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**Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Army** **DATE:** February 2012

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0604802A: <i>Weapons and Munitions - Eng Dev</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 Base</b>	<b>FY 2013 OCO</b>	<b>FY 2013 Total</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	25.099	13.815	14.581	-	14.581	18.943	14.038	14.522	14.767	Continuing	Continuing
AS5: <i>Artillery Munitions Engineering Development</i>	10.300	-	-	-	-	-	-	-	-	Continuing	Continuing
S36: <i>PRECISION GUIDANCE KIT</i>	14.799	13.815	14.581	-	14.581	18.943	14.038	14.522	14.767	Continuing	Continuing

**Note**

FY 2011: \$9.0 million Congressional decrement. \$10.3 million increase from FY11-25PA reprogramming action.

**A. Mission Description and Budget Item Justification**

This program element funds engineering development of precision guidance systems applicable to Indirect Fire artillery weapon systems. The Precision Guidance Kit (PGK) is a Global Positioning Guidance Kit with fuzing functions. PGK will improve the accuracy of existing artillery ammunition by correcting the trajectory of projectiles to their designated target location. Precision guidance systems will effectively reduce target delivery error, reducing the number of rounds required to conduct a fire mission.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 Base</b>	<b>FY 2013 OCO</b>	<b>FY 2013 Total</b>
Previous President's Budget	24.345	13.828	14.424	-	14.424
Current President's Budget	25.099	13.815	14.581	-	14.581
Total Adjustments	0.754	-0.013	0.157	-	0.157
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	10.300	-			
• SBIR/STTR Transfer	-0.456	-			
• Adjustments to Budget Years	-	-0.013	0.157	-	0.157
• Other Adjustments 1	-9.000	-	-	-	-
• Other Adjustments 2	-0.090	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Army									DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604802A: Weapons and Munitions - Eng Dev				PROJECT AS5: Artillery Munitions Engineering Development			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
AS5: Artillery Munitions Engineering Development	10.300	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											
Note Not applicable for this item.											
A. Mission Description and Budget Item Justification This program in FY11 funds the following as a result of FY11-25PA:  \$1.0 million to develop an efficient way to safely destroy buried Insensitive High Explosive (IHE) munitions. With the increasing deployment of Insensitive Munitions (IM) explosives there is an immediate need to develop an efficient and reliable method of IM neutralization. Current procedures are expensive and expose the soldier to unnecessary risk as the amount of C4 used for disposal does not always succeed at neutralizing its target. The improved 66MM shaped charge will be designed to penetrate munitions walls and dispose of the IM explosive fill utilizing minimal C4. This is OCO funding. This is an acceleration of an FY 2012 requirement.  \$9.3 million to accelerate the development of prototypes, in-house testing, development engineering support, verification of hardware and software, and conduct warfighter demonstrations. This effort specifically includes Molecular Imprinted Polymers (MIPs) for explosive compound and explosive precursor detection, which are being used by Insurgents to make Homemade Explosives (HME), and Picatinny Optics Detection System (PODS). This is in direct support of JUONs CC-0325 and CC-0416 respectively. This is an acceleration of an FY 2012 requirement. This is OCO funding.											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2011	FY 2012	FY 2013	
Title: Picatinny Optical Detection System (PODS 2.1)  Articles:  Description: "Picatinny Optical Detection System (PODS 2.1)" for \$7.1M - Deliverables include: five surrogate systems for software development, environmental testing, user training, and ATEC safety evaluation; and approximately 50 prototypes ready for in-theatre operational assessment.  FY 2011 Accomplishments: "Picatinny Optical Detection System (PODS 2.1)" for \$7.1M - Deliverables include: five surrogate systems for software development, environmental testing, user training, and ATEC safety evaluation; and approximately 50 prototypes ready for in-theatre operational assessment.								7.100	-	-	
								0			
Title: Molecularly Imprinted Polymers (MIPs)								2.200	-	-	

