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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	16.770	14.998	21.379	-	21.379	27.816	43.997	54.917	65.857	-	245.734
613: MORTAR SYSTEMS	-	-	-	-	-	-	-	7.302	15.930	17.000	-	40.232
EC1: 40mm Hi Vel and Low Vel Thermal Training Cartridge	-	-	6.960	7.257	-	7.257	-	-	-	-	-	14.217
EC4: Non-Standard Simulator Munitions	-	-	0.885	0.993	-	0.993	1.291	1.588	1.985	2.085	-	8.827
EL9: Ammunitions Logistics Prototyping	-	-	-	2.599	-	2.599	3.509	2.644	1.942	2.339	-	13.033
EP2: Individual Assault Munition (IAM)	-	-	-	-	-	-	-	-	-	10.980	-	10.980
EP3: Reduced Range Small Caliber Training Ammunition	-	-	-	-	-	-	-	6.000	6.800	12.000	-	24.800
EP4: One-Way Lumiscence (OWL) for Small Caliber Ammo	-	-	-	-	-	-	-	3.200	2.900	5.800	-	11.900
EP5: Adv Armor-Piercing (ADVAP) for Small Caliber Ammo	-	-	-	-	-	-	10.600	9.500	13.900	7.200	-	41.200
EP6: Lightweight Cartridge Case for Small Caliber Ammo	-	-	-	-	-	-	4.000	4.400	4.000	2.000	-	14.400
EP7: Tunable Pyrotechnic Aircraft Countermeasure Flares	-	-	-	1.000	-	1.000	1.450	4.400	2.000	-	-	8.850
S36: Precision Guidance Kit	-	16.770	7.153	9.530	-	9.530	6.966	4.963	5.460	6.453	-	57.295
Note FY 2016: New start for Projects EL9 and EP7; Budget rephasing for project S36.												
A. Mission Description and Budget Item Justification This program element funds multiple efforts for engineering development of weapons and munitions systems.												

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Project S36: 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 provides near precision accuracy and effectiveness for 155mm High Explosive artillery projectiles. 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. Project EC1: The Target Practice Day/ Night/ Thermal (TP D/N/T) cartridges are 40mm grenade training cartridges. The low velocity variant is for training with the M203/ M320 grenade launchers and the high velocity variant is for training with the Mk19 grenade machine gun. Both of these cartridges will provide the War Fighter with a non dud producing, environmentally friendly training cartridge which provides a visual and thermal impact signature that can be seen day or night, by the unaided eye or through night vision devices and thermal weapon sights. The program will carry competitive prototypes for each cartridge variant through the Engineering and Manufacturing Development (EMD) phase. Project EC4: Army's Combat Training Centers are currently using non-standard munitions to replicate both conventional and asymmetric warfare battlefield effects. These modified commercial-off-the-shelf products have not been type classified, material released, and are not sustainable; because of these issues, risk assessment, and risk mitigation lies with the individual Training Center. Standardization of these munitions will reduce training costs, eliminate redundancies between systems, and mitigate safety risks associated with realistic scenario based training. Project EL9: This project supports the future force by improving the distribution, management, reliability and survivability of ammunition through the advanced development, integration, and demonstration of logistics system enablers. These enablers will improve the efficiency and effectiveness of ammunition operations, to include retrograde, while reducing the logistics footprint on the battlefield. Technology areas addressed include handling, distribution, and management (strategic and tactical), prognostics, diagnostics, and asset visibility, explosives safety, and adaptive and environmentally friendly packaging and palletization. The efficient deployment and sustainment of reliable ammunition is vital to success on the battlefield. This project enhances the operational effectiveness of the ammunition logistics system to ensure the distribution of reliable ammunition to the warfighter. Project EP7: This project will support Integrated System Design (ISD) and System Capability and Manufacturing Process Demonstrations (SC&MPD) on current pyrotechnic munitions and tunable pyrotechnic aircraft counter measures and decoys. The project will also support ISD & SC& MPD on new expendable countermeasure munitions that will protect Army aircraft from advanced and current guided missile threats. Activities include modeling and simulation, flight testing, qualification testing, engineering to reduce size and weight, environmental considerations, safety enhancements, manufacturing enhancements, qualification of other service and foreign munitions that could meet current requirements, product improvements, insertion of new technologies to increase performance, and enhancement of current flare solutions for new and existing aircraft. Systems include impulse cartridges, pen flares, hand held signals, trip flares, simulators, marine markers, smoke pots, smoke grenades, rail road flares and other type of emergency/distress devices, aircraft expendables (to include Radio Frequency (RF) expendables), and primers used in munitions systems.		

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Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev			
B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	15.712	15.006	3.488	-	3.488
Current President's Budget	16.770	14.998	21.379	-	21.379
Total Adjustments	1.058	-0.008	17.891	-	17.891
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.576	-			
• SBIR/STTR Transfer	-0.531	-			
• Adjustments to Budget Years	0.013	-	17.987	-	17.987
• Budget Adjustments	-	-0.008	-0.096	-	-0.096

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) 613 / MORTAR SYSTEMS			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
613: MORTAR SYSTEMS	-	-	-	-	-	-	-	7.302	15.930	17.000	-	40.232
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Accelerated Precision Mortar Initiative (APMI), XM395 is a GPS guided 120mm mortar cartridge that will be compatible with all Army 120mm mortar systems in Afghanistan. The requirement for precision mortar capability resulted from an urgent operational need for highly transportable, all weather, rapidly responsive, precise, indirect fires to support widely dispersed combat outposts and operations at the lowest tactical echelons to meet an Operational Needs Statement (ONS) from Afghanistan. APMI will provide a precision 120mm mortar capability that has accuracy within 10 meter Circular Error Probable (CEP).

