

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2008

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev							
COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	96673	65236	52140	23662	25096	10211	144	Continuing	Continuing
613 MORTAR SYSTEMS	1126	2385							29823
705 Adv Precision Kill Weapon System (APKWS) - SD&ED	18904								44929
AS5 Artillery Munitions Engineering Development	2140	7849							44241
AS8 XM395 PRECISION GUIDED MORTAR MUNITION (PGMM)	37949								64882
S23 SURF LNCH ADV MED RNG AIR-TO-AIR MSL (SLAMRAAM)	28549	34526	31774						94849
S36 COURSE CORRECTING FUZE (CCF)	8005	20476	20366	23662	25096	10211	144	Continuing	Continuing

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

Project 613 funds completed the RDTE effort for the Mortar Fire Control System (MFCS), a revolutionary improvement in mortar capability seamlessly linking mortar fires in the future digital battlefield in FY06. FY07 funds are for the XM932 120mm Mortar - Short Range Practice Cartridge.

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, the OH-58 Kiowa Warrior, and armed reconnaissance helicopters (AHRs). FY08 and all future funding was realigned to other higher priority requirements.

Project AS5 funded through FY06 the Advanced Cannon Artillery Ammunition Program (ACAAP), a product improvement program for 105mm and 155mm families of extended range artillery munitions using common airframes for various payloads. ACAAP munitions have ballistic similitude intended to meet FCS and Force Entry range and ballistic requirements. FY07 funds the Hybrid Propellant program for the Future Combat System (FCS). Hybrid Propellant is a unique propellant under development for future application in small, medium and large caliber munitions. Hybrid propellant releases energy more efficiently than conventional propellants and provides FCS munitions with the highest possible muzzle velocity for extended ranges/lethality, the prospect of lighter barrels with less recoil, extended wear characteristics and the ability to use heavier projectiles at standard muzzle velocities for greater lethality.

Project AS8 funds Increment 1 Precision Guided Mortar Munition (PGMM). PGMM is a precision strike round with advanced sensors, guidance systems 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. FY08 and all future funding was realigned to other higher priority requirements.

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BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604802A - Weapons and Munitions - Eng Dev

Project S23, the Surface Launched Advanced Medium Range Air-To-Air Missile (SLAMRAAM), is the initial kinetic energy component of Integrated Air & Missile Defense (IAMD), an Air and Missile Defense (AMD) Future Force system. SLAMRAAM's force protection mission is to engage the low-altitude aerial threats out to 18km.

Project S36 funds the design, development, assembly and test of the Course Correcting Fuze (CCF). CCF is currently being pursued as a solution to meet the Precision Guidance Kit (PGK) Capability Development Document requirement. The PGK corrects the ballistic trajectory of the projectile to reduce delivery errors and thus improves projectile accuracy. The PGK will effectively reduce target delivery error of conventional artillery munitions and reduce the number of projectiles required to execute a fire mission.

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5 - System Development and Demonstration

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

<u>B. Program Change Summary</u>	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2008/2009)	121427	55368	32344
Current BES/President's Budget (FY 2009)	96673	65236	52140
Total Adjustments	-24754	9868	19796
Congressional Program Reductions		-432	
Congressional Rescissions	-13300		
Congressional Increases		10300	
Reprogrammings	-8067		
SBIR/STTR Transfer	-3387		
Adjustments to Budget Years			19796

Change Summary Explanation: Funding - FY 2009: Funds realigned to SLAMRAAM (Project S23) in the amount of \$20.0M to reflect approved rebaselined program.

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BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev						PROJECT S23	
COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
S23 SURF LNCH ADV MED RNG AIR-TO-AIR MSL (SLAMRAAM)	28549	34526	31774						94849

A. Mission Description and Budget Item Justification: Surface Launched Advanced Medium Range Air-To-Air Missile (SLAMRAAM) is a critical component of the Army's future Cruise Missile Defense capability. It will be resident within Integrated Air & Missile Defense (IAMD) Task Forces and Composite Battalions. SLAMRAAM is part of the Missiles and Space (MS) System of Systems concept, consisting of a launcher platform, AIM-120 Advanced Medium Range Air-to-Air Missiles (AMRAAMs), a common Army vehicle, launch rails, launcher electronics, on-board command, control, communications, and 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) system for countering cruise missile (CM), fixed wing (FW), unmanned aerial vehicle (UAV), and reconnaissance, surveillance, and target acquisition (RSTA) platforms. SLAMRAAM's mission is to engage the low-altitude aerial threats in excess of 18km. It is highly mobile and able to operate in close combat areas to protect maneuver forces and critical stationary units, as well as provide cruise missile defense protection for operational and strategic-level critical assets.

