

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development							
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	-	31.580	29.318	46.749	-	46.749	42.240	55.550	56.100	12.777	-	274.314
652: M829E4 120mm Cartridge	-	25.925	5.046	-	-	-	-	-	-	-	-	30.971
656: 120mm Cartridge (Advanced Multipurpose-AMP)	-	-	14.740	27.578	-	27.578	31.637	31.655	28.018	-	-	133.628
694: Medium Caliber Ammunition	-	5.655	-	-	-	-	-	8.717	9.912	9.195	-	33.479
EB8: OWL for Small Caliber Ammunition	-	-	1.966	2.500	-	2.500	2.500	2.200	2.400	-	-	11.566
EB9: Tunable Pyrotechnic Aircraft Countermeasure Flares	-	-	0.884	3.000	-	3.000	2.400	-	-	-	-	6.284
EC2: XM1158 for Small Caliber Ammo	-	-	4.913	7.700	-	7.700	-	3.800	-	-	-	16.413
EC3: Ammunition Logistics Prototyping	-	-	1.769	3.571	-	3.571	3.203	3.382	3.901	3.582	-	19.408
EL6: Individual Assault Munition (IAM)	-	-	-	-	-	-	-	1.896	8.469	-	-	10.365
EL7: Reduced Range Small Caliber Training Ammunition	-	-	-	-	-	-	2.500	3.900	3.400	-	-	9.800
EL8: LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER	-	-	-	2.400	-	2.400	-	-	-	-	-	2.400
Note In FY 2016, Lightweight Cartridge Case for small caliber PE 643639 Project EL8 is a new start \$2.400 Million. In FY 2016, PE 643639 Project EC2 XM1158 for Small Caliber Ammo is a new title. Previous title was Advanced Armor Piercing (ADVAP). PE 643639 Project EC2 M829E4 was completed in FY 2015.												
A. Mission Description and Budget Item Justification Title changed from Tank and Medium Caliber Ammunition to Weapons and Munitions Advanced Development.												