Mortar Anti-Personnel Anti-Materiel (MAPAM), XM1061 is a 60mm enhanced fragmentation mortar program that provides 81mm effectiveness in a 60mm configuration. FY 2010 Congressional funds provide support for analysis of XM1143 81mm MAPAM and finalizing the design, testing, and qualification of XM1061. The program is in the final stages of development and Type Classification will commence in March 2011.

B. Accomplishments/Planned Programs (\$ in Millions)
 N/A

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

E. Performance Metrics
 N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev						Project (Number/Name) 613 / MORTAR SYSTEMS			

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
APMI Phase II Contract	C/CPIF	ATK : Plymouth, MN	0.001	-		-		-		-		-		-	0.001	-
Subtotal			0.001	-		-		-		-		-		-	0.001	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.001	-		-		-		-		-	-	0.001	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																				Date: February 2015																	
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>										Project (Number/Name) 613 / <i>MORTAR SYSTEMS</i>																	
Event Name										FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
										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
APMI																																					

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) 613 / MORTAR SYSTEMS	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
APMI	2	2015	2	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
EC1: 40mm Hi Vel and Low Vel Thermal Training Cartridge	-	-	6.960	7.257	-	7.257	-	-	-	-	-	14.217
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note In FY 2015 program activities transferred from PE 643639 Project 694.												
A. Mission Description and Budget Item Justification The Target Practice Day Night Thermal (TP-DNT) cartridges are 40mm grenade training cartridges. The low velocity variant is for training with the M203/M320 grenade launchers; the high velocity variant is for training with the Mk19 grenade machine gun. Both cartridges will provide the Warfighter with a non-dud producing, environmentally friendly training cartridge that provides a visual impact signature seen day or night, by the naked eye, through night vision devices, and thermal weapon sights. These cartridges will replace the 40mm Target Practice, M918/M385A1 (Mixed Belt) cartridges and the 40mm M781 cartridges. It is expected that the unit price for high velocity cartridges will be lower than the Mixed Belt cartridges. Funding for FY 2015 activities transitions from PE 0603639/Project 694.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: Target Practice Day Night Thermal Cartridges									-	6.960	7.257	
Description: The Target Practice Day Night Thermal (TP-DNT) Cartridges are 40mm grenade training cartridges												
FY 2015 Plans: FY 2015 activities include EMD contracts award for both the HV and LV variants.												
FY 2016 Plans: FY 2016 developmental engineering test activities for both HV and LV variants..												
Accomplishments/Planned Programs Subtotals									-	6.960	7.257	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost	
• 40mm Hi Vel and Low Vel Thermal Trg: 40mm Hi Vel and Low Vel Thermal Trg PE 603639 Project 694	5.655	-	-	-	-	-	-	-	-	-	5.655	
• Target Pracice Day Night Thermal: Target Practice Day Night	-	1.972	-	-	-	110.400	116.828	103.329	99.941	-	432.470	

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge			
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
Thermal Cartridges Procurement (SSNs: E05610, E05611)											
Remarks Production dollars will be used to procure 40mm training cartridges. If not 40mm DNT cartridges, 40mm mixed belt cartridges will be procured.											
D. Acquisition Strategy The TP-DNT cartridges will be developed through a competitive Engineering and Manufacturing Development (EMD) program. The EMD phase will develop both High Velocity (HV) and Low Velocity (LV) variants that will most likely utilize the same critical technologies, making concurrent acquisitions a logical approach to reduce overall acquisition costs. As part of the EMD source selection, a Bid Sample shoot-off competition is underway to evaluate potential designs. Within funding constraints, multiple contractor designs will be awarded EMD contracts with intent to down select to one contractor for the HV variant and one contractor for the LV variant. Following the down select, begin Low Rate Initial Production (LRIP) and two production year options. Milestone C scheduled for 3Q FY 2017.											
E. Performance Metrics N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor 1 Low Velocity	C/FFP	TBD : TBD	0.000	-		1.414		-		-		-	-	1.414	-
Contractor 2 Low Velocity	C/FFP	TBD : TBD	0.000	-		1.415		-		-		-	-	1.415	-
Contractor 1 High Velocity	C/FFP	TBD : TBD	0.000	-		1.414		-		-		-	-	1.414	-
Contractor 2 High Velocity	C/FFP	TBD : TBD	0.000	-		1.415		-		-		-	-	1.415	-
PM MAS labor and travel	MIPR	PICATINNY ARSENAL : NJ	0.000	-		0.180		0.555		-		0.555	-	0.735	-
Subtotal			0.000	-		5.838		0.555		-		0.555	-	6.393	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ARDEC	MIPR	PICATINNY ARSENAL : NJ	0.000	-		0.552		2.178		-		2.178	-	2.730	-
Subtotal			0.000	-		0.552		2.178		-		2.178	-	2.730	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Yuma Proving Ground (YPG)	MIPR	Yuma : AZ	0.000	-		0.400		1.030		-		1.030	-	1.430	-
Aberdeen Test and Evaluation Center (ATEC)	MIPR	Aberdeen : MD	0.000	-		0.100		3.287		-		3.287	-	3.387	-
Dahlgren NSWC	MIPR	Dahlgren : VA	0.000	-		0.070		0.207		-		0.207	-	0.277	-
Subtotal			0.000	-		0.570		4.524		-		4.524	-	5.094	-
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		6.960		7.257		-		7.257	-	14.217	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army							Date: February 2015			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev			Project (Number/Name) EC1 / 40mm Hi Vel and Low Vel Thermal Training Cartridge				
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army