<u>Accomplishments/Planned Program:</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Product Development	10882	12532	237
Contractor Support Cost	3576	3852	5334
Test and Evaluation	1288	7712	20340
Project Management	12803	9464	5863
Small Business Innovative Research/Small Business Technology Transfer Program		966	
Total	28549	34526	31774

<u>B. Other Program Funding Summary</u>	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
PE 0604869A, Proj M06, Patriot/MEADS Combined Aggregate Program (CAP)	322915	369786	431270	585597	424948	433464	76911	Continuing	Continuing
SSN C50001, PATRIOT/MEADS CAP			31049	400215	668463	1032860	1305623	Continuing	Continuing
PE 0102419A, Proj E55, JLENS	237795	478204	356434	335071	318513	181294		Continuing	Continuing
SSN BZ0525, JLENS Production					442084	440585	391876	Continuing	Continuing
PE0604802A, Proj S23, SLAMRAAM	28549	34526	31774						94849
SSN C81001, SLAMRAAM Production			40468	117094	76073	61307	61307	Continuing	Continuing

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BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration	0604802A - Weapons and Munitions - Eng Dev						S23	
PE 0604820A, Proj E10, SENTINEL	2446	7022					Continuing	Continuing
PE 0603327A, Proj E88, Integrated Fire Control AMD	36342						Continuing	Continuing
PE 0303327A, Proj S34, AMD System of System Engineering and Integration	1870	137517	113853	81057	37608	5203	Continuing	Continuing

Comment: This PE is an integral part of the Missile and Space Integrated Air and Missile Defense (IAMD) Program including Integrated Fire Control, JLENS, Patriot/MEADS Combined Aggregate Program (CAP), SLAMRAAM, SENTINEL, and on-going initiatives to achieve Single Integrated Air Picture (SIAP).

C. Acquisition Strategy System Development and Demonstration (SDD) contract award in 2nd Quarter FY04. SDD is an ongoing effort that will result in completion of IOT&E, followed by a First Unit Equipped (FUE).

ARMY RDT&E COST ANALYSIS (R3)

February 2008

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604802A - Weapons and Munitions - Eng Dev							S23		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Hardware/Software Development	Sole Source (SS)/Cost Plus Incentive Fee (CPIF)	Raytheon, Tewksbury, MA	82652	11632	1-3Q	12532	1-3Q	237	1-3Q		107053	107053
Government Prototype Manufacturing (Government Furnished Equipment)	Not Applicable (N/A)	Multiple	3625								3625	
Subtotal:			86277	11632		12532		237			110678	107053
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Support Costs	SS/CPIF	Raytheon, Tewksbury, MA	6562	3576	1Q	3852	1Q	5334			19324	19324
Subtotal:			6562	3576		3852		5334			19324	19324
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government Modeling & Simulation	N/A	Multiple	6600		1-2Q						6600	
Government System Test & Evaluation	N/A	Multiple	5136		1-2Q	6324	1-2Q	20340	1-2Q		31800	
Contractor System Test & Evaluation	SS/CPIF	Raytheon, Tewksbury, MA	4455	1288	1Q	1388	1Q				7131	7131
Subtotal:			16191	1288		7712		20340			45531	7131

ARMY RDT&E COST ANALYSIS (R3)

February 2008

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev	PROJECT S23
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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor SE/PM	SS/CPIF	Raytheon, Tewksbury, MA	16887	7080	1Q	7628	1Q	2074	1Q		33669	33669
Government SE/PM	N/A	Multiple	8979	4973	1-2Q	2802	1-2Q	3789	1-2Q		20543	
Subtotal:			25866	12053		10430		5863			54212	33669

Remarks: Government Modeling & Simulation included in Test & Evaluation.