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>
<p>The Weapons and Munitions Advanced Development Program Element (PE) encompasses a comprehensive program to develop, rapidly transition to production, and field advanced weapons and munitions. These programs will ensure continued battlefield overmatch and lethality of U.S. maneuver forces against the full range of modern battlefield threats. To achieve this, Weapons and Munitions Engineering Development Program will identify and develop promising technologies through competitive development and streamlined acquisition procedures.</p> <p>M829E4: The M829E4 cartridge is an Abrams delivered Line of Sight (LOS) munition that will provide capability for the current force Armored Brigade Combat Team's (ABCT) commander to conduct decisive operations and destroy current and future enemy Main Battle Tanks (MBTs) equipped with Explosive Reactive Armor (ERA) and Active Protective System (APS) at ranges from 0-2km (T) and 0-4km (O). The M829E4 equips ABCT commanders with a unique capability which will increase the ABCT's lethality and ability to seize the initiative during unified land operations.</p> <p>One Way Luminescence (OWL): Current legacy small caliber ammunition tracer rounds are comprised of a pyrotechnic tracer mix that allows enemy forces to visually see the trace round and track its trajectory back to the shooter. The objective of the OWL program is to develop and field a full day/night tracer technology to replace the current pyrotechnic trace cartridges, with new trace cartridges that are only visible to the shooter and those soldiers in close proximity, thereby increasing soldier survivability. Additional benefits of the OWL program, depending on the technology that is selected include a possible reduction in unit cost compared to the pyrotechnic trace round and the potential for every round to have a trace capability. 7.62mm will be the critical focus followed by development of 5.56mm and .50 caliber OWL cartridges.</p> <p>Advanced Multi Purpose (AMP): The Advanced Multi Purpose (AMP) program is a direct fire line of sight 120mm large caliber munition under development for the Abrams Main Battle Tank. It has three modes of operation including point detonate, delay and airburst. AMP is the material solution for breaching reinforced concrete walls and defeating Anti Tank Guided Missile (ATGM) teams from 50m to 2000m (T) and 50m to 4500m (O), a validated gap that cannot currently be met with existing stockpiled ammunition. In addition to added capability, AMP will also consolidate the capabilities of four existing stockpiled 120mm munitions, thereby addressing the users' battlecarry dilemma by allowing them to load a single munition that is capable of defeating multiple targets including ATGM teams, reinforced walls, personnel, light armor, bunkers, and obstacles. The full performance of the AMP is obtained with an Abrams equipped Ammunition Data Link breech modification, the same required by the 120mm M829E4 cartridge that achieved Milestone C in FY 2014. FY 2016 supports multiple contracts with competing prototypes in Phase I of II for Engineering and Manufacturing Development (EMD).</p> <p>Medium Caliber Ammunition: 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 to PE 0654802/Project EC1. In FY 2018 funding is in place to start an Increased Range Anti-Personnel (IRAP) Program which will extend the range of conventional 40mm Low Velocity grenades from 300 meters to 600 meters.</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army				Date: February 2015		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0603639A I Weapons and Munitions Advanced Development				
Tunable Pyrotechnic Aircraft Countermeasure: This project will support research, development and testing to field new expendable countermeasure munitions that will protect Army aircraft from advanced and current guided-missile threats. Advances in the capability of threat systems necessitate development of new expendable countermeasures decoys. This program is considered essential to provide Army Aircraft and aircrews protection against surface-to-air weapon systems.						
Ammunition Logistics Prototyping: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.						
Adv Armor Piercing (ADVAP): The overall objective of the XM1158 Small Caliber Ammo program is to develop and field a 7.62mm XM1158 cartridge variant followed by a 5.56mm cartridge variant that will provide overmatch capability to defeat advanced light armored threats within typical machine gun ranges. Current XM1158 ammunition performance has been stagnant over the last 20 years, which has led to known deficiencies against current and future hard target threats. The 7.62mm XM1158 cartridge will be designed specifically for use in the M240 Machine Gun and will replace the older M993 Armor Piercing cartridge.						
Lightweight Cartridge Case for Small Caliber: The overall objective of the Lightweight Small Caliber Ammunition (LSCA) program is to develop and field 7.62mm LSCA cartridges that will provide the same capabilities as the M80A1 and M62A1 cartridges while achieving up to twenty percent weight savings at the cartridge level. The LSCA cartridge will be designed to be compatible with all Army 7.62mm weapons, but specifically optimized to work in the M240 Machine Gun. After the 7.62mm cartridge is matured a .50 Caliber variant will be developed.						
B. Program Change Summary (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget		30.596	29.334	38.611	-	38.611
Current President's Budget		31.580	29.318	46.749	-	46.749
Total Adjustments		0.984	-0.016	8.138	-	8.138
• Congressional General Reductions		-	-			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-	-			
• Adjustments to Budget Years		-	-	8.138	-	8.138
• Other Adjustments 1		0.984	-0.016	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) 652 / M829E4 120mm 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
652: M829E4 120mm Cartridge	-	25.925	5.046	-	-	-	-	-	-	-	-	30.971
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The M829E4 cartridge is an Abrams delivered Line of Sight (LOS) munition that will provide capability for the current force Armored Brigade Combat Team's (ABCT) commander to conduct decisive operations and destroy current and future enemy Main Battle Tanks (MBTs) equipped with Explosive Reactive Armor (ERA) and Active Protective System (APS) at ranges from 0-2km (T) and 0-4km (O). The M829E4 equips ABCT commanders with a unique capability which will increase the ABCT's lethality and ability to seize the initiative during unified land operations. After an Engineering and Manufacturing Development (EMD) Phase I competitive shoot off in FY 2011, Alliant Techsystems (ATK) was awarded the option to continue with Phase II until its conclusion in FY 2015. FY 2012 supported the continuation of Phase II of the M829E4 cartridge. FY 2013 funding supported design finalization, design verification, fabrication and initial testing of Developmental Test and Evaluation (DT&E) hardware. The full performance of the M829E4 is obtained with an Abrams equipped with an Ammunition Data Link breech modification. FY 2014 supported hardware and performance testing, mandated Live Fire Test & Evaluation (LFT&E) and completion of Milestone C. FY 2015 supported qualifying a second source for the composite sabot material. The current single source supplier for this material had significantly increased the cost for this material, more than doubled in cost, and expressed intentions of possibly getting out of this business. Qualification of this second source has occurred and has resulted in competitive pricing thus driving down the unit price cost. The aforementioned selection has mitigated the risk of the current supplier exiting as a supplier of this material.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: Phase II EMD									12.962	-	-	
Description: Funding is provided for the following effort:												
FY 2014 Accomplishments: Completed DT&E after obtaining Milestone C. This included completing the delivery of DT&E hardware and test, preparing and staffing Milestone C documentation, conducting performance analysis modeling and simulation, TDP review and staffing. Built cartridges with alternate sabot material. Generate fire control solution for Abrams M1A2 SEP (System Enhancement Package) V2 integration, transfer and demilitarization of any residual R&D hardware on the program.												
Title: Developmental Test & Evaluation (DT&E)									12.963	-	-	
Description: Funding is provided for the following effort:												
FY 2014 Accomplishments: Completed DT&E integrated testing with Abrams. Conducted single shot ammunition accuracy test and conducted the mandated Live Fire Testing & Evaluation (LFT&E).												
Title: Sabot Composite Material Qualification									-	5.046	-	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army								Date: February 2015			
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>				Project (Number/Name) 652 / M829E4 120mm Cartridge			