Date: February 2015

Appropriation/Budget Activity

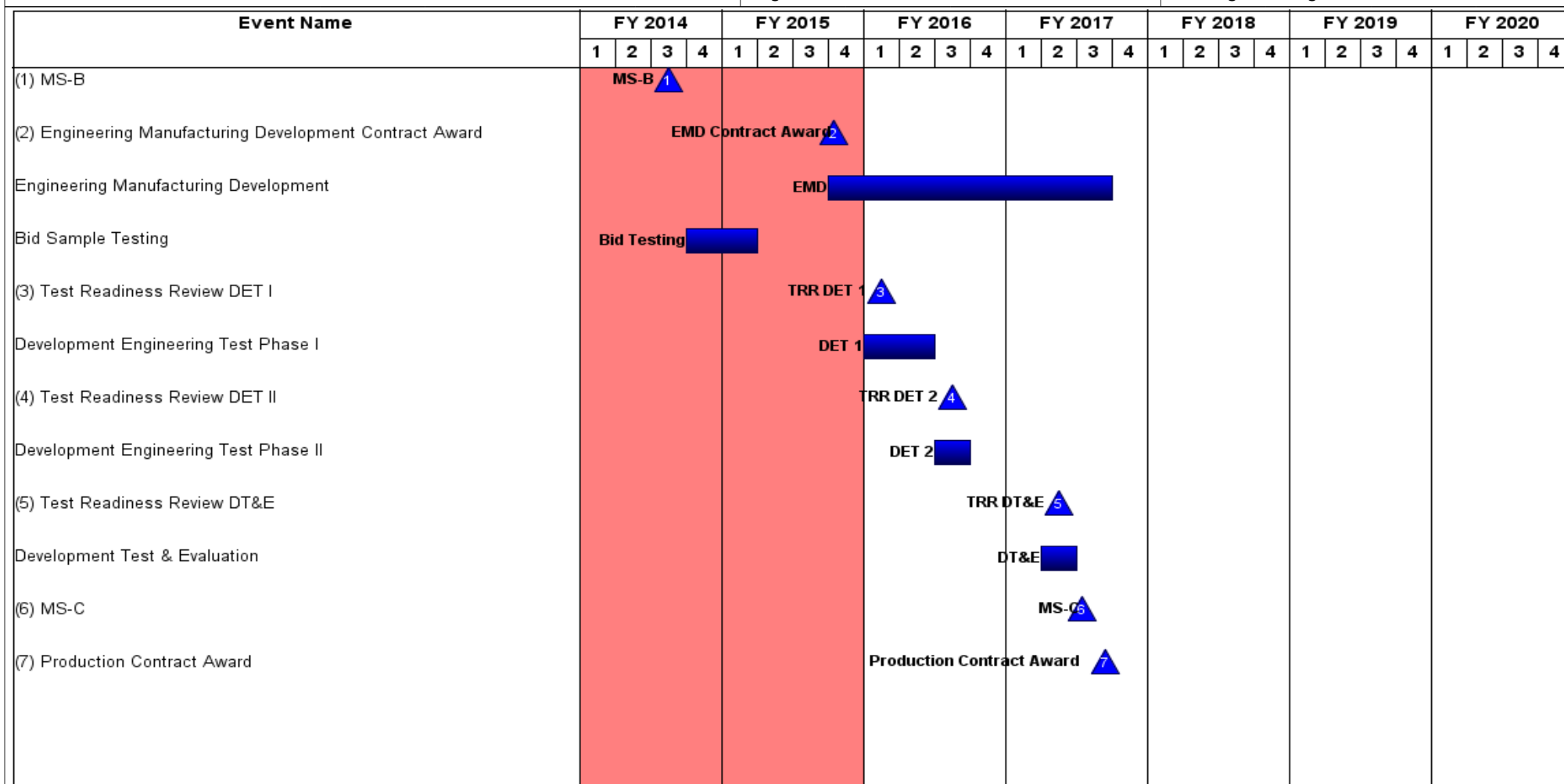
2040 / 5

R-1 Program Element (Number/Name)

PE 0604802A / Weapons and Munitions -
Eng Dev

Project (Number/Name)