Project Total Cost:	134896	28549		34526		31774				229745	167177
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Schedule Profile (R4 Exhibit)

February 2008

BUDGET ACTIVITY
5 - System Development and Demonstration

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

PROJECT
S23

Event Name	FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13			
	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) Low-Rate Initial Production (LRIP) Decision									LRIP Decision																			
SDD&I, SLAMRAAM, Fire Unit - Prototypes, Sensor Kits - Prototypes, ACS SW Development																												
DT, SLAMRAAM									DT																			
DT/OA									DT/OA																			
LRIP									LRIP																			
(2) FUE																												

Schedule Detail (R4a Exhibit)

February 2008

BUDGET ACTIVITY
5 - System Development and Demonstration

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

PROJECT
S23

<u>Schedule Detail</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>
Low-Rate Initial Production (LRIP) Decision				1Q			
DEVELOPMENT / TEST							
SDD&I, SLAMRAAM	1Q - 4Q	1Q - 4Q	1Q - 4Q				
Fire Unit - Prototypes	1Q - 2Q						
Sensor Kits - Prototypes	1Q - 3Q						
ACS SW Development	1Q - 4Q	1Q - 2Q					
DT, SLAMRAAM	4Q	1Q - 4Q	1Q - 2Q				
DT/OA			2Q - 4Q				
LRIP				1Q - 4Q			
FUE					4Q		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2008

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev						PROJECT S36	
COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
S36 COURSE CORRECTING FUZE (CCF)	8005	20476	20366	23662	25096	10211	144	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Course Correcting Fuze is currently being pursued as a solution to meet the Precision Guidance Kit (PGK) Capability Development Document requirement. The PGK is adaptable to existing stockpile and future conventional cannon artillery projectiles. The PGK corrects the ballistic trajectory of the projectile to reduce delivery errors and thus improves projectile accuracy. The PGK will effectively reduce target delivery error of conventional artillery munitions and reduce the number of projectiles required to execute a fire mission. The PGK will benefit 155mm projectiles as well as the family of 105mm projectiles. The increase in effectiveness offered by the PGK gives commanders the operational capability to defeat more targets with the same basic load, while reducing the logistical burden associated with current mission requirements.

<u>Accomplishments/Planned Program:</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Execute Milestone B Requirements and initiate MS B Increment 2			400
Conduct Systems Development and Demonstration - Increment 1 and Increment 2	7739	13900	10200
Engineering Support and Platform Integration	249	5003	4266
Testing	17	1000	5500
Small Business Innovative Research/Small Business Technology Transfer Programs		573	
Total	8005	20476	20366

<u>B. Other Program Funding Summary</u>	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
E99250 Course Correcting Fuze (CCF)			15633	20140	29631	35578	35868	Continuing	Continuing

Comment:

C. Acquisition Strategy Acquisition Strategy/Acquisition Plan was approved by Milestone Decision Authority (MDA) on 20 October 2005. The Army approved Milestone A (MS A) and awarded Technology Development (TD) contracts to ATK and BAE in FY06; each TD contract included options for Systems Development and Demonstration (SD&D) and 3 years of production. A Technology Development Demonstration was conducted in 3QFY07 to satisfy the MS A Exit Criteria. ATK was selected as the prime contractor based on the downselect criteria, and the PGK achieved entry into Milestone B (MS B) in May 2007. Milestone C (MS C) of Increment 1 (MSC1) is scheduled for 2QFY09, and Initial Operational Capability (IOC) is scheduled for 2QFY10.

