

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

February 2004

## BUDGET ACTIVITY

**5 - System Development and Demonstration**

## PE NUMBER AND TITLE

**0604802A - Weapons and Munitions - Eng Dev**

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
Total Program Element (PE) Cost		49830	157076	125885	94190	80507	55891	34494	Continuing	632117
134	OBJ IND CBT WPN ENG DE	0	0	16453	14453	2880	2791	0	0	36577
613	MORTAR SYSTEMS	8184	38419	19730	30927	41499	39448	29768	Continuing	228696
705	ADV PRECISION KILL WEAPON SYSTEM (APKWS) - SD&ED	21366	46870	12450	6241	5054	0	0	0	91981
AS1	SMALL ARMS IMPROVEMENT	8389	8384	11373	6258	2353	13652	4726	0	67216
AS5	ARTILLERY MUNITIONS ENGINEERING DEVELOPMENT	6201	23017	0	0	0	0	0	0	30660
AS6	COMMON REMOTELY OPERATED WEAPONS STATION (CROWS)	2581	2969	0	0	0	0	0	0	5550
AS8	XM395 PRECISION GUIDED MORTAR MUNITION (PGMM)	1434	0	0	0	0	0	0	0	1434
S23	SURF LNCH ADV MED RNG AIR-TO-AIR MSL (SLAMRAAM)	1675	37417	65879	36311	28721	0	0	0	170003

**A. Mission Description and Budget Item Justification:** This program element funds multiple efforts for engineering development of weapons and munitions systems.

The Objective Individual Combat Weapons Engineering Development (134) funds the spiral development of the XM29, Integrated Air Burst Weapons System, which represents the next generation of the individual weapons system for U.S. Armed Services. This modular, dual-barrel weapon system includes revolutionary high-explosive air bursting munitions, standard NATO 5.56mm kinetic energy projectiles and an integrated, multifunctional, all environment, full-solution target acquisition/fire control system. The first spiral will be the XM8 Assault Weapon. This system supports the Current to Future transition path of the Transformation Campaign Plan (TCP).

The Mortar Systems (613) effort supports development of the Mortar Fire Control System (MFCS). The MFCS is a revolutionary improvement in mortar capability, seamlessly linking mortar fires in the future digital battlefield. Additionally, it funds development of the Precision Guided Mortar Munition and the 120mm XM982 Short Range Practice Cartridge.

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Project 705, the Advanced Precision Kill Weapon System (APKWS), is a highly accurate weapon that will complement the HELLFIRE missile in precision strikes against soft point targets and provide improved accuracy over the current 2.75-inch munition used on the AH-64 Apache, OH-58 Kiowa Warrior, and the future RAH-66 Comanche helicopters. The APKWS will provide at least ten times the number of kills, thereby substantially reducing collateral damage and reducing cost. The APKWS supports the Current to Future transition path of the Transformation Campaign Plan (TCP).

The Small Arms Improvement program (AS1) develops technology to enhance lethality, target acquisition, fire control, training effectiveness, and/or reliability for small arms weapon systems. This program supports the Current to Future transition path of the Transformation Campaign Plan (TCP).

Project AS5 funds the design, development, assembly and test of a Low Cost Competent Munition (LCCM) fuze, now known as the Course Correcting Fuze (CCF). The final concept for the LCCM will probably encompass a standard fuze equipped with a Global Positioning System (GPS) receiver, an air-drag device compensating for gun and meteorological ballistics effects, a Fuze, Safe and Arm (FSA) mechanism, a U.S. required Selective Availability, Anti-Spoof GPS Module (SAASM), a smaller high power battery, an inductive fuze data link, and improved trajectory correcting software algorithms. The LCCM program supports the Current transition path of the Transformation Campaign Plan (TCP). Additionally, this project funds the development of the Advanced Concept Artillery Program (ACA2P), Dual Purpose Improved Conventional Munitions, and Hybrid Propellant for the Future Combat System.

The Remote Mount Platform (CROWS) (AS6) addresses the modernization of existing small arms weapons systems by providing for the engineering and manufacturing development of a remote mounting system for heavy and medium machine guns (MK19 and M2, M240B/M249 SAW). The CROWS will provide the capability to remotely operate crew served weapons, improve system accuracy and operational response time by integrating state of the art drives, controls and sensors. The CROWS will also provide a baseline for a common armament platform for insertion across a variety of vehicles to reduce life cycle cost. The system will be modular and have an open architecture to permit further improvements. The system will improve aiming accuracy and maximize probability of hit against a wide variety of targets. The funded effort will provide pre-production prototype systems for the Armored Security Vehicle, Up-Armored HMMWV and Future Combat Systems (FCS) in accordance with the Current to Future transition path of the Army's Transformation Campaign Plan (TCP).

Project AS8 funds the M223E1 Pyrotechnic Self-Destruct Fuze (p-SDF). The p-SDF will be developed and optimized for potential application for the 155mm M864 Recapitalization Program. The effort addresses incorporating mechanical enhancements focused on improving the reliability of both the primary and secondary (pyrotechnic) fuze modes; as well as pyrotechnic enhancements to achieve the minimum desired burn rate during all operational scenarios. The FY03 program will demonstrate the final fuze design and prove out the entire p-SDF manufacturing process to support the M864 Recapitalization Qualification Phase in FY04 and production in early FY05.

Project S23, the Surface Launched Advanced Medium Range Air-To-Air Missile (SLAMRAAM), is the initial kinetic energy component of the Enhanced Area Air Defense System (EAADS), an AMD Objective Force system. SLAMRAAM's force protection mission is to engage the low-altitude aerial threats out to 18km. This system supports the Future transformation path of the Transformation Campaign Plan (TCP).

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#### B. Program Change Summary

	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004)	50341	129409	133444
Current Budget (FY 2005 PB)	49830	157076	125885
Total Adjustments	-511	27667	-7559
Congressional program reductions		-1512	
Congressional rescissions			
Congressional increases		31450	
Reprogrammings	-511	-2271	
SBIR/STTR Transfer			
Adjustments to Budget Years			-7559

FY 2004: Funds increased (+\$31.5 million) for Congressional Adds for the following efforts:

- Common Remotely Operated Weapon Station (+\$3.0 million)
- XM932 Short Range Practice Cartridge (+\$1.2 million)
- Advanced Concept Artillery Program (ACA2P) (+\$8.5 million)
- Small Arms Fire Control System II (+\$1.7 million)
- Advanced Precision Kill Weapon System (+\$7.0 million)
- Precision Guided Mortar Munition (+\$2.8 million)
- Rapidly Installed Fuel Transfer System (+\$5.25 million)
- Dual Purpose Improved Conventional Munitions (+\$1.0 million)
- Hybrid Propellant For FCS Application (+\$1.0 million)

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PROJECT

**134**

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
134 OBJ IND CBT WPN ENG DE	0	0	16453	14453	2880	2791	0	0	36577

**A. Mission Description and Budget Item Justification:** The XM8 Assault Weapon is a spiral development program from the 5.56mm kinetic energy (KE) carbine portion of the XM29, Integrated Air Burst Weapon. The XM8 represents the state-of-the-art 5.56mm assault weapons. The XM8 Assault Weapon is lighter than a comparably equipped M4 Carbine Modular Weapon System (MWS) with improved features and performance unavailable in the current M4. The XM8 will have four variants, a baseline assault weapon, sharpshooter variant, automatic rifle variant and a compact variant. To meet changing mission requirements these variants are easily and quickly reconfigured by the individual Soldier with the use of interchangeable assembly groups such as barrel, handguard, low receiver, buttstock modules and sighting system. The XM8 Assault Weapon will increase reliability and decrease logistic operations. Due to the immediate benefits of the XM8 Assault Weapon, the Department of Army has accelerated this program. This system supports the Current to Future transition path of the Transformation Campaign Plan (TCP).

The XM25 Assault Weapon is the air burst portion of the XM29, Integrated Air Burst Weapon. The XM25 Air Burst Assault Weapon dramatically increases Soldier survivability, standoff and versatility. The air burst weapon provides the Soldier with a 300-500% increase in hit probability to defeat point, area and defilade targets out to approximately 500 meters. The XM25 weapon includes revolutionary high explosive air bursting munitions and an integrated, multifunctional, all environment, full-solution target acquisition / fire control system. This system supports the Current to Future transition path of the Transformation Campaign Plan (TCP).

This project is a spiral development program from Budget Activity 4 (PE 0603802 AS3).