EC1 / 40mm Hi Vel and Low Vel Thermal
Training Cartridge



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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EC1 / <i>40mm Hi Vel and Low Vel Thermal Training Cartridge</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MS-B	3	2014	3	2014
Engineering Manufacturing Development Contract Award	4	2015	4	2015
Engineering Manufacturing Development	4	2015	3	2017
Bid Sample Testing	4	2014	1	2015
Test Readiness Review DET I	1	2016	1	2016
Development Engineering Test Phase I	1	2016	2	2016
Test Readiness Review DET II	3	2016	3	2016
Development Engineering Test Phase II	3	2016	3	2016
Test Readiness Review DT&E	2	2017	2	2017
Development Test & Evaluation	2	2017	2	2017
MS-C	3	2017	3	2017
Production Contract Award	3	2017	3	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EC4 / Non-Standard Simulator Munitions			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
EC4: Non-Standard Simulator Munitions	-	-	0.885	0.993	-	0.993	1.291	1.588	1.985	2.085	-	8.827
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project will standardize various pyrotechnic that simulate battlefield effects. The Army's Combat Training Centers (CTCs) are currently using non-standard munitions to replicate both conventional and asymmetric warfare battlefield effects. These modified commercial-off-the-shelf products have not been type classified, material released, and are not safe or sustainable for use by Soldiers. This standardization effort will develop various pyrotechnics/simulators to include but not limited to: Black smoke signature (burning vehicles, buildings, and equipment); Yellow smoke signature (chemical, biological or nuclear effects); Macro pyrotechnics to simulate hostile fire and small Improvised Explosive Devices (IEDs) during mounted operations in urban terrain; Micro pyrotechnics to simulate indoor hostile fire and IED effects that are capable of being integrated into existing facilities; Rocket Propelled Grenade (RPG) on a wire to replicate the flight of a Rocket Propelled Grenade; High Order Blast Effect (HOBE) used to replicate a Vehicle Borne Improvised Explosive Device (VBIED), building explosions, and other significant explosive events; Artillery airburst (LA45) simulator to replicate indirect fire; simulator to replicate a STINGER (LA47) firing; Tracer Fire-back simulator to replicate enemy small arms fire and anti-aircraft fire. Standardization will reduce training costs, eliminate redundancies between systems, and mitigate safety risks associated with realistic scenario based training.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2014	FY 2015	FY 2016
Title: Standardize Special Use Ammunition	-	0.885	0.993
Description: Standardize non-standard pyrotechnic battlefield effects currently used by CTCs .			
FY 2015 Plans: This project will support development and preparation of documentation for Materiel Development Decision (MDD) approval. The following items were identified as required capabilities to simulate battlefield effects: a. Black smoke signature (burning vehicles, buildings, and equipment) that is interoperable with existing launcher configurations. b. Yellow smoke signature to simulate chemical, biological or nuclear effects that is interoperable with existing launcher configurations. c. Macro pyrotechnics to simulate hostile fire and small Improvised Explosive Devices (IED's) during mounted operations in urban terrain. d. Micro pyrotechnics to simulate indoor hostile fire and IED effects that are capable of being integrated into existing facilities. e. RPG on a wire to replicate the flight of a Rocket Propelled Grenade. The RPG signature leaves a smoke trail that gives a launch point location, visible spark signature, along with an audible launch and thrusting sound. f. High Order Blast Effect (HOBE) used to replicate a Vehicle Borne Improvised Explosive Device (VBIED), building explosions, and other significant explosive events. The signature is a large orange or red-colored fireball and smoke.			

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Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EC4 / <i>Non-Standard Simulator Munitions</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
g. Artillery airburst simulator to replicate indirect fire that is interoperable with existing launcher configurations. h. Simulator to replicate a MANPAD firing that is interoperable with existing launcher configurations. i. Tracer Fire-back simulator to replicate enemy small arms fire and anti-aircraft fire. Signature is red or green balls of fire. FY 2016 Plans: This project will support the Engineering Manufacturing and Development (EMD) phase for Black Smoke signature (burning vehicles, buildings, and equipment), Artillery airburst simulator and Tracer/STINGER simulators. Review and qualify test data for LA45 and LA47; evaluate Marine Type Classification (TC) and Material Release (MR) data; Conduct test and evaluation; TC and Full Material Release (FMR) for Final Operational Test (FOT) cartridge.			
Accomplishments/Planned Programs Subtotals	-	0.885	0.993