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Army		<b>DATE:</b> February 2012	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604802A: <i>Weapons and Munitions - Eng Dev</i>	<b>PROJECT</b> AS5: <i>Artillery Munitions Engineering Development</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2011</b>	<b>FY 2012</b>
<p align="right"><b>Articles:</b></p> <p><b>Description:</b> "Molecularly Imprinted Polymers (MIPs) Army FY12 RDTE" for \$2.2M - Deliverables include: formulation samples; formulation demonstrations; polymer acceptance test plan; polymer product specifications; prototypes for wipes, sprays, trace collection wipes for each polymeric solution developed; and testing of prototypes at NAVEOD.</p> <p><b>FY 2011 Accomplishments:</b> "Molecularly Imprinted Polymers (MIPs) Army FY12 RDTE" for \$2.2M - Deliverables include: formulation samples; formulation demonstrations; polymer acceptance test plan; polymer product specifications; prototypes for wipes, sprays, trace collection wipes for each polymeric solution developed; and testing of prototypes at NAVEOD.</p>		0	
<p><b>Title:</b> 66mm Hand-Packable Shape Charge for EOD Applications</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> "66mm Hand-Packable Shape Charge for EOD Applications" for \$1.0M- Deliverables include: modeling and simulation results for 4 IHE lumpy liner designs; verification Test Report of the final lumpy design against M107 projectiles; and 4 physical Prototypes of the counter-IM lumpy liner shaped charge.</p> <p><b>FY 2011 Accomplishments:</b> "66mm Hand-Packable Shape Charge for EOD Applications" for \$1.0M- Deliverables include: modeling and simulation results for 4 IHE lumpy liner designs; verification Test Report of the final lumpy design against M107 projectiles; and 4 physical Prototypes of the counter-IM lumpy liner shaped charge.</p>		1.000 0	-
<b>Accomplishments/Planned Programs Subtotals</b>		10.300	-
<b>C. Other Program Funding Summary (\$ in Millions)</b>			
N/A			
<b>D. Acquisition Strategy</b>			
Not applicable for this item.			
<b>E. Performance Metrics</b>			
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.			

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Army									DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604802A: Weapons and Munitions - Eng Dev				PROJECT S36: PRECISION GUIDANCE KIT			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
S36: PRECISION GUIDANCE KIT	14.799	13.815	14.581	-	14.581	18.943	14.038	14.522	14.767	Continuing	Continuing
Quantity of RDT&E Articles											
A. Mission Description and Budget Item Justification											
This program funds engineering development of precision guidance systems applicable to Indirect Fire artillery weapon systems. The Precision Guidance Kit (PGK) is a Global Positioning System Guidance Kit with fuzing functions. PGK will improve the accuracy of existing artillery ammunition by correcting the trajectory of projectiles to their designated target location. Precision guidance systems will effectively reduce target delivery error reducing the number of rounds required to conduct a fire mission.											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2011	FY 2012	FY 2013	
Title: Contractor Engineering and Manufacturing Development  Articles:  Description: Contractor Engineering and Manufacturing Development  FY 2011 Accomplishments: Contractor Engineering and Manufacturing Development  FY 2012 Plans: Contractor Engineering and Manufacturing Development  FY 2013 Plans: Engineering and Manufacturing Development								10.350	6.934	5.415	
								0	0		
Title: Government Engineering Support  Articles:  Description: Continue Engineering Support  FY 2011 Accomplishments: Continue Engineering Support  FY 2012 Plans: Continue Engineering Support  FY 2013 Plans:								3.483	4.643	4.526	
								0	0		

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Army							<b>DATE:</b> February 2012				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0604802A: <i>Weapons and Munitions - Eng Dev</i>			<b>PROJECT</b> S36: <i>PRECISION GUIDANCE KIT</i>					

  

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>				<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>
Continue Engineering Support						
<b>Title:</b> Continue Development/Operational Testing				0.966	2.238	4.640
				0	0	
<b>Description:</b> Continue Development/Operational Test						
<b>FY 2011 Accomplishments:</b> Continue Development/Operational Test						
<b>FY 2012 Plans:</b> Continue Development/Operational Test						
<b>FY 2013 Plans:</b> Continue Development/Operational Test						
<b>Accomplishments/Planned Programs Subtotals</b>				14.799	13.815	14.581

  

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u> <u>Base</u>	<u>FY 2013</u> <u>OCO</u>	<u>FY 2013</u> <u>Total</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E99250: <i>Procurement of Ammunition Army: Precision Guidance Kit (PGK) E99250</i>	0.047		37.952		37.952		69.176	70.080	55.796	Continuing	Continuing

  

<b>D. Acquisition Strategy</b>
<p>The Precision Guidance Kit (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 at lower costs as technology matures. The Acquisition Strategy/Acquisition Plan for the PGK Increment 1 program was approved by the Milestone Decision Authority (MDA) on 20 October 2005, subsequently revised and approved on 5 March 2009. Alliant Techsystems (ATK) was competitively awarded the Engineering and Manufacturing Development (EMD) phase in May 2007 following a Technology Development Demonstration. Approval to initiate the procurement of First Article/Production Verification Test (FAT/PVT) hardware occurred at Milestone C In-Process Review (IPR) 3Q FY 2009. The FAT/PVT hardware was procured in 3Q FY 2010. However, Milestone C/Type Classification Limited Procurement was delayed due to reliability growth challenges that required failure and root cause analysis that led to the restructure of the PGK Engineering and Manufacturing Development program and subsequent implementation of a reliability design improvement corrective action plan. As a result, Milestone C is planned for 2Q FY 2013 and Initial Operational Capability (IOC) of Increment 1 is scheduled for 3Q FY 2014. Following the Increment 1 Milestone C decision, a follow-on development effort is planned to make PGK compatible with future high explosive projectiles that contain a high explosive Insensitive Munition fill.</p>