<u>Accomplishments/Planned Program</u>	FY 2003	FY 2004	FY 2005
XM8 - Program Development and Engineering Changes	0	0	1700
XM8 - Fabrication for Testing	0	0	1000
XM8 - Production Verification Test	0	0	500
XM8 - Logistic Demonstration and IOT&E	0	0	6000
XM25 - Program Development	0	0	1253
XM25 - Finalize Design and Development	0	0	6000
Totals	0	0	16453

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PROJECT

**134**

## **B. Other Program Funding Summary**

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
WTCV: SSN G16102 XM-8 Carbine (5.56mm)	0	0	500	500	32191	42573	42654	Continuing	Continuing
RDTE: PE 0603802A, project AS3	26898	31500	0	0	0	0	0	0	58398

**C. Acquisition Strategy:** Using a spiral acquisition strategy the XM8 Carbine is being developed as a new assault weapon from the 5.56mm kinetic energy (KE) carbine portion of the XM29, Integrated Air Burst Weapon. In June 2003 an Acquisition Decision Memorandum was signed by Program Executive Officer (PEO) Soldier authorizing the initiation of a project to develop the XM8 as an early block development. Exit criteria and key performance parameters were established for an accelerated program. The System Development and Demonstration (SDD) phase will complete development of the XM8 weapon system and verify training solution for Milestone C approval in FY 2005.

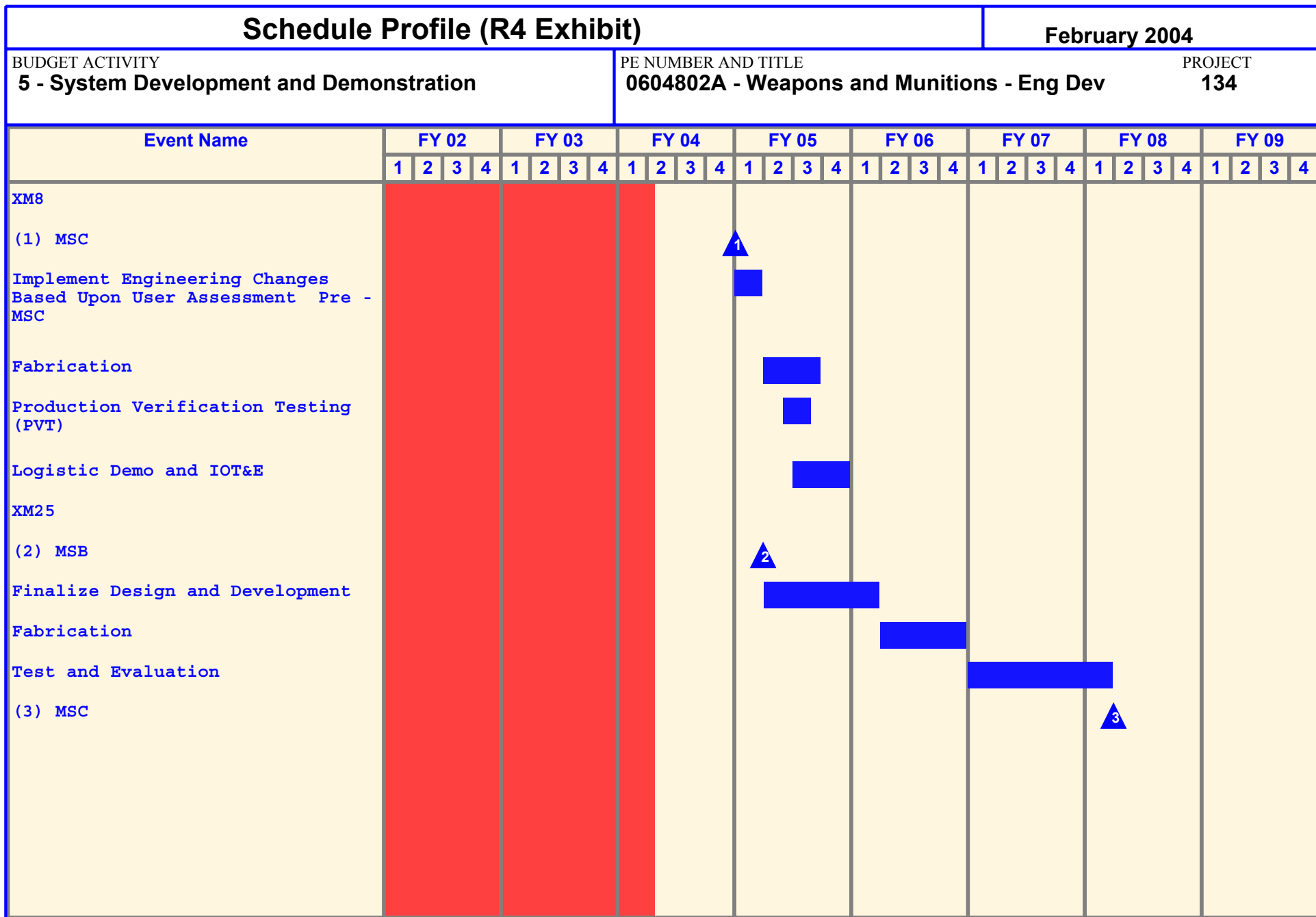
The XM25 Air Burst Assault Weapon will reach Milestone B in FY 2005. The System Development and Demonstration (SDD) phase will complete development of the XM25 weapon system and verify training solution for the Milestone C approval in FY 2008.

ARMY RDT&E COST ANALYSIS(R3)									February 2004			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>134</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 . XM8 - Engineering Changes	Cost Plus Fixed Fee	TBD	0	0		0		725	1Q	0	725	0
b . XM8 - Fabrication	Cost Plus Fixed Fee	TBD	0	0		0		1000	2Q	0	1000	0
c . XM25 - Design and Development	Cost Plus Fixed Fee	Alliant Technology Systems, Plymouth, MN	0	0		0		6000	2Q	0	6000	0
Subtotal:			0	0		0		7725		0	7725	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
a . XM8 - Engineering Support	MIPR	Multiple	0	0		0		300	1-4Q	0	300	0
b . XM8 - Logistics Support	MIPR	Multiple	0	0		0		250	1-4Q	0	250	0
c . XM25 - Engineering Support	MIPR	Multiple	0	0		0		600	1-4Q	0	600	0

ARMY RDT&E COST ANALYSIS(R3)									February 2004				
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT			
5 - System Development and Demonstration					0604802A - Weapons and Munitions - Eng Dev					134			
II. Support Cost (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	
			0	0		0		1150		0	1150	0	
Subtotal:													
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 . XM8 - Production Verification Test	MIPR	Army Test & Evaluation Command, VA	0	0		0		500	2-3Q	0	500	0	
b . XM8 - Logistic Demo and IOT&E	MIPR	Army Test & Evaluation Command, VA	0	0		0		6000	3-4Q	0	6000	0	
Subtotal:			0	0		0		6500		0	6500	0	

ARMY RDT&E COST ANALYSIS(R3)									February 2004				
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT			
5 - System Development and Demonstration					0604802A - Weapons and Munitions - Eng Dev					134			
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	In-House	PM Soldier Weapons	0	0		0		578	1-4Q	0	578	0	
b . Program Management Support	Time & Material	International Consultants, Inc., Dayton, OH	0	0		0		500	2Q	0	500	0	
Subtotal:			0	0		0		1078		0	1078	0	
Project Total Cost:			0	0		0		16453		0	16453	0	





Schedule Detail (R4a Exhibit)						February 2004	
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>			PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>			PROJECT <b>134</b>	
<u><b>Schedule Detail</b></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>
XM8 - Milestone C			1Q				
XM8 - Engineering Changes based upon Pre-MS C User Assessment			1Q				
XM8 - Fabrication			2-3Q				
XM8 - Production Verification Test			2-3Q				
XM8 - Logistic Demo and IOT&E			3-4Q				
XM25 - Milestone B			1Q				
XM25 - Final Design and Development			2-4Q	1Q			
XM25 - Fabrication				2-4Q			
XM25 - Test and Evaluation					1-4Q	1Q	
XM25 Milestone C						2Q	