B. Accomplishments/Planned Programs (\$ in Millions)				FY 2014	FY 2015	FY 2016
Description: Funding is provided for the following effort:						
FY 2015 Plans: FY 2015 qualified a second source for the composite sabot material. The current single source supplier for this material has significantly increased the cost for this material, more than doubled, and expressed intentions of possibly getting out of this business. Qualification of a second source drove down the unit price cost.						
Accomplishments/Planned Programs Subtotals				25.925	5.046	-

C. Other Program Funding Summary (\$ in Millions)												
			FY 2016	FY 2016	FY 2016						Cost To	
	Line Item	FY 2014	FY 2015	Base	OCO	Total	FY 2017	FY 2018	FY 2019	FY 2020	Complete	Total Cost
	• M829E4: M829E4 (SSN: E88106)	30.168	41.235	38.978	-	38.978	43.540	43.902	41.812	43.113	-	282.748
Remarks												
D. Acquisition Strategy Milestone B Decision was obtained in 4Q FY 2009, and the program entered Engineering and Manufacturing Development (EMD) in FY 2010. EMD consists of two phases; the Phase I contract was awarded in 2Q FY 2010 and Phase II contract was awarded in 3Q FY 2011. During Phase I (15 months), the Government awarded two separate Cost Plus Fixed Fee (CPFF) contracts culminating in a demonstration test and competitive source selection to down select to one contractor for the 31 month Cost Plus Incentive Fee (CPIF) Phase II. The down select was based on the demonstrated performance of the cartridge design, proposed systems engineering and management approach for Phase II, and the total program cost estimate for each contractor at the time of the demonstration test. ATK was awarded the option to continue EMD Phase II until its conclusion in FY 2015. Milestone C was granted on 1 July 2014. RDT&E will be completed in FY 2015 after the qualification of a second source for the production of sabot material. After Milestone C was granted, Low Rate Initial Production (LRIP) option was awarded to ATK on 1 July 2014. The contract also contains options for two additional production years. All production options are Firm Fixed Price (FFP).												
E. Performance Metrics N/A												