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Army		<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604802A: <i>Weapons and Munitions - Eng Dev</i>	<b>PROJECT</b> S36: <i>PRECISION GUIDANCE KIT</i>

**E. Performance Metrics**

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Army											DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604802A: Weapons and Munitions - Eng Dev					PROJECT S36: PRECISION GUIDANCE KIT				
Management Services (\$ in Millions)					FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Management Support	Various	Camber:Mt Arlington, NJ	1.597	0.243		0.061		-		0.061	0.000	1.901	1.901	
Miscellaneous Support Contract	Various	MITRE Corporation:Fort Monmouth, NJ	0.600	-		-		-		-	0.000	0.600	0.600	
Analysis Support	MIPR	Command and Control Directorate:Ft Monmouth, NJ	0.300	-		-		-		-	0.000	0.300	0.300	
Subtotal			2.497	0.243		0.061		-		0.061	0.000	2.801	2.801	
Product Development (\$ in Millions)					FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
PGK TD Contract	C/CPIF	Alliant Techsystems (ATK):Plymouth, MN	5.279	-		-		-		-	0.000	5.279	5.279	
PGK TD Contract	C/CPIF	BAE:Minneapolis, MN	3.103	-		-		-		-	0.000	3.103	3.103	
Soft Recovery Modules	MIPR	SubSystems Technology:Rosslyn, VA	0.116	-		-		-		-	0.000	0.116	0.116	
M107 Metal Parts	MIPR	US ARMY Field Support Command:Rock Island, IL	0.079	-		-		-		-	0.000	0.079	0.079	
PGK EMD & Phase 1-2 (Reliability Failure/Root Cause Analysis)	C/CPAF	Alliant Techsystems (ATK):Plymouth, MN	53.947	-		-		-		-	0.000	53.947	53.947	
PGK EMD - Phase 3a to 5	C/FFP	Alliant Techsystems (ATK):Plymouth, MN	14.090	6.934		1.160		-		1.160	0.000	22.184	22.184	
PGK Insensitive Munitions	C/FFP	TBD:TBD	-	-		4.255		-		4.255	18.857	23.112	23.112	
Subtotal			76.614	6.934		5.415		-		5.415	18.857	107.820	107.820	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Army										DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT					
2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)				PE 0604802A: Weapons and Munitions - Eng Dev				S36: PRECISION GUIDANCE KIT					
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Office	PO	PM CAS:Picatinny, NJ	7.995	0.725		0.735		-		0.735	1.510	10.965	10.965
Government Engineering Support	PO	ARDEC:Picatinny, NJ	21.990	3.675		3.730		-		3.730	5.160	34.555	34.555
Subtotal			29.985	4.400		4.465		-		4.465	6.670	45.520	45.520
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Air Gun/Railgun Testing	PO	ARDEC:Picatinny, NJ	0.317	-		-		-		-	0.000	0.317	0.317
Other Development Testing	Various	Various:Various	1.359	-		-		-		-	0.000	1.359	1.359
System Development Testing Increment 1	MIPR	Yuma Proving Ground:Yuma, AZ	7.784	2.238		0.690		-		0.690	3.068	13.780	13.780
Initial Operational Test & Evaluation - Increment 1	MIPR	Yuma Proving Ground:Yuma, AZ	-	-		3.500		-		3.500	0.000	3.500	3.500
Qualification Testing for Insensitive Munitions	MIPR	Yuma Proving Ground:Yuma, AZ	-	-		-		-		-	3.950	3.950	3.950
Cold Region Testing - Increment 1	MIPR	Cold Region Test Center:Ft Greely, AK	-	-		0.450		-		0.450	0.000	0.450	0.450
Subtotal			9.460	2.238		4.640		-		4.640	7.018	23.356	23.356
			Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			118.556	13.815		14.581		-		14.581	32.545	179.497	179.497
Remarks													

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**Exhibit R-4, RDT&E Schedule Profile: PB 2013 Army**

**DATE:** February 2012

**APPROPRIATION/BUDGET ACTIVITY**

2040: Research, Development, Test & Evaluation, Army  
BA 5: Development & Demonstration (SDD)

## R-1 ITEM NOMENCLATURE

PE 0604802A: Weapons and Munitions - Eng  
Dev

# PROJECT

S36: *PRECISION GUIDANCE KIT*

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Army			<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604802A: <i>Weapons and Munitions - Eng Dev</i>	<b>PROJECT</b> S36: <i>PRECISION GUIDANCE KIT</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Insensitive Munitions Development	3	2013	4	2015
Milestone C - Type Classification Limited Procurement	2	2013	2	2013
First Article Test (FAT)	2	2013	2	2013
Initial Operational Test and Evaluation (IOT&E)	4	2013	4	2013
Type Classification Standard / Full Materiel Release	3	2014	3	2014
IOC	3	2014	3	2014