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BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>				PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>				PROJECT <b>613</b>				
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
613      MORTAR SYSTEMS				8184	38419	19730	30927	41499	39448	29768	Continuing	228696
<p><b>A. Mission Description and Budget Item Justification:</b> Mortar Fire Control System (MFCS) - This program provides funds to complete development and type classify items that will enhance the effectiveness, lethality, versatility, mobility, and accuracy of mortar systems. Current mortar systems include conventional ammunition with a variety of fuzing, weapons that range from man-portable 60mm to vehicle-mounted 120mm mortars, and related equipment such as fire control systems, mortar ballistic computers, training devices, and ammunition. Current funding for this project continues development of the digital Mortar Fire Control System (MFCS) in heavy and light variants. The MFCS is a revolutionary improvement in mortar capability, seamlessly linking mortar fires in the future digital battlefield. The MFCS (Heavy) provides an on-board fire control system that includes a fire control computer, position navigation system, and gun pointing system. The MFCS allows mortar crews to set-up and fire in one minute or less, down from the current eight minutes and accuracy is increased by a factor of four. Shorter exposure times increase crew survivability. The MFCS is fully compatible with the Advanced Field Artillery Tactical Data System (AFATDS), increasing situational awareness and reducing the probability of fratricide. This project fully supports and is an integral component of the Army's Current-to-Future path of the Transformation Campaign Plan (TCP).</p> <p>Precision Guided Mortar Munition (PGMM) - This program provides funds to perform system and technical development that will enhance the effectiveness, lethality, versatility, mobility, and accuracy of mortar systems. Current mortar systems include conventional ammunition with a variety of fuzing weapons that range from man-portable 60mm to vehicle-mounted 120mm mortars, and related equipment such as fire control, mortar ballistic computers, and training devices. FY04-FY08 funds provide for start and completion of System Development &amp; Demonstration (SDD) of a Increment 1 Precision Guided Mortar Munition (PGMM). The PGMM will be a precision strike round using advanced sensors and guidance systems, extended range and enhanced lethal mechanism technology. It will be capable of a first round defeat of high-value, hard-point targets such as bunkers, command and control centers, and stationary lightly armored vehicles. The capability to hit point targets in built-up areas makes this especially valuable in Military Operations in Urban Terrain (MOUT) and Military Operations Other Than War/Stability and Support Operations (MOOTW/SASO) situations. First round hit capability reduces the overall logistical burden, a critical goal for early entry forces. This system supports the Current-to-Future transition path of the TCP.</p> <p>The Mortar Anti-Personnel - Anti-Materiel (MAPAM) round is a program to evaluate and, if possible, type classify a foreign round. Rounds have been procured for comparative testing via sole source contract to SM Swiss Ammunition Enterprise Corp.</p> <p>The 120mm XM982 Short Range Practice Cartridge will allow mortar crewmen to practice 120mm mortar firing techniques on ranges with limited impact areas.</p>												

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PROJECT

**613**

## Accomplishments/Planned Program

	FY 2003	FY 2004	FY 2005
MFCS: Hardware Development	2037	1369	2120
MFCS: Software Development	2379	633	1355
MFCS: Test & Evaluation	100	1955	960
MFCS: Program Management	270	150	150
MFCS: Development Engineering	250	470	440
PGMM: SD&D Subsystem Test and System Integration	0	25060	9775
PGMM: System Engineering	0	4000	3400
PGMM: Program Management	0	1100	990
PGMM: Development Test & Evaluation	0	1400	540
MAPAM: System Engineering	1182	0	0
MAPAM: Test and Evaluation	910	0	0
MAPAM: Vendor Hardware	251	0	0
MAPAM: Contract Engineering Support	400	0	0
MAPAM: Component Hardware and LAP	344	0	0
MAPAM: Program Management	61	0	0
120mm SRPC: Development	0	715	0
120mm SRPC: Test and Evaluation	0	400	0
120mm SRPC: Program Management	0	50	0
Small Business Innovative Research/Small Business Technology Transfer Programs	0	1117	0
<b>Totals</b>	<b>8184</b>	<b>38419</b>	<b>19730</b>

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PE NUMBER AND TITLE

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PROJECT

**613**

## **B. Other Program Funding Summary**

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
Other Procurement, Army-2-: K99300 (MFCS)	30013	39224	14633	18877	37528	0	0	0	149925
0603802 AS4 Weapons and Munitions Advanced Development, Mortar Systems	7740	0	0	0	0	0	0	0	10427
Procurement, Army Ammunition - E86200 (CTG, Mortar, 120mm, PGMM)	0	0	0	0	9882	23458	19567	181103	234010

**C. Acquisition Strategy:** The acquisition strategy for Mortar Fire Control System includes product development efforts performed by the government and industry. RDECOM, specifically ARDEC, will develop all versions of Mortar Fire Control software for all platforms, and will also provide post deployment software support. Most hardware and integration efforts will be performed by Honeywell Defense and Space Electronic Systems. However, hardware for the light weight handheld computer, as required by the MFCS Operational Requirements Document (ORD) for dismounted operations, will be procured through the PM Common Hardware/Software Task contract.

The Precision Guided Mortar Munition (PGMM) Component Advanced Development (CAD) phase contract was awarded sole source to Lockheed Martin, Orlando, FL and was completed in September 2003. The PGMM program had a successful Milestone B program review and was given conditional approval to begin the Systems Development and Demonstration (SDD) phase, subject to approval of the Operational Requirements Document (ORD). The Army approved the ORD at the 3-Star level on 20 Nov 2003, and the ORD is currently being staffed through the Joint Requirements Oversight Council (JROC). The SDD source selection has been completed and contract award will be made to Alliant Techsystems pending completion of the JROC review in 2QFY04 and subsequent to ORD approval by the Chief of Staff of the Army (CSA).

The Mortar Anti-Personnel - Anti-Materiel (MAPAM) round is a program to evaluate and type classify a foreign round. Rounds have been procured for comparative testing via sole source contract to SM Swiss Ammunition Enterprise Corp.

The 120mm XM982 Short Range Practice Cartridge is being developed by the government at ARDEC.

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BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
5 - System Development and Demonstration					0604802A - Weapons and Munitions - Eng Dev					613		
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 . MFCS: Software Development (LHMBC)	Project Order	TACOM-ARDEC Picatinny Arsenal NJ	1311	2379	2Q	633	2Q	1355	2Q	0	5678	0
b . MFCS: Hardware Development	Contract	Honeywell Defense Electronics Systems, Albuqu	0	857	4Q	0	2Q	1640	2Q	0	2497	0
c . MFCS: Fire Direction Center Hardware Development	Project Order	TACOM-ARDEC Picatinny Arsenal NJ	0	800	2Q	0		0		0	800	0
d . LHMBC: Hardware Development	Project Order	TACOM-ARDEC Picatinny Arsenal NJ	0	0		473	2Q	0		0	473	0
e . LHMBC: Hardware	Contract	CHS2 Fort Monmouth, NJ	0	0		400	3Q	0		0	400	0
f . PGMM: SD&D - Subsystem Test & System Integration	Competitive /CPIF	ATK Plymouth, MN	0	0		25060	2-3Q	9775	2-3Q	0	34835	0
g . MAPAM: Component Hardware and LAP	SS/FP	SM Swiss AEC Zurich, Switzerland	0	344	4Q	0		0		0	344	0
h . MAPAM: Vendor Hardware	SS/FP	SM Swiss AEC Zurich, Switzerland	6302	251	2Q	0		0		0	6553	0
i . 120mm SRPC: Development	Project Order	TACOM-ARDEC Picatinny Arsenal NJ	0	0		335	3Q	0		0	335	0

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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
j . 120mm SRPC: Development	Contract	Pocal Industries Moscow, PA	0	0		380	3Q	0		0	380	0
Subtotal:			7613	4631		27281		12770		0	52295	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
a . MFCS: Development Engineering	Project Order	TACOM-ARDEC Picatinny Arsenal NJ	4895	250	2Q	0		0		0	5145	0
b . MFCS: Logistics Support	Project Order	TACOM-RI Rock Island III	396	80	2Q	200	2Q	170	2Q	0	846	0
c . MAPAM: System Engineering	Project Order	TACOM-ARDEC Picatinny Arsenal NJ	3100	1182	2Q	0		0		0	4282	0
d . MFCS: Development Support	T&M Contract	CSC	0	300	2Q	100	2Q	100	2Q	0	500	0
e . LHMCB: Development Engineering	Project Order	TACOM-ARDEC Picatinny Arsenal NJ	0	0		496	2Q	480	2Q	0	976	0

