

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	63434	57948	34878	Continuing	Continuing
613 MORTAR SYSTEMS	2699				9455
AS5 Artillery Munitions Engineering Development	7636	3987			24463
S23 SURF LNCH ADV MED RNG AIR-TO-AIR MSL (SLAMRAAM)	33570	33662	11736	Continuing	Continuing
S36 PRECISION GUIDANCE KIT	19529	20299	23142	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, FY 08 funds the 81mm Mortar Anti-Personnel Anti-Materiel (MAPAM) Program. MAPAM is an improved High Explosive Mortar Cartridge with increased lethality.

Project AS5, FY08 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. FY08 also funds Lightweight Multi-Functional Material Technology (LMFMT), a materials development program for Ammunition containers. It includes the use of advanced composite and non-composite materials in developing the design of mortar containers and barrier applications.

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 engineering development of precision guidance systems applicable to Indirect Fire weapon systems (artillery and mortars). This includes the Precision Guidance Kit which is a Global Positioning guidance kit with fuzing functions. PGK will be adaptable to existing ammunition. It corrects the trajectory of projectiles to reduce delivery errors, improving accuracy. Precision guidance systems will effectively reduce target delivery error reducing the number of rounds required to conduct a fire mission. This capability will benefit indirect fire systems.

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BUDGET ACTIVITY
5 - System Development and Demonstration

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

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	65236	52140	23662
Current BES/President's Budget (FY 2010)	63434	57948	34878
Total Adjustments	-1802	5808	11216
Congressional Program Reductions		-192	
Congressional Rescissions			
Congressional Increases		6000	
Reprogrammings	20		
SBIR/STTR Transfer	-1822		
Adjustments to Budget Years			11216

Change Summary Explanation:

FY 2009: Congressional Increases for Hybrid Propellant for Medium and Large Caliber Ammunition (\$3.2M); Lightweight Multi-Functional Material Technology for Combat Munitions Logistics (\$0.8M) and Extended Range Modular Sniper Rifle System (\$2.0M).

FY 2010: Funds increased for Project S23, the Surface Launched Advanced Medium Range Air-To-Air Missile (SLAMRAAM) program to develop Engage on Remote (EOR) capability, Training, Aids, Devices, Simulators and Simulations (TADSS) and complete Initial Operational Test and Evaluation (IOTE).

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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 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
S23 SURF LNCH ADV MED RNG AIR-TO-AIR MSL (SLAMRAAM)	33570	33662	11736	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The Surface Launched Advanced Medium Range Air-To-Air Missile (SLAMRAAM) is a critical component of the Army's future Integrated Air & Missile Defense (IAMD) system. SLAMRAAM consists of launcher platforms employing the proven AIM-120-C7 Advanced Medium Range Air-to-Air Missile; Integrated Fire Control Station (IFCS) command, control, and communications platforms; and Improved Sentinel Sensors. SLAMRAAM is a lightweight, day or night, adverse weather, non-line-of-sight system that counters cruise missiles (CM), unmanned aerial vehicle (UAV), fixed wing, and rotary wing threats. SLAMRAAM is highly mobile and able to operate in a variety of combat situations to protect maneuver forces and strategic-level critical assets. SLAMRAAM represents a substantial increase in performance over current short-range air defense systems.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Product Development	12532	237	
Contractor Support Cost	3852	5334	
Test and Evaluation	7712	22340	
System Engineering/ Program Management (SE/PM)	9474	4808	11736
Training (TADSS)			
Small Business Innovative Research/Small Business Technology Transfer Program		943	
Total	33570	33662	11736

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PE 0604869A, Proj M06, Patriot/MEADS Combined Aggregate Program (CAP)	401565	429846	569182	Continuing	Continuing
SSN C50001, PATRIOT/MEADS CAP		30957	16406	Continuing	Continuing
PE 0102419A, Proj E55, JLENS	464877	355257	360076	Continuing	Continuing
SSN BZ0525, JLENS Production				Continuing	Continuing
PE 0604802A, Proj S23, SLAMRAAM	33570	33662	11736	Continuing	Continuing
SSN C81002, SLAMRAAM Launcher		40349	72920	Continuing	Continuing
SSN C81004, Surfaced-Launched AMRAAM Missile				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	6828			Continuing	Continuing
PE 0303327A, Proj S34, AMD System of System Engineering and Integration	123712	114673	209531	Continuing	Continuing
SSN BZ5075000, ARMY IAMD BATTLE COMMAND SYSTEM (IBCS)				Continuing	Continuing
PE 0643305, Proj TR7, Mobile Directed Energy Weapon System (MDEWS)				Continuing	Continuing

Comment: This program is an integral part of the PEO, Missiles and Space Integrated Air and Missile Defense (IAMD) architecture.