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development						Project (Number/Name) 652 / M829E4 120mm 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
Alliant Tech Systems (ATK) Phase II	C/CPIF	Alliant Tech Systems (ATK) : MN	148.600	13.093		4.046		-		-		-	-	165.739	-
Program Manager - Maneuver Ammunition Systems (PM MAS) - Labor and Travel	MIPR	Program Manager -Maneuver Ammunition Systems (PM MAS) Picatinny Arsenal : NJ	4.196	2.920		0.100		-		-		-	-	7.216	-
General Dynamics - Ordnance & Tactical Systems (GD-OTS)	C/CPFF	General Dynamics - Ordnance & Tactical Systems (GD-OTS) : FL	2.068	-		-		-		-		-	-	2.068	-
Alliant Tech Systems (ATK) Phase 1	C/CPFF	Alliant Tech Systems : MN	5.254	-		-		-		-		-	-	5.254	-
Subtotal			160.118	16.013		4.146		-		-		-	-	180.277	-
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
Armament Research, Development and Engineering Center (ARDEC)	MIPR	Picatinny : New Jersey	13.446	2.400		0.450		-		-		-	-	16.296	-
Subtotal			13.446	2.400		0.450		-		-		-	-	16.296	-
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
Aberdeen Test Center (ATC)	MIPR	Aberdeen Proving Ground (APG) : Aberdeen, MD	9.360	2.100		-		-		-		-	-	11.460	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>						Project (Number/Name) 652 / M829E4 120mm Cartridge			
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 Proving Ground (YPG) : Yuma, AZ	11.202	3.412		0.450		-		-		-	-	15.064	-
Army Test and Evaluation Center (ATEC)	MIPR	Army Test and Evaluation Center (ATEC) : Aberdeen, MD	0.400	0.100		-		-		-		-	-	0.500	-
Watervliet	MIPR	Watervliet : Troy, NY	0.868	-		-		-		-		-	-	0.868	-
Joint Munitions Command (JMC)	MIPR	Joint Munitions Command (JMC) : Rock Island, IL	3.000	0.400		-		-		-		-	-	3.400	-
Army Research Lab (ARL)	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	10.314	1.500		-		-		-		-	-	11.814	-
Subtotal			35.144	7.512		0.450		-		-		-	-	43.106	-
			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			208.708	25.925		5.046		-		-		-	-	239.679	-
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015												
Appropriation/Budget Activity 2040 / 4										R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development								Project (Number/Name) 652 / M829E4 120mm Cartridge										
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 and Manufacturing Development (EMD)																												
Engineering and Manufacturing Development (EMD) Phase II																												
Developmental Test & Evaluation (DT&E)																												
(1) Milestone C																												
(2) Low Rate Initial Production Award																												
Low Rate Initial Production																												
(3) Materiel Release/Full-Rate Production Decision Review																												
Sabot Composite Material Qualification																												
Full Rate Production																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) 652 / <i>M829E4 120mm Cartridge</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering and Manufacturing Development (EMD)	2	2010	3	2014
Engineering and Manufacturing Development (EMD) Phase II	3	2011	3	2014
Developmental Test & Evaluation (DT&E)	1	2014	3	2014
Milestone C	4	2014	4	2014
Low Rate Initial Production Award	4	2014	4	2014
Low Rate Initial Production	4	2014	3	2015
Materiel Release/Full-Rate Production Decision Review	3	2015	3	2015
Sabot Composite Material Qualification	1	2014	3	2015
Full Rate Production	3	2015	1	2022

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) 656 / 120mm Cartridge (Advanced Multipurpose-AMP)			
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
656: 120mm Cartridge (Advanced Multipurpose-AMP)	-	-	14.740	27.578	-	27.578	31.637	31.655	28.018	-	-	133.628
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Advanced Multi Purpose (AMP) program is a direct fire line of sight 120mm large caliber munition under development for the Abrams Main Battle Tank. It has three modes of operation including point detonate, delay and airburst. AMP is the material solution for breaching reinforced concrete walls and defeating Anti Tank Guided Missile (ATGM) teams from 50m to 2000m (T) and 50m to 4500m (O), a validated gap that cannot currently be met with existing stockpiled ammunition. In addition to added capability, AMP will also consolidate the capabilities of four existing stockpiled 120mm munitions, thereby addressing the users' battlecarry dilemma by allowing them to load a single munition that is capable of defeating multiple targets including ATGM teams, reinforced walls, personnel, light armor, bunkers, and obstacles. The full performance of the AMP is obtained with an Abrams equipped Ammunition Data Link breach modification, the same required by the 120mm M829E4 cartridge that achieved Milestone C in FY 2014. FY 2016 supports multiple contracts with competing prototypes in Phase I of II for Engineering and Manufacturing Development (EMD).												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: Phase I Engineering and Manufacturing Development (EMD)									-	14.740	27.578	
Description: Funding is provided for the following effort.												
FY 2015 Plans: Initiated EMD Phase I with two contract awards for competing prototypes. Contractors conducted engineering efforts focused on demonstrating cartridge performance requirements. This required hardware design and procurement along with initial component and cartridge level testing.												
FY 2016 Plans: Continue EMD Phase I with competing prototypes. In late FY 2016 conduct competitive shoot-off with demonstrations. Data collected during the shoot-off will be used during downselect to award EMD Phase II contract to a single contractor in FY 2017. Preliminary Design Review will be held in 2Q FY 2016												
Accomplishments/Planned Programs Subtotals									-	14.740	27.578	










UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) 656 / 120mm Cartridge (Advanced Multipurpose-AMP)			
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>
• AMP (SSN: E88105):	-	-	-	-	-	-	-	25.000	50.000	-	75.000
AMP (SSN: E88105)											
Remarks											
D. Acquisition Strategy											
The Advanced Multi Purpose Program (AMP) achieved Milestone B and entered Engineering and Manufacturing Development (EMD) in FY 2015. EMD consists of two phases; Phase I consists of awarding two contracts to competitively prototype in FY 2015. A cartridge demonstration test, conducted in late FY 2016, will be used in part to down select to a single contractor for EMD Phase II, followed by Low Rate Initial Production in FY 2019 and two optional years of procurement in FY 2020 and FY 2021.											
E. Performance Metrics											
N/A											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development						Project (Number/Name) 656 I 120mm Cartridge (Advanced Multipurpose-AMP)			
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	C/CPFF	TBD : TBD	0.000	-		5.325		10.900		-		10.900	Continuing	Continuing	Continuing
Contractor 2	C/CPFF	TBD : TBD	0.000	-		5.325		10.900		-		10.900	Continuing	Continuing	Continuing
PM-MAS Labor and Travel	MIPR	Picatinny : NJ	0.009	-		0.740		0.998		-		0.998	Continuing	Continuing	Continuing
Subtotal			0.009	-		11.390		22.798		-		22.798	-	-	-
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	-		1.500		1.611		-		1.611	Continuing	Continuing	Continuing
Army Research Lab	MIPR	ARL Aberdeen : MD	0.000	-		0.600		0.700		-		0.700	Continuing	Continuing	Continuing
Subtotal			0.000	-		2.100		2.311		-		2.311	-	-	-
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 Test Center	MIPR	Yuma Proving Ground : AZ	0.000	-		0.750		0.750		-		0.750	Continuing	Continuing	Continuing
Aberdeen Test Center (ATC)	MIPR	Aberdeen Proving Ground : MD	0.000	-		0.500		1.719		-		1.719	Continuing	Continuing	Continuing
Subtotal			0.000	-		1.250		2.469		-		2.469	-	-	-
			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			0.009	-		14.740		27.578		-		27.578	-	-	-
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																
Appropriation/Budget Activity 2040 / 4								R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development								Project (Number/Name) 656 I 120mm Cartridge (Advanced Multipurpose-AMP)																
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				
(1) Milestone B					MS B 																											
(2) EMD Contract Phase I Awards					EMD Contract Phase I Award 																											
Engineering and Manufacturing Development (EMD) Phase I					EMD Phase I 																											
(3) Preliminary Design Review (PDR)									PDR 																							
(4) EMD Contract Phase II Award									EMD Contract Phase II Award 																							
Engineering and Manufacturing Development (EMD) Phase II									EMD Phase II 																							
(5) Critical Design Review																	CDR 															
Developmental Test & Evaluation (DT&E)																					DT&E 											
(6) Milestone C																									MS C 							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) 656 / <i>120mm Cartridge (Advanced Multipurpose-AMP)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B	1	2015	1	2015
EMD Contract Phase I Awards	3	2015	3	2015
Engineering and Manufacturing Development (EMD) Phase I	3	2015	1	2017
Preliminary Design Review (PDR)	2	2016	2	2016
EMD Contract Phase II Award	2	2017	2	2017
Engineering and Manufacturing Development (EMD) Phase II	2	2017	3	2019
Critical Design Review	2	2018	2	2018
Developmental Test & Evaluation (DT&E)	1	2019	3	2019
Milestone C	3	2019	3	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) 694 / Medium Caliber 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
694: Medium Caliber Ammunition	-	5.655	-	-	-	-	-	8.717	9.912	9.195	-	33.479
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015 funding transitions from 643639 Project 694 - Tank and Medium Caliber Ammunition to 654802 Project EC1 - 40mm Hi Vel and Low Vel Thermal Training Cartridges.