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BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
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II. Support Cost (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
f . LHMB: Development Engineering	Contract	Robbins Gioia	0	0		40	2Q	40	2Q	0	80	0
g . LHMB: Development Engineering	Contract	Camber	0	0		130	2Q	130	2Q	0	260	0
h . PGMM: Systems Engineering	Project Order	TACOM-ARDEC Picatinny Arsenal NJ	0	0		4000	2-3Q	3400	2-3Q	0	7400	0
i . MAPAM: Contract Engineering Support	SS/FP	SM Swiss AEC, Zurich, Switzerland	0	400	2Q	0		0		0	400	0
Subtotal:			8391	2212		4966		4320		0	19889	0



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BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>613</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 . MFCS: Development Test & Evaluation	MIPR	ATEC, Alexandria, VA	3635	0		0		0		0	3635	0
b . LHMB: Development Test & Evaluation	MIPR	ATEC, Alexandria, VA	0	0		1371	4Q	460	3Q	0	1831	0
c . MFCS: Information Assurance	MIPR	CECOM Ft Monmouth NJ	178	0		0		0		0	178	0
d . LHMB: Information Assurance	MIPR	CECOM Ft Monmouth NJ	0	0		150	2Q	100	2Q	0	250	0
e . MFCS: Development Test	Project Order	TACOM-ARDEC Picatinny Arsenal, NJ	0	100	2Q	0		0		0	100	0
f . LHMB: Development Test (PQT)	Project Order	TACOM-ARDEC Picatinny Arsenal, NJ	0	0		434	2Q	400	2Q	0	834	0
g . PGMM: Development Test and Evaluation	Project Order	ATEC, Alexandria, VA	0	0		1400	2-3Q	540	2-3Q	0	1940	0
h . MAPAM: PQT	Project Order	Yuma Proving Ground, Yuma, AZ	0	910	3Q	0		0		0	910	0
i . 120mm SRPC: Test and Evaluation	Project Order	Yuma Proving Ground Yuma, AZ	0	0		400	3Q	0		0	400	0

ARMY RDT&E COST ANALYSIS(R3)									February 2004			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>613</b>		
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
			3813	1010		3755		1500		0	10078	0
Subtotal:												
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 . Mortar Fire Control System	In-house	PM Mortars, Picatinny Arsenal NJ	1601	270	1Q	150	2Q	150	2Q	0	2171	0
b . MAPAM	In-house	PM Mortars, Picatinny Arsenal NJ	233	61	2Q	0		0		0	294	0
c . Precision Guided Mortar Munition	In-House	PM Mortars, Picatinny Arsenal NJ	0	0		1100	2Q	990	2Q	0	2090	0
d . 120mm SRPC	In-House	PM Mortars, Picatinny Arsenal NJ	0	0		50	2Q	0		0	50	0
e . SBIR/STTR			0	0		1117		0		0	1117	0
Subtotal:			1834	331		2417		1140		0	5722	0
Project Total Cost:			21651	8184		38419		19730		0	87984	0

Schedule Profile (R4 Exhibit)																				February 2004																									
BUDGET ACTIVITY 5 - System Development and Demonstration										PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev												PROJECT 613																							
Event Name										FY 02				FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09							
										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	1	2	3	4				
COMPONENT ADV. DEVEL., PGMM Increment 1										PGMM Increment 1																																			
(1) PGMM MILESTONE B, Increment One																		1																											
SYSTEM DEVELOPMENT & DEMONSTRATION																						PGMM Increment 1																							
(2) PQT&E, (3) LUT, (4) IOT&E																														2								3				4			
(5) MILESTONE C, INCREMENT ONE																																		5											
PRODUCTION & DEPLOY (PGMM Increment 1)																																						LRIP							
Full Rate Production (PGMM Increment 1)																																										Pr			
SYSTEM DEVELOPMENT & DEMONSTRATION																																										PGMM Block			
MFCS (Heavy) Fielding																																													
MFCS (LHMBC) System Development and Demonstration Phase																						MFCS (LHMBC)																							
(6) MFCS (Light) Materiel Release																						6																							
(7) LHMBC - PQT&E																		7																											
(8) LHMBC - IOT&E																										8																			

Schedule Detail (R4a Exhibit)						February 2004	
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>			PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>			PROJECT <b>613</b>	
<u><b>Schedule Detail</b></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>
LHMBC Production Qualification Test		3Q					
LHMBC IOT&E			1Q				
LHMBC Type Classification			2Q				
LHMBC First Unit Equipped			3Q				
PGMM Start SD&D Increment 1		2Q					
PGMM Type Classification						2Q	
PGMM Qualification/User Tests MS C (Increment 1)						3-4Q	1Q
PGMM Start SD&D Increment 2						3Q	
PGMM IOT&E							4Q
ER-DPICM SDD Start (MS B)					2Q		
MAPAM Production Qualification Test	3Q						
MAPAM Type Classification			2Q				

<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)</b>	<b>February 2004</b>
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BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>	PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>	PROJECT <b>705</b>
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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
705    ADV PRECISION KILL WEAPON SYSTEM (APKWS) - SD&ED	21366	46870	12450	6241	5054	0	0	0	91981

**A. Mission Description and Budget Item Justification:**The Advanced Precision Kill Weapon System (APKWS) is a family of precision-guided rockets that combines a newly designed guidance section with existing 2.75-inch munition components and launch equipment. The APKWS is a highly accurate weapon that will complement the HELLFIRE missile in a precision strike against soft point targets. The APKWS will provide improved accuracy over the current 2.75-inch munition used on the AH-64 Apache, OH-58 Kiowa Warrior and the future RAH-66 Comanche helicopters. The APKWS Block 1 program will develop, test and qualify a laser guided 2.75-inch munition. The funding supports system level qualification and operational testing for APKWS. The APKWS is expected to provide a substantial increase in the number of kills over the unguided Hydra 70 rocket and a reduction in collateral damage to minimize fratricide. APKWS is an FCS unit of action complementary system. The APKWS program supports the Current to Future Force transition path of the Transformation Campaign Plan (TCP).

<b>Accomplishments/Planned Program</b>	FY 2003	FY 2004	FY 2005
Define and develop system requirements and preliminary design for precision guided rocket including hardware and software.	19244	37446	7192
Develop test plans and test support equipment.	1353	1571	3620
Perform government engineering support.	769	1293	1638
Small Business Innovative Research/Small Business Technology Transfer Programs	0	1310	0
Realign funds to proper PE for execution of funds to support Rapidly Installed Fuel Transfer System	0	5250	0
<b>Totals</b>	21366	46870	12450

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

February 2004

BUDGET ACTIVITY

**5 - System Development and Demonstration**

PE NUMBER AND TITLE

**0604802A - Weapons and Munitions - Eng Dev**

PROJECT

**705**

## **B. Other Program Funding Summary**

	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	6879	15681	83810	124958	160953	1435900	1828181
0203802, project 786 (APKWS Simulator Upgrade)	0	0	4863	9858	8987	22916	21623	0	68247

C70301 APKWS (Advanced Precision Kill Weapon System)

0

0

6879

15681

83810

124958

160953

1435900

1828181

0203802, project 786 (APKWS Simulator Upgrade)

0

0

4863

9858

8987

22916

21623

0

68247

\*FY04 funding includes \$5.250 added by Congress for Rapidly Installed Fuel Transfer System which will be properly aligned to PE 0603804A, Project 526 for execution.