ARMY RDT&E COST ANALYSIS (R3)

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BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604802A - Weapons and Munitions - Eng Dev							S36		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PGK TD Contract	CPIF	ATK, Minneapolis, MN	3978								3978	
PGK TD Contract	CPIF	BAE, Minneapolis, MN	2978								2978	
PGK SDD Contract - Increment 1	CPIF/Option	ATK, Minneapolis, MN		7544	3Q	13900	1-2Q	3156	1-2Q	Cont.	24600	
PGK SDD Contract- Increment 2	CPIF/Option	TBD						7044	1-2Q	Cont.	Cont.	
Soft Recovery Modules	MIPR	SubSystems Technology, Rosslyn, VA		116	3Q						116	
M107 Metal Parts	MIPR	US ARMY Field Support Command, RIA, IL		79	4Q						79	
Subtotal:			6956	7739		13900		10200		Cont.	Cont.	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Product Manager's Office	In House	PM CAS, Picatinny NJ	320	249	1-4Q	700	1-4Q	1142	1-4Q	Cont.	Cont.	
Government IPT Support	MIPR	ARDEC, Picatinny NJ	5715			2118	1-4Q	2624	1-4Q	Cont.	Cont.	
Platform Integration		Various				1990	1-4Q	700	1-2Q		2690	
Miscellaneous Support	Various	Various	2504				1-4Q			Cont.	Cont.	
Subtotal:			8539	249		4808		4466		Cont.	Cont.	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Component Air Gun/Railgun	MIPR	ARDEC, Picatinny, NJ	150	17	2-3Q					Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

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BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604802A - Weapons and Munitions - Eng Dev							S36		
Testing												
System Demonstration	MIPR	Yuma Proving Ground, Yuma, AZ	1170		2Q	1000	2Q	5500	2-4Q	Cont.	Cont.	
Subtotal:			1320	17		1000		5500		Cont.	Cont.	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PGK Management Support Contract	FFP	Camber, Mt. Arlington, NJ	75		2Q	195	2Q	200	2Q	Cont.	Cont.	
SBIR/STTR						573					573	
Subtotal:			75			768		200		Cont.	Cont.	
Project Total Cost:			16890	8005		20476		20366		Cont.	Cont.	

Schedule Profile (R4 Exhibit)

February 2008

BUDGET ACTIVITY
5 - System Development and Demonstration

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

PROJECT
S36

Event Name	FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13							
	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				
PGK - Increment 1	TD/SDD																															
(1) Technology Demonstration			▲ 1 Tech Demo																													
(2) SDD Contract Award - Increment 1			▲ 2 SDD Contract Award																													
(3) Milestone B1			▲ 3 MS B1																													
Sequential Environmental Testing - S													■ SET-S																			
Sequential Environmental Test ing- P													■ SET-P																			
(4) Milestone C1									▲ 4 MS C1																							
First Article Testing - Increment 1													 FAT																			
Limited User Test - Increment 1													 LUT																			
(5) Initial Operational Capability - Increment 1																	▲ 5 IOC															
PGK - Increment 2																	SDD															
(6) Milestone B2									▲ 6 MS B2																							
Sequential Environmental Testing - S - Increment 2																	■ SET-S															
Sequential Environmental Testing - P - Increment 2																					■ SET-P											

Schedule Profile (R4 Exhibit)

February 2008

BUDGET ACTIVITY
5 - System Development and Demonstration

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

PROJECT
S36

Event Name	FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13							
	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				
(7) Milestone C2																					 MS C2											
(8) First Article Testing - Increment 2																									 FAT							
Limited User Test - Increment 2																									 LUT							
(9) Initial Operational Capability - Increment 2																									 IOC							

Schedule Detail (R4a Exhibit)

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PROJECT
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<u>Schedule Detail</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>
PGK - Increment 1	1Q - 4Q	1Q - 4Q	1Q				
Milestone A							
TD Contract Award							
Technology Demonstration	2Q						
SDD Contract Award - Increment 1	3Q						
Milestone B1	3Q						
Sequential Environmental Testing - S			1Q - 2Q				
Sequential Environmental Test ing- P			2Q				
Milestone C1			2Q				
First Article Testing - Increment 1			4Q				
Limited User Test - Increment 1				1Q			
Initial Operational Capability - Increment 1				3Q			
PGK - Increment 2			2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q	
Milestone B2			1Q				
Sequential Environmental Testing - S - Increment 2					3Q		
Sequential Environmental Testing - P - Increment 2					4Q		
Milestone C2						1Q	
First Article Testing - Increment 2						3Q	
Limited User Test - Increment 2						3Q	
Initial Operational Capability - Increment 2							2Q