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 to PE 0654802/Project EC1. In FY 2018 funding is in place to start an Increased Range Anti-Personnel (IRAP) Program which will extend the range of conventional 40mm Low Velocity grenades from 300 meters to 600 meters.

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

	FY 2014	FY 2015	FY 2016
Title: Target Practice Day Night Thermal cartridges.	5.655	-	-
Description: The Target Practice Day NightThermal (TP-DNT) cartridges are 40mm grenade training cartridges.			
FY 2014 Accomplishments: FY14 primary activities consisted of Milestone B approval, Source Selection Planning, and Bid Sample Test competition.			
Accomplishments/Planned Programs Subtotals	5.655	-	-

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 604802 Project EC1	-	6.960	7.257	-	7.257	-	-	-	-	-	14.217

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) 694 / Medium Caliber Ammunition			
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
• Target Practice Day Night	40.466	1.972	-	-	-	110.400	116.828	103.329	99.941	Continuing	Continuing
Thermal: Target Practice Day Night 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											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army													Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>					Project (Number/Name) 694 / <i>Medium Caliber Ammunition</i>					
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	0.467		-		-		-		-	-	0.467	-
Contractor 2 Low Velocity	C/FFP	TBD : TBD	0.000	0.467		-		-		-		-	-	0.467	-
Contractor 1 High Velocity	C/FFP	TBD : TBD	0.000	0.467		-		-		-		-	-	0.467	-
Contractor 2 High Velocity	C/FFP	TBD : TBD	0.000	0.467		-		-		-		-	-	0.467	-
PM-MAS labor and travel	MIPR	Picatinny Arsenal : NJ	0.000	0.270		-		-		-		-	-	0.270	-
Subtotal			0.000	2.138		-		-		-		-	-	2.138	-
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	2.631		-		-		-		-	-	2.631	-
Subtotal			0.000	2.631		-		-		-		-	-	2.631	-
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
ATEC	MIPR	ATEC : Aberdeen, MD	0.000	0.010		-		-		-		-	-	0.010	-
YPG	MIPR	YPG : Yuma, AZ	0.000	0.876		-		-		-		-	-	0.876	-
Subtotal			0.000	0.886		-		-		-		-	-	0.886	-
			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	5.655	-		-		-		-	-	5.655	-	
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015												
Appropriation/Budget Activity 2040 / 4								R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development								Project (Number/Name) 694 / Medium Caliber 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
(1) MS-B (DNT)	MS-B 1																											
Engineering Manufacturing Development	EMD																											
Bid Sample Testing	Bid Testing																											
(2) Test Readiness Review DET I (DNT)									TRR DET 1 2																			
Development Engineering Test Phase I									DET 1																			
(3) Test Readiness Review DET II (DNT)													TRR DET 2 3															
Development Engineering Test Phase II													DET 2															
(4) Test Readiness Review DT&E (DNT)													TRR DT&E 4															
Developmental Test & Evaluation													DT&E															
(5) MS-C (DNT)													MS-C 5															
Production (DNT)													Production															
(6) MS-B (IRAP)																	MS-B 6											
Engineering Manufacturing Development (IRAP)																	EMD											