**C. Acquisition Strategy:** Development of the APKWS will be sole source. The APKWS Block 1 development program is a 30-month effort. The Low Rate Initial Production (LRIP) and Full Rate Production will be sole source. 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 2004			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>705</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	General Dynamics Armament and Technical Products, Inc.	0	17656	2Q	35918	2Q	5443	2Q	0	59017	0
b . Support Costs	Various	Various	0	391	1-4Q	977	1-4Q	792	1-4Q	1842	4002	0
c . Development Engineering	Various	Various	0	1197	1-4Q	1861	1-4Q	957	1-4Q	0	4015	0
d . Rapidly Installed Fuel Transfer System Realignment			0	0		5250		0		0	5250	0
Subtotal:			0	19244		44006		7192		1842	72284	0

ARMY RDT&E COST ANALYSIS(R3)									February 2004			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>705</b>		
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
			0	0		0		0		0	0	0
Subtotal:												
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	1353	1Q	1571		3620		7045	13589	0
Subtotal:			0	1353		1571		3620		7045	13589	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	769	1-4Q	1293	1-4Q	1638	1-4Q	1315	5015	0
Subtotal:			0	769		1293		1638		1315	5015	0
Project Total Cost:			0	21366		46870		12450		10202	90888	0



Schedule Detail (R4a Exhibit)						February 2004	
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>			PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>			PROJECT <b>705</b>	
<u><b>Schedule Detail</b></u>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone B	1Q						
Award APKWS SDD Contract	2Q						
APKWS PDR	4Q						
APKWS CDR		2Q					
APKWS Testing		3Q					
Milestone C			4Q				

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

February 2004

BUDGET ACTIVITY

**5 - System Development and Demonstration**

PE NUMBER AND TITLE

**0604802A - Weapons and Munitions - Eng Dev**

PROJECT

**AS1**

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
AS1 SMALL ARMS IMPROVEMENT	8389	8384	11373	6258	2353	13652	4726	0	67216

**A. Mission Description and Budget Item Justification:** This program provides funds to demonstrate engineering development models or integrated commercial items designed to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems and munitions. Future programs will provide enhancements to weapons, fire control, ammo and optics through improved technology associated with obscurants, reconnaissance, observation, non-lethal, lethal and electronics. Current small arms include a variety of personal defense weapons (9mm), individual weapons (5.56mm), crew-served weapons (5.56mm-40mm) and related items such as fire control equipment, training devices, hand grenades and ammunition. Current efforts focus on improvements to the M249 Squad Automatic Weapon, M16/M4 Rifle, M203 Grenade Launcher, MK19 Grenade Machine Gun, Medium Machine Guns, mounts, ammunition to include thermobarics and hand grenades. Future programs include Lt Wt Ammo (FY 05 New Start), Non Toxic Ammo, Sniper Weapons Improvements, Airburst Ammo, Lt Wt Machine Gun, M249 200 Round Ammo Pack (FY 04 New Start), M249 Short Range Training Ammo, XM116 Sight Computerized (SAFC), Aviation Variant High Capacity Feed System (FY 05 New Start) and Payload Rifle (transition from AS2 Adv Dev). Platform Integration is a FY 05 New Start which include the development of a High Mobility Multi Wheeled Vehicle (HMMWV) Auxiliary Weapon Mount (HAWM), an improved pedestal for the MG Mount allowing 360 degree target engagement, a swing arm, allowing the use of various weapons outside the doors of numerous vehicles, and a MK93/MK64 cradle adapter providing soldier with the capability of using M249/M240's on MK93/MK64's and CROWS Weight Reduction. Future requirements will also be pursued for alternate integration of M249 mounts, M240 mounts, MK19 mounts and XM307 mounts with numerous alternate platforms. These small arms weapon systems support the Current to Future transition path of the Transformation Campaign Plan (TCP).

<b>Accomplishments/Planned Program</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>
Light-Weight Ground Mount (XM192) - Complete	0	0	0
- Technical Testing	332	0	0
- Operational Testing	386	0	0
- Complete Hardware Modifications	278	0	0
- Independent Evaluation	125	0	0
- MS C	160	0	0
M249 200-RD Ammo Pack/Mount Investigation - FY04 New Start	0	0	0
- Engineering Development	0	325	0
- Technical Assessment	0	30	0
- Award Development Contract	0	65	0
- Hardware Fabrication	0	130	0

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

February 2004

BUDGET ACTIVITY

**5 - System Development and Demonstration**

PE NUMBER AND TITLE

**0604802A - Weapons and Munitions - Eng Dev**

PROJECT

**AS1**

<u>Accomplishments/Planned Program (continued)</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
- Technical Test	0	0	265
- User Assessment	0	0	65
- Design Qualification	0	0	520
M249 MG Barrel Life Extension Program - Complete	0	0	0
- Fabricate Pre-Production Hardware	100	0	0
- Test Pre-Production Hardware	102	0	0
- Complete Final Report	30	0	0
M249 Short Range Training Ammunition - Ongoing	0	0	0
- Engineering Development	185	0	0
- Technical Assessment	25	0	0
- Design Finalization	88	0	0
- Manufacture Prototypes	0	40	0
- Conduct Development Tests	0	75	0
- Engineering Analysis	0	65	0
- Manufacture PPQT Samples	0	295	0
- DT	0	0	150
- Safety Confirmation	0	0	10
- Limited User Test	0	0	20
- System Evaluation Report	0	0	10
- MS C	0	0	26
XM116 SIGHT, COMPUTERIZED, SAFC - FY04 Congressional Plus-up	0	0	0
- Engineering Development	0	578	0
- Technical Testing	0	561	0
- User Assessment	0	391	0
- Test Reports/Evaluations	0	170	0
MK19 Self-Destruct Cartridge - Ongoing	0	0	0
- Prepare Program Doc/MS B	75	0	0
- Solicitation	100	0	0
- Bid Sample Test and Evaluation	130	0	0
- Contract Award	75	0	0
- Build/Test Validation Samples	510	0	0
- Manufacture PPQ Quantity	0	635	0
- DT	0	490	0

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

February 2004

BUDGET ACTIVITY

**5 - System Development and Demonstration**

PE NUMBER AND TITLE

**0604802A - Weapons and Munitions - Eng Dev**

PROJECT

**AS1**

<u>Accomplishments/Planned Program (continued)</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
- OT/LFT	0	100	0
- Systems Evaluation Report (SER)	0	0	75
- Prepare MS C IPR Package	0	0	235
- MS C	0	0	82
Medium Machine Gun Weight Reduction/Mounts - Ongoing	0	0	0
- Engineering Tests	80	0	0
- Award Contract	234	0	0
- Finalize Design	103	0	0
- Design Assessment	285	0	0
- Technical Assessment/Comparison	0	225	0
- Program Documentation/MS B	0	220	0
- Fabricate DT/LUT Hardware	0	425	0
- Technical Test	0	0	125
- Limited User Test	0	0	240
- Independent Assessment/Test Reports	0	0	125
- Prepare Program Doc/MS C	0	0	115
Platform Integration of Crew Served Weapons - FY05 New Start	0	0	0
- Market Research/Market Survey	0	0	100
- In House Design	0	0	150
- Prototype Production	0	0	150
- Preliminary Testing	0	0	50
- Design Improvement	0	0	70
- Manufacturing	0	0	100
- Tech testing	0	0	200
Aviation Variant (M240) - Ongoing	0	0	0
- Fabricate Prototype Weapons	525	0	0
- Design/Qualify Pintle Mods	625	0	0
- Prepare Program Doc	200	0	0
- Fabricate Pintles/Test Hardware	325	0	0
- Engineering Tests	910	0	0
- Technical Testing	0	150	0
- Limited User Test	0	1050	0
- Evaluation Reports	0	250	0

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

February 2004

BUDGET ACTIVITY

**5 - System Development and Demonstration**

PE NUMBER AND TITLE

**0604802A - Weapons and Munitions - Eng Dev**

PROJECT

**AS1**

<u>Accomplishments/Planned Program (continued)</u>	FY 2003	FY 2004	FY 2005
- Prepare Prog Doc/MS C	0	275	0
- Production Planning	0	75	0
Rifle Carbine Improvement Block II - Ongoing	0	0	0
- Draft Requirements	66	0	0
- Analysis of Commercial Items	262	0	0
- Purchase Order/Hardware	119	0	0
- Prepare/Staff Procurement Package	0	329	0
- Evaluate/Downselect	0	200	0
- Competitive Contractor Selection/Award	0	0	288
- Engineering Support	0	0	464
- DT/OT/Evaluation	0	0	1931
Thermobaric Cartridges - Ongoing	0	0	0
- Prototype Design	289	0	0
- Prototype Fabrication	625	0	0
- Engineering Tests	350	0	0
- Contract Award	90	0	0
- Redesign	125	0	0
- Safety Testing	340	0	0
- Urgent Materiel Release	135	100	0
- Fabricate Prototypes	0	377	0
- Engineering Tests	0	220	0
- Design Review	0	20	0
- Contract Option Award	0	100	0
- Design Optimization	0	130	300
- Fabricate PPQT Quantity	0	0	175
- DT/OT	0	0	770
- FHC Testing	0	0	135
- IM Testing	0	0	210
- Live Fire Testing	0	0	210
- System Evaluation Report	0	0	50
M240 Aviation Variant (High Cap Feed System) - FY05 New Start	0	0	0
- Engineering Development	0	0	300
- Technical Assessment	0	0	225

**ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)****February 2004**

BUDGET ACTIVITY

**5 - System Development and Demonstration**

PE NUMBER AND TITLE

**0604802A - Weapons and Munitions - Eng Dev**

PROJECT

**AS1****Accomplishments/Planned Program (continued)**

	FY 2003	FY 2004	FY 2005
- Award Development Contract	0	0	295
- Hardware Fabrication	0	0	400
- Technical Qualification Test	0	0	625
- Finalize Design	0	0	275
- Limited User Evaluation	0	0	550
- Production Decision Documentation	0	0	330
5.56MM LT WT Ammo - FY05 New Start	0	0	0
- Market Survey/Program Documentation	0	0	150
- MS B	0	0	50
- Prepare RFP	0	0	200
- Bid Sample Testing	0	0	300
- Source Selection	0	0	257
"Small Business Innovative Research/Small Business Technology Transfer"	0	288	0
<b>Totals</b>	<b>8389</b>	<b>8384</b>	<b>11373</b>

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

February 2004

BUDGET ACTIVITY  
**5 - System Development and Demonstration**

PE NUMBER AND TITLE  
**0604802A - Weapons and Munitions - Eng Dev**

PROJECT  
**AS1**

## B. Other Program Funding Summary

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
WTCV, GZ1290, Squad Auto Wpn (MODS)	11658	5473	3382	1300	5006	11192	4074	0	46457
WTCV, GZ2800, M16 Rifle MODS	0	2351	2345	2045	0	3904	0	0	12730
WTCV, GB3000, MK19 MODS	2847	3816	4236	4834	3277	6421	8749	0	35214
WTCV, GZ1300, Med MG (MODS)	1289	3922	3409	3312	4915	13823	0	0	31406
WTCV, GB3007, M4 Carbine MODS	33272	22907	13777	10270	10642	10103	2770	0	103741

C. Acquisition Strategy: Primary strategy is to mature and finalize design, award RDT&E hardware contracts, test and evaluate system to result in type classification and production award.

ARMY RDT&E COST ANALYSIS(R3)									February 2004			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>AS1</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 . Hardware Development	TBD	Various	11535	2930	1-4Q	1616	1-4Q	1279	1-4Q	Continue	17360	0
Subtotal:			11535	2930		1616		1279		Continue	17360	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
a . Development	MIPR	ARDEC, Picatinny, NJ	6438	2011	1-4Q	1821	1-4Q	2535	1-4Q	0	12805	0
b . Logistics	MIPR	TACOM, Rock Island, IL	523	150	1-4Q	175	1-4Q	550	1-4Q	0	1398	0
c . Human Research and Eng Directorate	MIPR	APG, MD	885	628	1-4Q	424	1-4Q	615	1-4Q	0	2552	0
Subtotal:			7846	2789		2420		3700		0	16755	0



ARMY RDT&E COST ANALYSIS(R3)									February 2004			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>AS1</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 . DT	MIPR	Developmental Test Command (DTC), Aberdeen Proving Ground (APG), MD	3891	664	1-4Q	1325	1-4Q	1765	1-4Q	Continue	7645	0
b . OT	MIPR	AEC, Alexandria, VA	190	169	1-4Q	1185	1-4Q	1380	1-4Q	0	2924	0
c . Validation testing	MIPR	DTC, APG, MD	233	658	1-4Q	430	1-4Q	1795	1-4Q	0	3116	0
Subtotal:			4314	1491		2940		4940		Continue	13685	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 . Program Management	In House	PM Soldier Weapons, Picatinny Arsenal, NJ	1812	1119	1-4Q	1318	1-4Q	1314	1-4Q	0	5563	0
b . Travel	In House	PM Soldier Weapons, Picatinny Arsenal, NJ	142	60	1-4Q	90	1-4Q	140	1-4Q	0	432	0
Subtotal:			1954	1179		1408		1454		0	5995	0
Project Total Cost:			25649	8389		8384		11373		Continue	53795	0

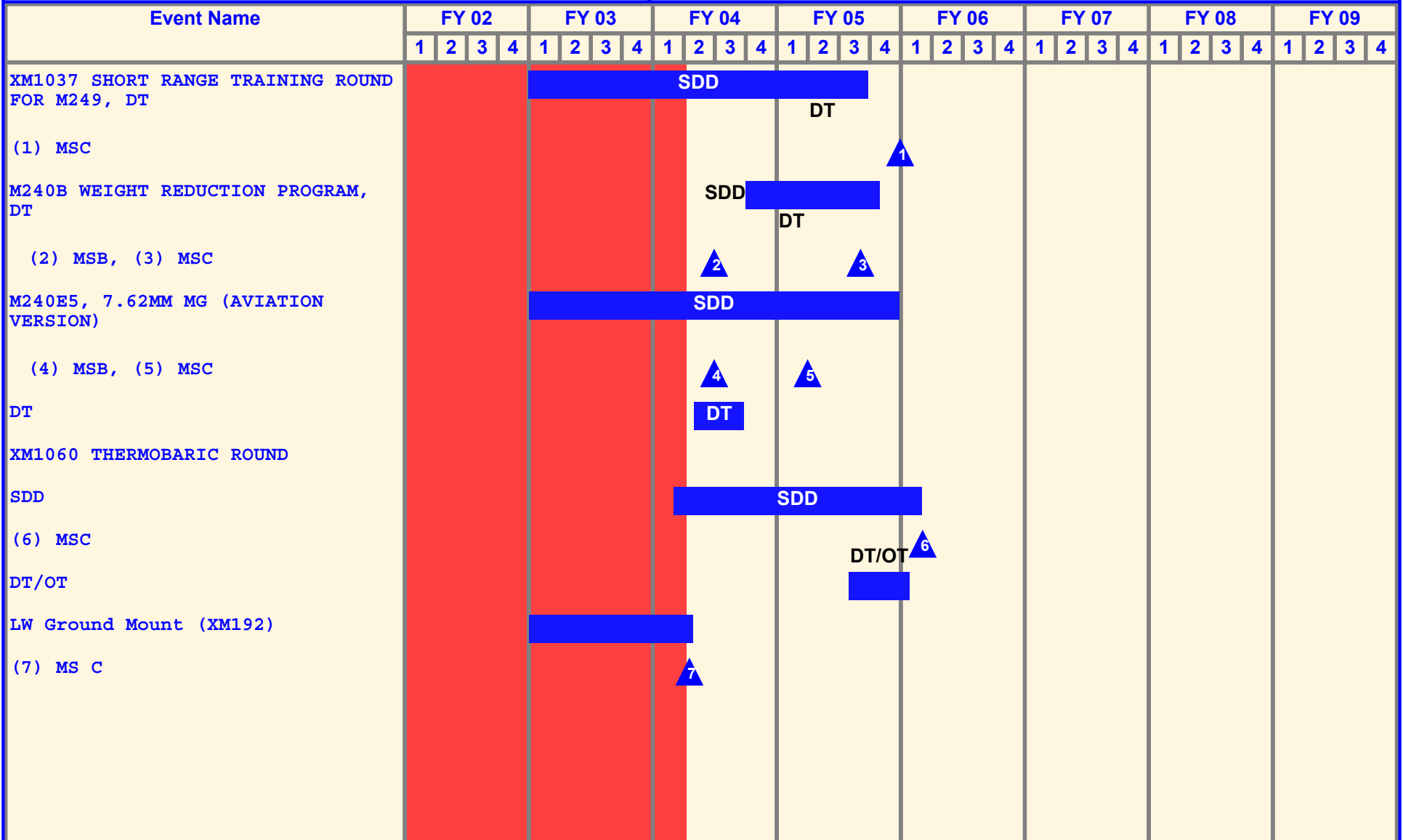
# Schedule Profile (R4 Exhibit)