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 Milestone C 1QTRFY10, followed by a First Unit Equipped (FUE) 4QTRFY11.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

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 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Hardware/Software Development	SS/CPIF/CPF F*	Raytheon, Tewksbury, MA	109849	12532	1-3Q	237	1-3Q				107053	107053
Government Prototype Manufacturing (Government Furnished Equipment)	Not Applicable (N/A)	Multiple	3625								3625	
Subtotal:			113474	12532		237					110678	107053
Remarks: *SS/CPIF/CPFF - Sole Source/Cost Plus Incentive Fee/Cost Plus Fixed Fee												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Support Costs	SS/CPIF/CPF F*	Raytheon, Tewksbury, MA	14923	3852	1Q	5334	1Q				24109	20962
Government Training (TADSS)	Not Applicable (N/A)	Multiple									19110	
Subtotal:			14923	3852		5334					43219	20962
Remarks: *SS/CPIF/CPFF - Sole Source/Cost Plus Incentive Fee/Cost Plus Fixed Fee												
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government Modeling and Simulation	N/A	Multiple	6600								6600	
Government System Test and Evaluation	N/A	Multiple	5136	6324	1-2Q	19193	1-2Q		1Q		30653	
Contractor System Test and Evaluation	SS/CPIF/CPF F*	Raytheon, Tewksbury, MA	7467	1388	1Q	3147					12002	12002

ARMY RDT&E COST ANALYSIS (R3)

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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev							PROJECT S23	
Subtotal:	19203	7712		22340				49255	12002

Remarks: *SS/CPIF/CPFF - Sole Source/Cost Plus Incentive Fee/Cost Plus Fixed Fee

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor SE/PM	SS/CPIF/CPF F*	Raytheon, Tewksbury, MA	33441	7628	1Q	2074	1Q		1Q		43143	43247
Government SE/PM	N/A	Multiple	16438	1846	1-2Q	3677	1-2Q	11736		7642	41339	
Subtotal:			49879	9474		5751		11736		7642	84482	43247

Remarks: Government Modeling and Simulation in FY08 and beyond is included in Test and Evaluation.
*SS/CPIF/CPFF - Sole Source/Cost Plus Incentive Fee/Cost Plus Fixed Fee

Project Total Cost:	197479	33570		33662		11736		7642	287634	183264
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Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604802A - Weapons and Munitions - Eng Dev						S23	
<u>Schedule Detail</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>	<u>FY 2014</u>	<u>FY 2015</u>	
System Development & Demonstration	1Q - 4Q	1Q - 4Q							
Air & Missile Defense Common Software (ACS) Development	1Q - 2Q								
Government DT/LUT		3Q - 4Q	1Q						
Long Lead LRIP Decision		3Q							
MS C LRIP Decision			1Q						
Low Rate Initial Production			1Q - 4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604802A - Weapons and Munitions - Eng Dev			PROJECT S36	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
S36 PRECISION GUIDANCE KIT	19529	20299	23142	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This program funds engineering development of precision guidance systems applicable to Indirect Fire weapon systems (artillery and mortars). This includes the Precision Guidance Kit which is a Global Positioning guidance kit with fuzing functions. PGK will be adaptable to existing ammunition. It corrects the trajectory of projectiles to reduce delivery errors while improving accuracy. Precision guidance systems will effectively reduce target delivery error reducing the number of rounds required to conduct a fire mission. This capability will benefit indirect fire systems. The increase in effectiveness 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 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Complete Phase 2 Engineering and Manufacturing Development (EMD)- Increment 1	10970	12465	690
Initiate Engineering and Manufacturing Development (EMD)- Increment 2			6952
Continue Engineering Support and Platform Integration	7329	3712	4650
Continue Developmental Testing	1230	3554	5850
Conduct Technology maturation			5000
Small Business Innovative Research/Small Business Technology Transfer Programs		568	
Total	19529	20299	23142

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
E99250 Course Correcting Fuze (CCF)		15587	27670	Continuing	Continuing

Comment:

C. Acquisition Strategy The Acquisition Strategy/Acquisition Plan for the PGK program was approved by the Milestone Decision Authority (MDA) on 20 October 2005. The PGK program is using an incremental development approach to provide a combat capability to the Soldier as quickly as possible, and to deliver advanced capabilities and lower costs as technology matures. The Army approved Milestone A (MS A) for Increment 1 in FY06, and following a Technology Development Demonstration proceeded to Milestone B in May 2007. Alliant Techsystems (ATK) was awarded the Engineering and Manufacturing Development (EMD) program. Approval to build First Article/Production Verification Test will occur at In-Process Review (IPR)1 (3QFY09), and Milestone C (MSC)/Type Classification Limited Procurement (TCLP) is scheduled

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BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604802A - Weapons and Munitions - Eng Dev

