

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2003

## BUDGET ACTIVITY

### 7 - Operational system development

## PE NUMBER AND TITLE

0203802A - Other Missile Product Improvement Programs

COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	52921	12445	9822	4915	4903	4777	4907	4903	0	169275
336 TOW PIP	35371	0	0	0	0	0	0	0	0	93344
785 LONGBOW HELLFIRE PIP	17550	12445	9822	0	0	0	0	0	0	51526
786 APKWS SIMULATOR UPGRADE	0	0	0	4915	4903	4777	4907	4903	0	24405

**A. Mission Description and Budget Item Justification:** The TOW Fire and Forget (F&F) Missile program provides a capability to Light Early-Entry Contingency Forces and the Interim Brigade Combat Teams equipped with the TOW Improved Target Acquisition System (ITAS). The Army has recently completed a thorough review of all programs in order to balance near-term requirements with Objective Force needs. As a result, the TOW F&F program is not funded after FY02.

Longbow HELLFIRE is a critical system to the Interim and Objective Forces. Longbow HELLFIRE provides the Army with a fire-and-forget, anti-armor capability for the Apache Longbow (Interim Force) and Comanche (Objective Force) 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) and add Counter-Active Protection System (CAPS) capabilities for the missile. The HOJ/AJ and CAPS objective is to maintain the Longbow HELLFIRE Missile System's low vulnerability and susceptibility to any "hard kill" Active Protection System (APS) and battlefield jammer threats. This system supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP).

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 the RAH-66 Comanche helicopter simulators. These 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. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

**ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)****February 2003****BUDGET ACTIVITY****7 - Operational system development****PE NUMBER AND TITLE****0203802A - Other Missile Product Improvement Programs**

<b><u>B. Program Change Summary</u></b>	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>
Previous President's Budget (FY 2003)	68318	13018	9988	0
Current Budget (FY 2004/2005 PB)	52921	12445	9822	4915
Total Adjustments	-15397	-573	-166	4915
Congressional program reductions				
Congressional rescissions		-143		
Congressional increases				
Reprogrammings	-13496	-72		
SBIR/STTR Transfer	-1901	-358		
Adjustments to Budget Years			-166	4915

FY02 funds reprogrammed to higher Army priorities due to the termination of the TOW Fire and Forget program.  
FY05 increase to initiate APKWS Simulator upgrade development.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								February 2003			
BUDGET ACTIVITY 7 - Operational system development				PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs				PROJECT 785			
COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
785	Longbow Hellfire PIP	17550	12445	9822	0	0	0	0	0	0	51526
<p><b>A. Mission Description and Budget Item Justification:</b> Longbow HELLFIRE is an Objective Force missile system that provides the Army with a fire-and-forget, anti-armor capability for the Apache Longbow (Interim Force) and Comanche (Objective Force) 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) and add Counter-Active Protection System (CAPS) capabilities for the missile. The HOJ/AJ and CAPS objective is to maintain the Longbow HELLFIRE Missile System's low vulnerability and susceptibility to any "hard kill" Active Protection System (APS) and battlefield jammer threats. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).</p>											
<b>Accomplishments/Planned Program</b>							<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>	
Complete critical/final design of HOJ/AJ software; complete 6 degree of freedom modeling.							15518	0	0	0	
Implement design changes; formal hardware qualification; hardware in the loop; complete critical/final design; complete guidance section and rocket ball design evaluation.							0	10229	6578	0	
Conduct missile ground flight test, low speed captive flight test, and aircraft system flight test.							0	1193	2303	0	
Conduct tower, wind tunnel, and hardware in the loop testing.							549	0	0	0	
Perform government engineering support.							1483	1023	941	0	
<b>Totals</b>							<b>17550</b>	<b>12445</b>	<b>9822</b>	<b>0</b>	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								February 2003		
BUDGET ACTIVITY 7 - Operational system development				PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs					PROJECT 785	
<b>B. Other Program Funding Summary</b>	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
C70300 Longbow Hellfire/LBHF	231486	181183	33061	28526	26892	11174	0	0	0	2137617
<b>C. Acquisition Strategy:</b> Development of the Longbow Hellfire HOJ/AJ and CAPS 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 and CAPS.										