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																				Date: February 2015								
Appropriation/Budget Activity 2040 / 4										R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>										Project (Number/Name) 694 / <i>Medium Caliber Ammunition</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
Developmental Test & Evaluation (IRAP)																					DT&E							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) 694 / <i>Medium Caliber Ammunition</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MS-B (DNT)	3	2014	3	2014
Engineering Manufacturing Development	3	2014	3	2017
Bid Sample Testing	4	2014	1	2015
Test Readiness Review DET I (DNT)	1	2016	1	2016
Development Engineering Test Phase I	1	2016	2	2016
Test Readiness Review DET II (DNT)	3	2016	3	2016
Development Engineering Test Phase II	3	2016	3	2016
Test Readiness Review DT&E (DNT)	2	2017	2	2017
Developmental Test & Evaluation	2	2017	2	2017
MS-C (DNT)	3	2017	3	2017
Production (DNT)	3	2017	4	2020
MS-B (IRAP)	3	2018	3	2018
Engineering Manufacturing Development (IRAP)	3	2018	1	2022
Developmental Test & Evaluation (IRAP)	4	2019	1	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EB8 / OWL for Small Caliber 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
EB8: OWL for Small Caliber Ammunition	-	-	1.966	2.500	-	2.500	2.500	2.200	2.400	-	-	11.566
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This program develops a new tracer technology and applies it to multiple calibers. The intial focus will be on 7.62mm ammunition in FY 2015 followed by 5.56mm in FY 2018 and .50 Caliber ammunition in FY 2019. As the technology matures it will be transitioned to Project 654802 EP4 starting in FY 2018 for 7.62mm, FY 2020 for 5.56mm and .50 Caliber.												
A. Mission Description and Budget Item Justification One Way Luminescence (OWL): Current legacy small caliber ammunition tracer rounds are comprised of a pyrotechnic tracer mix that allows enemy forces to visually see the trace round and track its trajectory back to the shooter. The objective of the OWL program is to develop and field a full day/night tracer technology to replace the current pyrotechnic trace cartridges, with new trace cartridges that are only visible to the shooter and those soldiers in close proximity, thereby increasing soldier survivability. Additional benefits of the OWL program, depending on the technology that is selected include a possible reduction in unit cost compared to the pyrotechnic trace round and the potential for every round to have a trace capability. 7.62mm will be the critical focus followed by development of 5.56mm and .50 caliber OWL cartridges.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: One Way Luminescence (OWL)									-	1.966	2.500	
Description: One Way Luminescence (OWL) will develop and demonstrate a full day/night tracer technology that eliminates the shortcomings of current legacy tracers.												
FY 2015 Plans: FY 2015 work will include concurrent government and contractor development efforts. The efforts will include procurement, development, and testing of competing material solutions to meet user requirements.												
FY 2016 Plans: FY 2016 work will continue with concurrent government and contractor development efforts to mature technology readiness level. The efforts will include procurement, development, and testing of competing material solutions to meet user requirements.												
Accomplishments/Planned Programs Subtotals									-	1.966	2.500	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EB8 / OWL for Small Caliber Ammunition			
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
• 654802 Project EP4: PE 654802 Project EP4	-	-	-	-	-	-	3.200	2.900	5.800	-	11.900
Remarks											
D. Acquisition Strategy											
The OWL concept will be developed through government and industry prototyping efforts. An annual Technology Readiness Assessment (TRA) will be conducted in FY 2015, FY 2016, and FY 2017 to measure the progress of the designs. If the technology matures to a Technology Readiness Level of 6 (prototypes fired from the M240 machine gun) by FY 2017 for 7.62mm, there will be a down select to one design for Engineering and Manufacturing Development (EMD) program. The 5.56mm and .50 Caliber cartridges will follow the 7.62mm schedule with Engineering and Manufacturing Development (EMD) starting at the end of FY 2020. These new tracer cartridges will then replace the old tracers in each of the various small caliber configurations purchased by the Army.											
E. Performance Metrics											
N/A											