February 2004

BUDGET ACTIVITY  
5 - System Development and Demonstration

PE NUMBER AND TITLE  
0604802A - Weapons and Munitions - Eng Dev

PROJECT  
AS1



Schedule Detail (R4a Exhibit)						February 2004	
BUDGET ACTIVITY			PE NUMBER AND TITLE			PROJECT	
5 - System Development and Demonstration			0604802A - Weapons and Munitions - Eng Dev			AS1	
Schedule Detail	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Lightweight Ground Mount (XM192)							
- Technical Testing	1-2Q						
- Operational Testing	3Q						
- Complete Hardware Modifications	4Q						
- Independent Evaluation (FY03 Carryover)		1Q					
- MS C (FY03 Carryover)		2Q					
M249 200-RD Ammo Pack/Mount Investigation							
- Engineering Development		3Q					
- Technical Assessment		4Q					
- Award Development Contract		4Q					
- Hardware Fabrication (FY04 Carryover)		4Q	1Q				
- Technical Test			1-2Q				
- User Assessment			1-2Q				
- Design Qualification			3Q				
M249 Machine Gun Barrel Life Ext Pgm							
- Fabricate Pre-Production Hardware	2-3Q						
- Test Pre-Production Hardware	3-4Q						
- Complete Final Report (FY03 Carryover)		1Q					
M249 Short Range Training Ammunition							
- Engineering Development	1-2Q						
- Technical Assessment	3-4Q						
- Design Finalization (FY03 Carryover)	4Q	1Q					
- Manufacture Prototypes		1Q					
- Conduct Development Tests		2-3Q					
- Engineering Analysis		3Q					
- Manufacture PPQT Samples		4Q					
- DT			1-2Q				
- Safety Confirmation			2Q				
- Limited User Test			2Q				

Schedule Detail (R4a Exhibit)						February 2004				
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev			PROJECT AS1			
<u>Schedule Detail (continued)</u>				FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
- System Evaluation Report						3Q				
- MS C						4Q				
XM116 Sight, Computerized, SAFC										
- Engineering Development					1-2Q					
- Technical Testing					2-4Q					
- User Assessment (FY04 Carryover)					4Q	1Q				
- Test Reports/Evaluations (FY04 Carryover)						1Q				
- Prepare MS-C Documentation/LRP Decision (FY04 Carryover)						1-2Q				
MK19 Self-Destruct Cartridge										
- Prepare Program Doc/MS B				2Q						
- Solicitation				2Q						
- Bid Sample Test and Evaluation (FY03 Carryover)					1Q					
- Contract Award (FY03 Carryover)					2Q					
- Manufacture PPQ Quantity (FY04 Carryover)						1-2Q				
- DT (FY04 Carryover)						2-3Q				
- OT/LFT (FY04 Carryover)						2-3Q				
- System Evaluation Report (FY05 Carryover)					4Q	1Q				
- Prepare MS C IPR Package (FY05 Carryover)						2Q				
- MS C (FY05 Carryover)						2Q				
Medium Machine Gun Weight Reduction/Mount										
- Engineering Tests				2-4Q						
- Award Contract				3Q						
- Finalize Design				4Q						
- Design Assessment				2-3Q						
- Technical Assessment/Comparison					2-3Q					
- Program Documentation/MS B					2-3Q					
- Fabricate DT/LUT Hardware (FY03 Carryover)					4Q	1Q				
- Technical Test						1-2Q				

Schedule Detail (R4a Exhibit)						February 2004			
BUDGET ACTIVITY			PE NUMBER AND TITLE				PROJECT		
5 - System Development and Demonstration			0604802A - Weapons and Munitions - Eng Dev				AS1		
<u>Schedule Detail (continued)</u>			FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
- Limited User Test					2Q				
- Independent Assessment/Test Reports					2-3Q				
- Prepare Program Doc/MS C					4Q				
Platform Integration of Crew Served Weapons									
- Market Research/Market Survey					1Q				
- In House Design					1-2Q				
- Prototype Production					2Q				
- Preliminary Testing					2-3Q				
- Design Improvement					3Q				
- Manufacturing					3-4Q				
- Tech Testinging (FY05 Carryover)					4Q	1Q			
- Tech Test						1Q			
- Safety Cert						1Q			
- IPR						1Q			
- Market Survey/Market Research						1Q			
- Prototype Production						3Q			
- Validation Testing						3Q			
- Manufacture						4Q			
- Tech Testing (FY06 Carryover)							1Q		
- Tech Test							1Q		
- Operational Test							1Q		
- Safety Release							2Q		
- IPR							2Q		
- Market Survey/Market Research							1Q		
- In House Design							1-2Q		
- Prototypes							2Q		
- Prel Testing							2Q		
- Manufacturing							3Q		
- Tech Test							3-4Q		
- Operational Test							4Q		

Schedule Detail (R4a Exhibit)						February 2004			
BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev				PROJECT AS1		
<u>Schedule Detail (continued)</u>			FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
- Safety Release								1Q	
- IPR								1Q	
- Survey								1Q	
- In House Design								2Q	
- Prototype Production								2Q	
- Val Test								2-3Q	
- Redesign								3Q	
- Manufacturing								3Q	
- Tech Test								4Q	
- Operational Test									1Q
- Safety Release									2Q
- IPR									2Q
Aviation Variant (M240)									
- Mount Concept			1-3Q						
- Fabricate Prototype Weapons (FY03 Carryover)			2-4Q	1Q					
- Design/Qualify Pintle Mods (FY03 Carryover)				1Q					
- Program Documentation (FY03 Carryover)				2Q					
- Fab Pintles/Test H/W (FY03 Carryover)			4Q	1-2Q					
- Engineering Tests (FY03 Carryover)			4Q	1-2Q					
- Technical Testing				2Q					
- Limited User Test				4Q					
- Evaluation Reports				4Q					
- Prepare Program Doc /MS C (FY04 Carryover)				4Q	1Q				
- Production Planning (FY04 Carryover)				4Q	1Q				
Rifle Carbine Improvement Block II									
- Draft Requirements			3Q						
- Analysis of Commercial Items			1-4Q						
- Purchase Order/Hardware			4Q						
- Prepare/Staff Procurement Package				2Q					
- Evaluate/Downselect				3-4Q					

Schedule Detail (R4a Exhibit)						February 2004			
BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev				PROJECT AS1		
<u>Schedule Detail (continued)</u>			FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
- Competitive Contractor Selection/Award					1Q				
- Engineering Support					2-4Q				
- DT/OT/Evaluation					4Q				
- Independent Evaluation						1Q			
- Prepare/Staff Procurement Decision						1-2Q			
Thermobaric Cartridges									
- Prototype Design			1-2Q						
- Prototype Fabrication			2Q						
- Engineering Tests			2Q						
- Contract Award			2Q						
- Redesign			2Q						
- Safety Testing			2-3Q						
- Urgent Materiel Release			4Q						
- Fabricate Prototypes				1Q					
- Design Review				3Q					
- Contract Option Award				4Q					
- Design Optimization				4Q	1Q				
- Fabricate PPQT Quantity					2-3Q				
- DT/OT					3-4Q				
- FHC Testing					3Q				
- IM Testing					3-4Q				
- Live Fire Testing					3-4Q				
- System Evaluation Report					4Q				
- MS C						1Q			
M240 Aviation Variant (High Cap Feed System)									
- Engineering Development					1-2Q				
- Technical Assessment					1Q				
- Award Development Contract					2Q				
- Hardware Fabrication					2-4Q				
- Tech Qual Test (FY05 Carryover)						1Q			

Schedule Detail (R4a Exhibit)						February 2004	
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>			PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>			PROJECT <b>AS1</b>	
<b>Schedule Detail (continued)</b>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
- Finalize Design (FY05 Carryover)				2Q			
- Limited User Evaluation (FY05 Carryover)				2-3Q			
- Prod Decision Doc (FY05 Carryover)				4Q			
5.56MM LT WT Ammo							
- Market Survey/Program Documentation			1Q				
- MS B			2Q				
- Prepare RFP			1-2Q				
- Bid Sample Testing			3Q				
- Source Selection			3-4Q				
- Contract Award				1Q			
- Design Prototypes				1-2Q			
- Design Review				3Q	2Q		
- Sample Fabrication				3-4Q			
- Lethality Test				4Q			
- Reliability Test				4Q			
- DT I					1Q		
- Manufacture DT II Qty					3-4Q		
- DT II						1-2Q	
- LFT & FHC Test						3-4Q	
- LUT						4Q	
- Prepare MS C IPR Package						4Q	1Q
- MS C							2Q



