1-4Q	1722	2917	0
Subtotal:			0	388		396		411		1722	2917	0
Project Total Cost:			0	4659		4879		5227		21814	35519	0

Schedule Profile (R4 Exhibit)																				February 2005												
BUDGET ACTIVITY 7 - Operational system development										PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs														PROJECT 786								
Event Name	FY 05				FY 06				FY 07				FY 08				FY 09				FY 10				FY 11				FY 12			
	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				
APKWS Simulator																																
(1) Contract Award																																
Software Design Review																																
Software Integration/Testing																																
Simulator Upgrade																																

Schedule Detail (R4a Exhibit)

February 2005

BUDGET ACTIVITY

7 - Operational system development

PE NUMBER AND TITLE

0203802A - Other Missile Product Improvement Programs

PROJECT

786

<u>Schedule Detail</u>	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Award APKWS Simulator Contract		2Q						
APKWS Simulator Software Design Review			2-4Q	1-4Q	1-4Q	1-4Q	1-2Q	
APKWS Simulator Software Integration/Testing			3-4Q	1-4Q	1-4Q	1-4Q	1-3Q	
APKWS Simulator Upgrade			4Q	1-4Q	1-4Q	1-4Q	1-4Q	1Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)							February 2005			
BUDGET ACTIVITY 7 - Operational system development				PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs				PROJECT 788		
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
788 ATACMS PIP	0	0	18681	19395	17531	0	0	0	0	55607
<p>A. Mission Description and Budget Item Justification: The Army Tactical Missile Systems (ATACMS) Quick Reaction Unitary (QRU) is a 24/7 all weather low collateral damage precision strike, artillery missile system. Coupled with the High Mobility Artillery Rocket System (HIMARS) and Multiple Launch Rocket System (MLRS) M270A1 launch platforms, the ATACMS Unitary provides the joint war fighter with unprecedented expeditionary capability as a highly mobile, rapidly deployable, precision guided munition. It is effective against counter fire, air defense, light material, and urban infrastructure targets. During Operation Iraqi Freedom (OIF), 456 ATACMS precision missiles were launched from Multiple Launch Rocket System (MLRS) M270A1 and High Mobility Artillery Rocket System (HIMARS) launchers by the Joint Land Component Commander and Joint Special Operations Command (JSOC) providing critical Operational Shaping/Precision Strike fires. ATACMS Quick Reaction Unitary (QRU) missiles were subsequently used during Operation IVY CYCLONE II against terrorist insurgent hard targets. The following efforts will further develop the ATACMS QRU into the ATACMS Block IA Unitary. These efforts encompass the acquisition of a new warhead, the development and implementation of a tri-mode capable fuze, and Insensitive Munitions (IM) trade studies. The new warhead and multi-mode fuze will provide the capability of point detonation, air burst, and delay. Future technologies and munitions will be assessed for spiral development and potential insertion into ATACMS Block IA Unitary to provide operational flexibility and capability.</p>										
Accomplishments/Planned Program						FY 2004	FY 2005	FY 2006	FY 2007	
Conduct Development Engineering which includes: Warhead design, evaluation and qualification, tri-mode fuze development and qualification, and Insensitive Munitions (IM) trade studies.						0	0	15763	14384	
Conduct system Test and Evaluation program which includes: Developmental (Arena/Sled) and Operational (Flight) tests.						0	0	873	2917	
Develop Advance Field Artillery Tactical Data System (AFATDS) interface.						0	0	511	491	
Perform continuous technical and risk assessments, conduct studies, and prepare milestone documentation for milestone review.						0	0	1534	1603	
Totals						0	0	18681	19395	

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PROJECT

788

B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
ATACMS Block IA - Procurement Army C98510	57572	61247	58458	60484	61044	0	0	0	0	298805
ATACMS MODS - Procurement Army C98510	0	0	0	0	2245	37817	40331	42000	426150	548543

C. Acquisition Strategy: The Army Tactical Missile Systems (ATACMS) Quick Reaction Unitary (QRU) is the only ATACMS variant currently in production and is the fourth variant of the ATACMS developed. It is a modification of the ATACMS Block IA system, which replaced the M74 anti-personnel, anti-materiel (APAM) bomblets with a Navy WDU-18 Unitary Warhead. The System Development and Demonstration (SDD) program will focus on developing capabilities toward meeting requirements in the ATACMS Unitary Operational Requirements Document (ORD). The SDD program will also include a development and operational test program which will assess system survivability, accuracy, and effectiveness. The Acquisition Strategy is to leverage technology already gained from the QRU program, and execute a stream-lined product improvement program employing a spiral development approach. These efforts encompass the acquisition of a new warhead, the development and implementation of a tri-mode fuze, and Insensitive Munitions (IM) trade studies.

ARMY RDT&E COST ANALYSIS(R3)										February 2005		
BUDGET ACTIVITY 7 - Operational system development					PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs					PROJECT 788		
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 . Prime Contract	TBD	TBD	0	0		14921	2Q	13308	2Q	11133	39362	0
b . Developmental Engineering	Various	RDEC, AL	0	0		842	1-2Q	1076	1-2Q	1228	3146	0
Subtotal:			0	0		15763		14384		12361	42508	0
Remarks: TBD - To Be Determined, RDEC - Research Development Engineering Center, Huntsville, AL.												
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 . Support Contract	C/CPFF	S3, GSA, CAS	0	0		511	1-2Q	491	1-2Q	0	1002	0
Subtotal:			0	0		511		491		0	1002	0
Remarks: S3 - Systems Studies Simulation, Inc., Huntsville, AL; C/CPFF - Competitive/Cost Plus Fixed Fee; GSA - Government Service Agency; CAS - Clark and Stender, Inc.												

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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 . Test Support	Various	WSMR, FSA, APG, Eglin, China Lake	0	0		873	1-2Q	2917	1-2Q	4136	7926	0
Subtotal:			0	0		873		2917		4136	7926	0
Remarks: WSMR - White Sands Missile Range, New Mexico; RSA - Redstone Arsenal, Alabama; APG - Aberdeen Proving Grounds, Maryland; Eglin Air Force Base, Florida; China Lake, California												
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 . In-House Support	N/A	PFRMS Project Office, Redstone Arsenal, AL	0	0		1534	1-4Q	1603	1-4Q	1034	4171	0
Subtotal:			0	0		1534		1603		1034	4171	0
Remarks: PFRMS - Precision Fires Rocket and Missile Systems; N/A - Not Applicable												
Project Total Cost:			0	0		18681		19395		17531	55607	0