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• Procurement Ammunition, Army: <i>Simulators, Non-Standard, Special Effects for CTCs; SSN E88404</i>	-	-	-	-	-	1.505	1.009	1.029	1.051	-	4.594
Remarks											
D. Acquisition Strategy The Acquisition strategy is under development and will be approved by the Milestone Decision Authority (MDA) once complete.											
E. Performance Metrics N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev						Project (Number/Name) EC4 / Non-Standard Simulator Munitions			
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	PM Close Combat Systems : PICATINNY ARSENAL	0.000	-		0.278		0.100	Jan 2016	-		0.100	-	0.378	-
Subtotal			0.000	-		0.278		0.100		-		0.100	-	0.378	-
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	MIPR	ARDEC : PICATINNY ARSENAL	0.000	-		0.607		0.790	Jan 2016	-		0.790	-	1.397	-
Subtotal			0.000	-		0.607		0.790		-		0.790	-	1.397	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	MIPR	ARDEC : Picatinny	0.000	-		-		0.103	Mar 2016	-		0.103	-	0.103	-
Subtotal			0.000	-		-		0.103		-		0.103	-	0.103	-
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		0.885		0.993		-		0.993	-	1.878	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																					
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev										Project (Number/Name) EC4 / Non-Standard Simulator Munitions																	
Event Name										FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
										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
Materiel Development Decision Special Use Ammunition Pyrotechnics														MDD																							
Review/qualify Marine Corps test data for LA45/LA47																																					
Evaluate Marine Corps TC/MR																																					
(1) IOC Tracer/STINGER Simulator														1 IOC Tracer/STINGER																							
(2) IOC Artillery Airbust Simulator														2 IOC Artillery																							
Conduct T&E, TC/MR black smoke cartridge																																					
(3) MS C Black Smoke Simulator														3 MS C Black Smoke																							
(4) MS C Yellow Smoke Simulator														4 MS C Yellow Smoke																							
(5) MS C Force on Force Simulator														5 MS C Force on Force																							
(6) MS C RPG																						6 MS C RPG															
(7) MS C Micro-Macro																														7 MS C Micro/Mac							

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EC4 / <i>Non-Standard Simulator Munitions</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Development Decision Special Use Ammunition Pyrotechnics	2	2015	3	2015
Review/qualify Marine Corps test data for LA45/LA47	1	2016	2	2016
Evaluate Marine Corps TC/MR	2	2016	3	2016
IOC Tracer/STINGER Simulator	4	2016	4	2016
IOC Artillery Airbust Simulator	4	2016	4	2016
Conduct T&E, TC/MR black smoke cartridge	3	2016	4	2016
MS C Black Smoke Simulator	4	2016	4	2016
MS C Yellow Smoke Simulator	2	2017	2	2017
MS C Force on Force Simulator	2	2018	2	2018
MS C RPG	3	2019	3	2019
MS C Micro-Macro	3	2020	3	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EL9 / Ammunitions Logistics Prototyping			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
EL9: Ammunitions Logistics Prototyping	-	-	-	2.599	-	2.599	3.509	2.644	1.942	2.339	-	13.033
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification This project supports the future force by improving the distribution, management, reliability and survivability of ammunition through the advanced development, integration, and demonstration of logistics system enablers. These enablers will improve the efficiency and effectiveness of ammunition operations, to include retrograde, while reducing the logistics footprint on the battlefield. Technology areas addressed include handling, distribution, and management (strategic and tactical), prognostics, diagnostics, and asset visibility, explosives safety, and adaptive and environmentally friendly packaging and palletization. The efficient deployment and sustainment of reliable ammunition is vital to success on the battlefield. This project enhances the operational effectiveness of the ammunition logistics system to ensure the distribution of reliable ammunition to the warfighter.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2014	FY 2015	FY 2016
Title: Munitions Survivability and Logistics Enablers										-	-	2.599
Description: This program will develop ammunition logistics systems that improve munitions survivability and logistics												
FY 2016 Plans: Develop ammunition logistics systems that improve munitions survivability and logistics.												
Accomplishments/Planned Programs Subtotals										-	-	2.599
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy Strategy is under development and will be approved by the MDA once complete. E. Performance Metrics N/A												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev						Project (Number/Name) EL9 / Ammunitions Logistics Prototyping			

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor	C/TBD	TBD : TBD	0.000	-		-		2.000		-		2.000	-	2.000	-
Subtotal			0.000	-		-		2.000		-		2.000	-	2.000	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ARDEC	MIPR	Picatinny Arsenal : NJ	0.000	-		-		0.599		-		0.599	-	0.599	-
Subtotal			0.000	-		-		0.599		-		0.599	-	0.599	-

			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		-		2.599		-		2.599	-	2.599	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																		Date: February 2015										
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev										Project (Number/Name) EL9 / Ammunitions Logistics Prototyping								
Event Name	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Material Development Decision																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EL9 / <i>Ammunitions Logistics Prototyping</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Development Decision	4	2015	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP2 / Individual Assault Munition (IAM)			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
EP2: Individual Assault Munition (IAM)	-	-	-	-	-	-	-	-	-	10.980	-	10.980
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
<u>A. Mission Description and Budget Item Justification</u> no funding until FY20 <u>B. Accomplishments/Planned Programs (\$ in Millions)</u> N/A <u>C. Other Program Funding Summary (\$ in Millions)</u> N/A <u>Remarks</u> <u>D. Acquisition Strategy</u> N/A <u>E. Performance Metrics</u> N/A												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev						Project (Number/Name) EP2 / Individual Assault Munition (IAM)			

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
na	C/TBD	na : na	0.001	-		-		-		-		-		-	0.001	-
Subtotal			0.001	-		-		-		-		-		-	0.001	-

			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.001	-		-		-		-		-	-	0.001	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																			
Appropriation/Budget Activity 2040 / 5								R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev								Project (Number/Name) EP2 / Individual Assault Munition (IAM)																			
Event Name								FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
								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
NA																																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP2 / <i>Individual Assault Munition (IAM)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NA	2	2015	2	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP3 / Reduced Range Small Caliber Training Ammunition			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
EP3: Reduced Range Small Caliber Training Ammunition	-	-	-	-	-	-	-	6.000	6.800	12.000	-	24.800
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification no funding until FY18 B. Accomplishments/Planned Programs (\$ in Millions) N/A C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP3 / Reduced Range Small Caliber Training Ammunition					