PROJECT

S36

for 4QFY09. Materiel Release of Increment 1 is scheduled for 4QFY10. A Milestone B for Increment 2 is scheduled for 2QFY10. The PGK program will be supported by several guidance technology maturation efforts.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

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 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PGK TD Contract	CPIF	ATK, Plymouth, MN	7956								3978	
PGK TD Contract	CPIF	BAE, Minneapolis, MN	5956								5956	
Soft Recovery Modules	MIPR	SubSystems Technology, Rosslyn, VA	116								116	
PGK EMD Contract - Increment 1	CPAF	ATK, Plymouth, MN	7544	10970	1-2Q	12245	1-4Q			Cont.	30759	
PGK EMD Contract Award Fee Incr 1	CPAF	ATK, Plymouth, MN				220	4Q	690	1Q		910	
PGK EMD Contract- Increment 2	CPIF	TBD						6952	2Q	Cont.	Cont.	
M107 Metal Parts	MIPR	US ARMY Field Support Command, RIA, IL	79								79	
Subtotal:			21651	10970		12465		7642		Cont.	Cont.	

Remarks: 6952

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Product Manager's Office	In House	PM CAS, Picatinny NJ	889	734	1-4Q	640	1-4Q	700	1-4Q	Cont.	Cont.	
Government IPT Support	MIPR	ARDEC, Picatinny NJ	11430	2050	1-4Q	2200	1-4Q	1800	1-4Q	Cont.	Cont.	
Platform Integration		Various		3390	1-4Q	865	1-2Q	1300	1-2Q	Cont.	Cont.	
Miscellaneous Support	Various	Various	5008	715	1-4Q	200	1-4Q	700	1-4Q	Cont.	Cont.	
Future Increments Technology Maturation	Various	Various						5000	1-4Q	Cont.	Cont.	
Subtotal:			17327	6889		3905		9500		Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604802A - Weapons and Munitions - Eng Dev							S36		
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Component Air Gun/Railgun Testing	MIPR	ARDEC, Picatinny, NJ	317							Cont.	Cont.	
System Demonstration Testing Incr 1	MIPR	Yuma Proving Ground, Yuma, AZ	2340	1230	2Q	2938	2-4Q			Cont.	6508	
System Demonstration Testing Incr 2	MIPR							2000	3-4Q		2000	
Other Development Testing		Various				616	1-4Q			Cont.	Cont.	
IOT&E Incr 1	MIPR	Yuma Proving Ground, Yuma, AZ						3500	3Q		3500	
Cold Region Testing Incr 1	MIPR	Cold Region Test Center, Ft. Greely, Alaska						350	2Q		350	
Subtotal:			2657	1230		3554		5850		Cont.	Cont.	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PGK Management Support Contract	FFP	Camber, Mt. Arlington, NJ	150	440	2Q	150	1Q	150	3Q	Cont.	Cont.	
PGK Analysis Support	MIPR	Command and Control Directorate, Ft. Monmouth, NJ				75	1Q				75	
PGK Support Contract	FFP	MITRE Corporation, Bedford, MA				150	1Q				150	
Subtotal:			150	440		375		150		Cont.	Cont.	
Project Total Cost:			41785	19529		20299		23142		Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

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

PROJECT
S36

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15					
	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		
PGK - Increment 1	TD/EMD																																	
(1) Milestone B1			▲ 1	MS B1																														
(2) IPR1- Approve FAT/PVT								▲ 2	IPR1																									
(3) Milestone C1-Type Classification Limited Procurement								▲ 3	MS C1- TC LP																									
First Article Testing/Production Verification Test-Increment 1									■ FAT/PVT																									
(4) IPR1- Authorize IOTE/Production Hardware									▲ 4	IPR2																								
IOTE- Increment 1										■ IOTE- Incr 1																								
(5) Type Classification Standard/Full Materiel Release - Increment 1										▲ 5	TC/FMR																							
(6) Milestone B2									▲ 6	MS B2																								
PGK - Increment 2										EMD- Incr 2																								

Schedule Detail (R4a Exhibit)

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BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
5 - System Development and Demonstration		0604802A - Weapons and Munitions - Eng Dev						S36
<u>Schedule Detail</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>	<u>FY 2014</u>	<u>FY 2015</u>
PGK - Increment 1	1Q - 4Q	1Q - 4Q						
Milestone B1	3Q							
IPR1- Approve FAT/PVT		3Q						
Milestone C1-Type Classification Limited Procurement		4Q						
First Article Testing/Production Verification Test- Increment 1			1Q - 2Q					
IPR1- Authorize IOTE/Production Hardware			2Q					
IOTE- Increment 1			3Q - 4Q					
Type Classification Standard/Full Materiel Release - Increment 1			4Q					
Milestone B2			2Q					
PGK - Increment 2			2Q - 4Q					