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY <b>7 - Operational system development</b>					PE NUMBER AND TITLE <b>0203802A - Other Missile Product Improvement Programs</b>					PROJECT <b>785</b>		
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 . Prime Contract	LC/CPIF-AF	Longbow Limited Liability Company, Orlando, FL	21576	8970	1Q	4829	1Q	0		0	35375	0
b . Support Contracts	Various	Various	2120	622	1-4Q	764	1-4Q	0		0	3506	0
c . Development Engineering	Various	Various	1944	637	1-4Q	985	1-4Q	0		0	3566	0
Subtotal:			25640	10229		6578		0		0	42447	0
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
Subtotal:			0	0		0		0		0	0	0

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY <b>7 - Operational system development</b>					PE NUMBER AND TITLE <b>0203802A - Other Missile Product Improvement Programs</b>					PROJECT <b>785</b>		
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 . Test Support	Various	Various	1074	1193	1-4Q	2303	1-4Q	0		0	4570	0
Subtotal:			1074	1193		2303		0		0	4570	0
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 . In-House Support	Various	Various	2545	1023	1-4Q	941	1-4Q	0		0	4509	0
Subtotal:			2545	1023		941		0		0	4509	0
Project Total Cost:			29259	12445		9822		0		0	51526	0

Schedule Profile Detail (R-4a Exhibit)							February 2003	
BUDGET ACTIVITY <b>7 - Operational system development</b>				PE NUMBER AND TITLE <b>0203802A - Other Missile Product Improvement Programs</b>				PROJECT <b>785</b>
<u>Schedule Detail</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Test and Evaluation	2-3Q							
Missile firings LBHF HOJ/AJ		2Q						
Engineering Change Proposal LBHF HOJ/AJ		3Q						
Complete detailed design LBHF CAPS		2Q						
Test and Evaluation			2Q					
Engineering Change Proposal LBHF CAPS			3Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								February 2003		
BUDGET ACTIVITY <b>7 - Operational system development</b>				PE NUMBER AND TITLE <b>0203802A - Other Missile Product Improvement Programs</b>				PROJECT <b>786</b>		
COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
786      APKWS SIMULATOR UPGRADE	0	0	0	4915	4903	4777	4907	4903	0	24405
<p><b><u>A. Mission Description and Budget Item Justification:</u></b>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. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).</p>										
<b><u>Accomplishments/Planned Program</u></b>						<b><u>FY 2002</u></b>	<b><u>FY 2003</u></b>	<b><u>FY 2004</u></b>	<b><u>FY 2005</u></b>	
Define system requirements for training simulator hardware and software.						0	0	0	4413	
Develop test plans.						0	0	0	212	
Perform government engineering support.						0	0	0	290	
Totals						0	0	0	4915	



ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								February 2003		
BUDGET ACTIVITY 7 - Operational system development				PE NUMBER AND TITLE 0203802A - Other Missile Product Improvement Programs					PROJECT 786	
B. Other Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
C70301 APKWS (Advanced Precision Kill Weapon System)	0	0	0	20566	50458	65320	125869	160451	1435900	1858564
PE 604802/705 Advanced Precision Kill Weapon System (APKWS) SD&ED	0	23369	35112	11414	6667	9405	18252	16966	0	121185
<p><b>C. Acquisition Strategy:</b>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.</p>										

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY <b>7 - Operational system development</b>					PE NUMBER AND TITLE <b>0203802A - Other Missile Product Improvement Programs</b>					PROJECT <b>786</b>		
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 . Prime Contract	CPIF/AF	TBD	0	0		0		3863	1Q	57961	61824	0
b . Support Contracts	Various	Various	0	0		0		125	1-4Q	1916	2041	0
c . Developmental Engineering	Various	Various	0	0		0		425	1-4Q	5247	5672	0
Subtotal:			0	0		0		4413		65124	69537	0
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
Subtotal:			0	0		0		0		0	0	0

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
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 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 . Test Support	Various	Various	0	0		0		212	1Q	3781	3993	0
Subtotal:			0	0		0		212		3781	3993	0
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 . In-House Support	Various	Various	0	0		0		290	1Q	5385	5675	0
Subtotal:			0	0		0		290		5385	5675	0
Project Total Cost:			0	0		0		4915		74290	79205	0

Schedule Profile Detail (R-4a Exhibit)							February 2003	
BUDGET ACTIVITY <b>7 - Operational system development</b>				PE NUMBER AND TITLE <b>0203802A - Other Missile Product Improvement Programs</b>			PROJECT <b>786</b>	
<u>Schedule Detail</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Award APKWS Simulator Contract				1Q				
APKWS Simulator PDR				3Q				
APKWS Simulator CDR					2Q			
APKWS Simulator Testing					3Q			
APKWS Simulator Refit					4Q			
APKWS Simulator PDR for Lethality Enhancements						1Q		
APKWS Simulator CDR for Lethality Enhancements						2Q		
APKWS Simulator ECP for Lethality Enhancements						3Q		
APKWS Simulator Lethality Enhancements Refit							1Q	
APKWS Simulator PDR for Motor/Seeker Enhancements							3Q	
APKWS Simulator CDR for Motor/Seeker Enhancements								1Q
APKWS Simulator ECP for Motor/Seeker Enhancements								4Q