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
x	C/TBD	x : x	0.001	-		-		-		-		-	-	0.001	-
Subtotal			0.001	-		-		-		-		-	-	0.001	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.001	-	-	-	-	-	-	0.001	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																				Date: February 2015									
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev										Project (Number/Name) EP3 / Reduced Range Small Caliber Training Ammunition									
Event Name	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				
	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	
NA																													

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Small Caliber Training Ammunition

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NA	2	2015	2	2015

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[illegible]

A. Mission Description and Budget Item Justification

no funding until FY18

B. Accomplishments/Planned Programs (\$ in Millions)

N/A

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP4 / One-Way Lumiscence (OWL) for Small Caliber Ammo					

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
x	C/TBD	x : x	0.001	-		-		-		-		-		-	0.001	-
Subtotal			0.001	-		-		-		-		-		-	0.001	-

			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.001	-		-		-		-		-	-	0.001	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																		Date: February 2015																			
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev								Project (Number/Name) EP4 / One-Way Lumiscence (OWL) for Small Caliber Ammo																			
Event Name										FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
										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
NA																																					

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Lumiscence (OWL) for Small Caliber Ammo

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NA	2	2015	2	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber Ammo			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
EP5: Adv Armor-Piercing (ADVAP) for Small Caliber Ammo	-	-	-	-	-	-	10.600	9.500	13.900	7.200	-	41.200
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

no funding until FY17

B. Accomplishments/Planned Programs (\$ in Millions)

N/A

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber Ammo					

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
x	C/TBD	x : x	0.001	-		-		-		-		-		-	0.001	-
Subtotal			0.001	-		-		-		-		-		-	0.001	-

			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.001	-		-		-		-		-	-	0.001	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																		Date: February 2015										
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev								Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber Ammo										
Event Name	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
NA																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP5 / Adv Armor-Piercing (ADVAP) for Small Caliber Ammo

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NA	2	2015	2	2015

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[illegible]

A. Mission Description and Budget Item Justification

no funding until FY17

B. Accomplishments/Planned Programs (\$ in Millions)

N/A

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP6 / Lightweight Cartridge Case for Small Caliber Ammo					

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
x	C/TBD	x : x	0.001	-		-		-		-		-		-	0.001	-
Subtotal			0.001	-		-		-		-		-		-	0.001	-

			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.001	-		-		-		-		-	-	0.001	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																			
Appropriation/Budget Activity 2040 / 5								R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev								Project (Number/Name) EP6 / Lightweight Cartridge Case for Small Caliber Ammo																			
Event Name								FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
								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
na																																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP6 / Lightweight Cartridge Case for Small Caliber Ammo

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
na	2	2015	2	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP7 / Tunable Pyrotechnic Aircraft Countermeasure Flares			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
EP7: Tunable Pyrotechnic Aircraft Countermeasure Flares	-	-	-	1.000	-	1.000	1.450	4.400	2.000	-	-	8.850
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

FY 2016: New start for Projects EL9 and EP7; Budget rephasing for project S36.

A. Mission Description and Budget Item Justification

This project will support Integrated System Design (ISD), System Capability (SC) and Manufacturing Process Demonstrations (MPD) on current pyrotechnic munitions and tunable pyrotechnic aircraft counter measures and decoys. The project will also support ISD, SC and MPD on new expendable countermeasure munitions that will protect Army aircraft from advanced and current guided missile threats. Activities include modeling and simulation, flight testing, qualification testing, engineering to reduce size and weight, environmental considerations, safety enhancements, manufacturing enhancements, qualification of other service and foreign munitions that could meet current requirements, product improvements, insertion of new technologies to increase performance, and enhancement of current flare solutions for new and existing aircraft. Systems include impulse cartridges, pen flares, hand held signals, trip flares, simulators, marine markers, smoke pots, smoke grenades, rail road flares and other type of emergency/distress devices, aircraft expendables (to include Radio Frequency (RF) expendables), and primers used in munitions systems.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2014	FY 2015	FY 2016
Title: Improvements to countermeasure flares	-	-	1.000
Description: This program will develop improvements to legacy counter measure flare solutions and qualify for Army use.			
FY 2016 Plans: Modeling and Simulation, engineering and testing to develop alternative timing solutions that increase effectiveness for aircraft expendables, and integrate tunable pyrotechnics.			
Accomplishments/Planned Programs Subtotals	-	-	1.000

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603639A - Tank and Medium Caliber: EB9 - Tunable Pyrotechnic Aircraft Countermeasure Flares	-	0.884	3.000	-	3.000	3.400	-	-	-	-	7.284