<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)</b>							<b>February 2004</b>					
<b>BUDGET ACTIVITY</b> <b>5 - System Development and Demonstration</b>				<b>PE NUMBER AND TITLE</b> <b>0604802A - Weapons and Munitions - Eng Dev</b>			<b>PROJECT</b> <b>S23</b>					
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
S23	SURF LNCH ADV MED RNG AIR-TO-AIR MSL (SLAMRAAM)			1675	37417	65879	36311	28721	0	0	0	170003
<p><b>A. Mission Description and Budget Item Justification:</b> Surface Launched Advanced Medium Range Air-To-Air Missile (SLAMRAAM) is the initial kinetic energy component of Integrated Air &amp; Missile Defense (IAMD), an Air and Missile Defense (AMD) Future Force system. SLAMRAAM is a System of Systems, consisting of a launcher platform, AIM-120 Advanced Medium Range Air-to-Air Missiles (AMRAAM), a common Army vehicle, launch rails, launcher electronics, on-board command, control, communications, computer (C4) components, Sentinel (Enhanced Target Range and Classification) Sensor, other external Sensors, and an Integrated Fire Control Station (IFCS). SLAMRAAM is a lightweight, day or night, adverse weather, non-line-of-sight (NLOS) fire unit for countering cruise missile (CM), low altitude rotary wing (RW), fixed wing (FW), unmanned aerial vehicle (UAV), and reconnaissance, surveillance, and target acquisition (RSTA) platforms. It supports clutter engagements in close combat areas where maneuvering forces and their supporting units operate. SLAMRAAM's force protection mission is to engage the low-altitude aerial threats out to 18km. This system supports the Future Force transformation path of the Transformation Campaign Plan (TCP).</p>												
<b><u>Accomplishments/Planned Program</u></b>									<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>	
Product Development									0	24544	46599	
Support Cost									0	2555	3438	
Test and Evaluation									0	5225	8041	
Management Services									1675	4047	7801	
Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)									0	1046	0	
<b>Totals</b>									<b>1675</b>	<b>37417</b>	<b>65879</b>	

<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)</b>	<b>February 2004</b>
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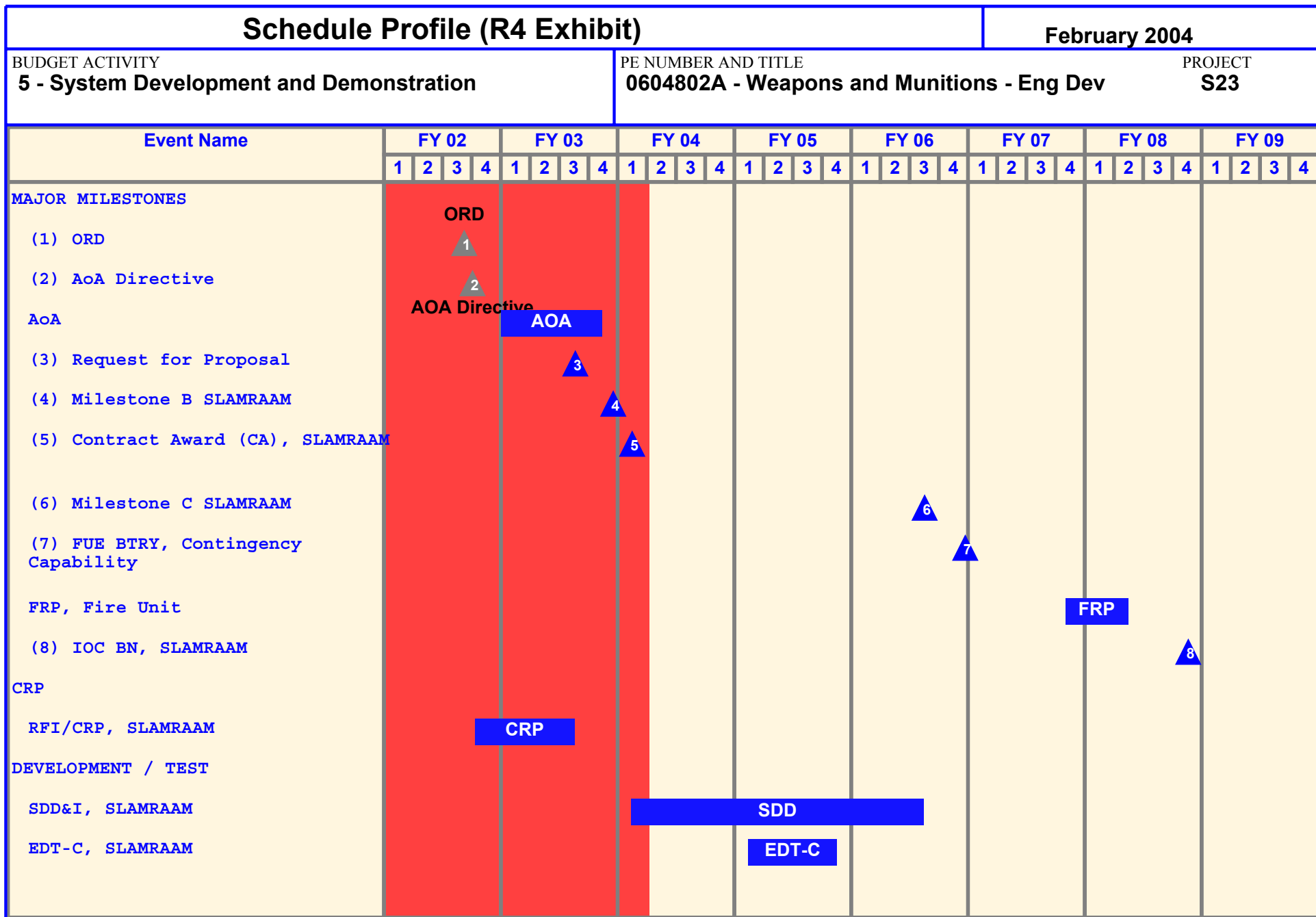
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>	PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>	PROJECT <b>S23</b>
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<b><u>B. Other Program Funding Summary</u></b>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost	
Surface-Launched AMRAAM System Summary (C81001)	0	7397	2449	36001	44352	29552	0	0	119751	

**C. Acquisition Strategy:**System Development and Demonstration (SDD) contract award is scheduled for 2nd Quarter FY04. SDD will be a 41 month effort, culminated by completion of IOT&E in 2nd Qtr FY07. A contingency capability (FUE Battery) will be fielded in FY06 with Initial Operational Capability (IOC) available in FY08.

ARMY RDT&E COST ANALYSIS(R3)									February 2004			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>S23</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 . Contractor Hardware/Software Development	CPIF	TBD	0	0		18332	1Q	41385	1Q	33040	92757	0
b . Government Prototype Manufacturing (GFE)	MIPR	TBD	0	0		6170	1Q	5214	1Q	0	11384	0
Subtotal:			0	0		24502		46599		33040	104141	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
a . Contractor Support Costs	CPIF	TBD	0	0		2555	1Q	3438	1Q	2004	7997	0
Subtotal:			0	0		2555		3438		2004	7997	0

ARMY RDT&E COST ANALYSIS(R3)									February 2004			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>					PROJECT <b>S23</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 . Contractor System Test & Evaluation	CPIF	TBD	0	0		419	1Q	861	1Q	3389	4669	0
b . Government System Test & Evaluation	MIPR	TBD	0	0		1256	1Q	3880	1Q	13809	18945	0
c . Government Modeling & Simulation		TBD	0	0		3550	1Q	3300	1Q	5750	12600	0
Subtotal:			0	0		5225		8041		22948	36214	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 . Contractor SE/PM	CPIF	TBD	0	0		1762	1Q	2004	1Q	1539	5305	0
b . Government SE/PM		SHORAD PO, Huntsville, AL	0	1675		3373	1Q	5797	1Q	5501	16346	0
Subtotal:			0	1675		5135		7801		7040	21651	0
Remarks: Government Modeling & Simulation included in Test & Evaluation.												
Project Total Cost:			0	1675		37417		65879		65032	170003	0



Schedule Detail (R4a Exhibit)						February 2004	
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>			PE NUMBER AND TITLE <b>0604802A - Weapons and Munitions - Eng Dev</b>			PROJECT <b>S23</b>	
<u><b>Schedule Detail</b></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>
Operational Requirements Document (ORD) Approved							
Analysis of Alternatives (AOA) Directive							
AoA	1-4Q						
Request for Proposal	3Q						
Milestone B	4Q						
Contract Award		2Q					
Milestone C				3Q			
FUE Btry, Contingency Capability				4Q			
Full Rate Production					4Q	1-2Q	
IOC, BN						4Q	
Request for Information (RFI) / Contract Requirements Package (CRP)	1-3Q						
SDD&I		1-4Q	1-4Q	1-4Q			
EDT-C			1-3Q				
EDT-G			3-4Q	1Q			
FDE				1Q			
LUT				2Q			
FDT				4Q	1Q		
IOT					2Q		