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP7 / Tunable Pyrotechnic Aircraft Countermeasure Flares			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2016</u>	<u>FY 2016</u>	<u>FY 2016</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Complete</u>	<u>Total Cost</u>
Remarks											
D. Acquisition Strategy											
The Acquisition strategy is under development and will be approved by the Milestone Decision Authority (MDA) once complete. It is anticipated that these items will be restricted to the National Technology and Industrial Base (NTIB).											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev						Project (Number/Name) EP7 / Tunable Pyrotechnic Aircraft Countermeasure Flares			
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	PM CCS : Picatinny Arsenal	0.000	-		-		0.193		-		0.193	-	0.193	-
Subtotal			0.000	-		-		0.193		-		0.193	-	0.193	-
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	MIPR	ARDEC : Picatinny Arsenal	0.000	-		-		0.607		-		0.607	-	0.607	-
Subtotal			0.000	-		-		0.607		-		0.607	-	0.607	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test & Evaluation	MIPR	AED : Redstone Arsenal	0.000	-		-		0.200		-		0.200	-	0.200	-
Subtotal			0.000	-		-		0.200		-		0.200	-	0.200	-
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		-		1.000		-		1.000	-	1.000	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015												
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev								Project (Number/Name) EP7 / Tunable Pyrotechnic Aircraft Countermeasure Flares										
Event Name	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Countermeasure Flare Modeling & Simulation																												
Develop countermeasure solutions																												
Test & Evaluation of countermeasure solutions																												
(1) Incorporate countermeasure solutions into production decision																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP7 / <i>Tunable Pyrotechnic Aircraft Countermeasure Flares</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Countermeasure Flare Modeling & Simulation	2	2016	3	2016
Develop countermeasure solutions	3	2016	3	2016
Test & Evaluation of countermeasure solutions	3	2016	4	2016
Incorporate countermeasure solutions into production decision	4	2016	4	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) S36 / Precision Guidance Kit			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
S36: Precision Guidance Kit	-	16.770	7.153	9.530	-	9.530	6.966	4.963	5.460	6.453	-	57.295
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 provides near precision accuracy and effectiveness for 155mm High Explosive artillery projectiles. PGK improves 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)									FY 2014	FY 2015	FY 2016	
Title: Contractor Engineering and Manufacturing Development									9.926	0.500	6.050	
Description: Contractor Engineering and Manufacturing Development												
FY 2014 Accomplishments: GPS Anti-Jam Development												
FY 2015 Plans: GPS Anti-Jam Development												
FY 2016 Plans: GPS Anti-Jam Development												
Title: Government and Engineering Support									3.760	3.013	2.480	
Description: Continue Engineering Support												
FY 2014 Accomplishments: Engineering Support												
FY 2015 Plans: Engineering Support												
FY 2016 Plans: Engineering Support												
Title: Continue Development/Operational Testing									3.084	3.640	1.000	

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) S36 / Precision Guidance Kit				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2014	FY 2015	FY 2016
Description: Continue Development/Operational Test												
FY 2014 Accomplishments: Development/Operational Test												
FY 2015 Plans: Development/Operational Test												
FY 2016 Plans: Development/Operational Test												
Accomplishments/Planned Programs Subtotals										16.770	7.153	9.530
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost	
• E99250: Procurement of Ammunition Army: Precision Guidance Kit (PGK)	26.466	45.285	55.324	-	55.324	56.108	58.512	60.637	62.363	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
The Precision Guidance Kit (PGK) is a Global Positioning System (GPS) guidance kit with fuzing functions for 155mm High Explosive (HE) artillery projectiles. PGK provides near precision accuracy and effectiveness for 155mm HE projectiles. Using an integrated GPS receiver, the PGK corrects the inherent errors associated with ballistic firing solutions and reduces the number of artillery projectiles required to execute the mission. The current PGK Increment qualified the PGK for the M795 and M549A1 HE projectiles. The Acquisition Strategy/Acquisition Plan for the PGK program was approved by the Milestone Decision Authority on 20 October 2005, subsequently revised and approved on 14 December 2012. 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 Low Rate Initial Production (LRIP) occurred at Milestone C in March 2013. Initial Operational Test and Evaluation (IOT&E) is planned to be completed by 3Q FY 2015, Full Material Release (FMR) and Full Rate Production (FRP) decisions are planned for 4Q FY 2015 and Initial Operational Capability (IOC) is scheduled for 1Q FY 2016. Continued development efforts support integration of GPS Anti-Jam capability and M-Code compliance with Public Law 111-383 Sec 913. A 4 channel anti-jam capability is currently being developed by ATK for PGK under The DoD Ordnance Technology Consortium (DOTC) initiative.												
E. Performance Metrics												
N/A												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) S36 / Precision Guidance Kit					
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Support	MIPR	Camber : Mt Arlington, NJ	1.849	0.087	Jun 2014	-		-		-		-	-	1.936	1.909
LNO Support - Ft. Sill	MIPR	DCMA MANASSAS : Manassas, VA	0.000	0.065	May 2014	-		-		-		-	-	0.065	-
Miscellaneous Support Contract	MIPR	MITRE Corporation : Fort Monmouth, NJ	0.600	-		-		-		-		-	-	0.600	0.600
PGK Parallel Studies and Analysis Support -	MIPR	Command and Control Directorate : Ft Monmouth, NJ	0.300	-		-		-		-		-	-	0.300	0.300
Subtotal			2.749	0.152		-		-		-		-	-	2.901	2.809
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PGK TD Contract	C/CPAF	Alliant Techsystems (ATK) : Plymouth, MN	5.279	-		-		-		-		-	-	5.279	5.279
PGK TD Contract	C/CPAF	BAE : Minneapolis, MN	3.103	-		-		-		-		-	-	3.103	3.103
Soft Recovery Modules	MIPR	SubSystems Technology : Rosslyn, VA	0.116	-		-		-		-		-	-	0.116	0.116
PGK EMD & Phase 1-2 (Reliability Failure/Root Cause Analysis)	C/CPAF	Alliant Techsystems (ATK) : Plymouth, MN	53.947	-		-		-		-		-	-	53.947	53.947
PGK EMD - Phase 3a to 5	C/FFP	Alliant Techsystems (ATK) : Plymouth, MN	24.102	0.236	Apr 2014	-		-		-		-	-	24.338	24.474
DOTC - PGK GPS Anti-Jam	C/CPFF	Alliant Techsystems (ATK) : Plymouth, MN	7.626	8.597	May 2014	0.500	Jul 2015	6.050	Jul 2016	-		6.050	Continuing	Continuing	21.123

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) S36 / Precision Guidance Kit					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DOTC - GDOTS - Engineering & Technology Assessment. Low Cost Roll Control Solutions	C/CPFF	General Dynamics Ordnance & Tactical Systems : Bothell, WA	1.000	1.093	Jul 2014	-		-		-		-	-	2.093	0.500
DOTC - BAE Systems - Engineering & Technology Assessment. Low Cost Course Correction solutions.	C/CPFF	BAE/Rokar : Minneapolis, MN	0.500	-		-		-		-		-	-	0.500	0.500
High Angle Software Configuration	C/CPFF	Raytheon : Ft Wayne, IN	0.105	-		-		-		-		-	-	0.105	-
Subtotal			95.778	9.926		0.500		6.050		-		6.050	-	-	109.042
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	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	9.805	0.370	Dec 2013	0.903	Dec 2014	0.500	Dec 2015	-		0.500	Continuing	Continuing	11.494
Government Engineering Support	MIPR	ARDEC : Picatinny, NJ	26.580	2.945	Jan 2014	1.840	Jan 2015	1.730	Jan 2016	-		1.730	Continuing	Continuing	32.136
Jammer Support	MIPR	Electronic Proving Ground : Ft Huachuca, AZ	0.000	0.288	Jul 2014	0.250	Jun 2015	0.250	Jun 2016	-		0.250	-	0.788	-
ATEC Support	MIPR	Army Test and Evaluation Command : Aberdeen, MD	0.000	0.005	Dec 2014	0.020	Jun 2015	-		-		-	-	0.025	-
Subtotal			36.385	3.608		3.013		2.480		-		2.480	-	-	43.630

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) S36 / Precision Guidance Kit					
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Component Air Gun/ Railgun Testing	MIPR	ARDEC : Picatinny, NJ	0.317	-		-		-		-		-	-	0.317	0.317
Other Development Testing	MIPR	Various : Various	1.725	-		-		-		-		-	-	1.725	1.725
System Development Testing Increment 1	MIPR	Yuma Proving Ground : Yuma, AZ	10.442	-		-		-		-		-	-	10.442	10.487
Limited User Test	MIPR	Yuma Proving Ground : Yuma, AZ	0.080	1.354	Nov 2013	-		-		-		-	-	1.434	-
Development Testing for GPS Anti-Jam	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	0.880	Jun 2014	0.640	Aug 2015	1.000	Jul 2016	-		1.000	-	2.520	3.606
Initial Operational Test & Evaluation - Increment 1	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	-		3.000	Feb 2015	-		-		-	-	3.000	3.500
Cold Region Testing	MIPR	Cold Region Test Center : Yuma, AZ	0.000	0.600	Sep 2014	-		-		-		-	-	0.600	0.900
Airdrop Testing	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	0.250	May 2014	-		-		-		-	-	0.250	0.200
Subtotal			12.564	3.084		3.640		1.000		-		1.000	-	20.288	20.735
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			147.476	16.770		7.153		9.530		-		9.530	-	-	176.216
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																					
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev										Project (Number/Name) S36 / Precision Guidance Kit																	
Event Name										FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
										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
Engineering & Manufacturing Development										EMD																											
GPS Anti-Jam Development										GPS Anti-Jam Development																											
M - Code Development																																					
Limited User Test										LUT																											
First Article Test (FAT)										FAT																											
Initial Operational Test and Evaluation (IOT&E)														IOT&E																							
(1) Full Materiel Release / Full Rate Production														1 FMR / FRP																							
(2) Initial Operational Capability (IOC)																		2 IOC																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) S36 / <i>Precision Guidance Kit</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering & Manufacturing Development	4	2009	4	2014
GPS Anti-Jam Development	4	2013	4	2017
M - Code Development	1	2018	4	2020
Limited User Test	2	2014	2	2014
First Article Test (FAT)	1	2015	1	2015
Initial Operational Test and Evaluation (IOT&E)	2	2015	3	2015
Full Materiel Release / Full Rate Production	4	2015	4	2015
Initial Operational Capability (IOC)	1	2016	1	2016