UNCLASSIFIED

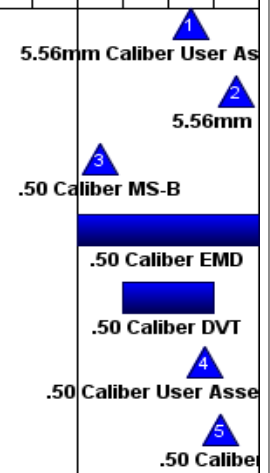
Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EB8 / OWL for Small Caliber Ammunition					
Product 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
Contractor 1	TBD	TBD : TBD	0.000	-		0.500		0.500		-		0.500	Continuing	Continuing	-
Contractor 2	TBD	TBD : TBD	0.000	-		0.500		0.500		-		0.500	Continuing	Continuing	-
PM MAS Labor & Travel	MIPR	Picatinny Arsenal : New Jersey	0.000	-		0.200		0.200		-		0.200	Continuing	Continuing	-
Subtotal			0.000	-		1.200		1.200		-		1.200	-	-	-
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 : New Jersey	0.000	-		0.366		0.900		-		0.900	Continuing	Continuing	-
Subtotal			0.000	-		0.366		0.900		-		0.900	-	-	-
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
ARL	MIPR	Aberdeen : Maryland	0.000	-		0.200		0.200		-		0.200	Continuing	Continuing	-
Army Corps of Engineers	MIPR	Ft.Belvoir : Virginia	0.000	-		0.200		0.200		-		0.200	Continuing	Continuing	-
Subtotal			0.000	-		0.400		0.400		-		0.400	-	-	-
			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	-		1.966		2.500		-		2.500	-	-	-
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015												
Appropriation/Budget Activity								R-1 Program Element (Number/Name)								Project (Number/Name)												
2040 / 4								PE 0603639A / Weapons and Munitions Advanced Development								EB8 / OWL for Small Caliber 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
(1) Materiel Development Decision (MDD)					Materiel Development Decision (MDD)				1																			
7.62mm Multiple Concept Design Evaluations					7.62mm Multiple Concept Design Evaluations																							
(2) 7.62mm Milestone B (MS-B)																	2											
7.62mm Engineering and Manufacturing Development (EMD)																												
7.62mm Design Verification Test																	7.62mm DVT				7.62mm EMD							
(3) 7.62mm User Assessment																	3											
(4) 7.62mm Preliminary Design Review (PDR)																	7.62mm User Assessment											
(5) 7.62mm Critical Design Review (CDR)																	4											
7.62mm Development Test & Evaluation (DT&E)																	7.62mm PDR											
(6) 7.62mm Milestone C																					5							
(7) 5.56mm Milestone B (MS-B)																												
5.56mm Engineering and Manufacturing Development (EMD)																												
5.56mm Design Verification Test																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																					
Appropriation/Budget Activity 2040 / 4										R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development								Project (Number/Name) EB8 / OWL for Small Caliber 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
(1) 5.56mm User Assessment																														5.56mm Caliber User As				1			
(2) 5.56mm Preliminary Design Review (PDR)																																		2			
(3) .50 Caliber Milestone B (MS-B)																																		3			
.50 Caliber Engineering and Manufacturing Development (EMD)																																		4			
.50 Caliber Design Verification Test																																		5			
(4) .50 Caliber User Assessment																														4							
(5) .50 Caliber Preliminary Design Review (PDR)																														5							



UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) EB8 / <i>OWL for Small Caliber Ammunition</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Development Decision (MDD)	1	2016	1	2016
7.62mm Multiple Concept Design Evaluations	1	2015	4	2017
7.62mm Milestone B (MS-B)	1	2018	1	2018
7.62mm Engineering and Manufacturing Development (EMD)	1	2018	4	2020
7.62mm Design Verification Test	2	2018	3	2018
7.62mm User Assessment	3	2018	3	2018
7.62mm Preliminary Design Review (PDR)	4	2018	4	2018
7.62mm Critical Design Review (CDR)	4	2019	4	2019
7.62mm Development Test & Evaluation (DT&E)	1	2020	3	2020
7.62mm Milestone C	4	2020	4	2020
5.56mm Milestone B (MS-B)	1	2020	1	2020
5.56mm Engineering and Manufacturing Development (EMD)	1	2020	4	2021
5.56mm Design Verification Test	2	2020	3	2020
5.56mm User Assessment	3	2020	3	2020
5.56mm Preliminary Design Review (PDR)	4	2020	4	2020
.50 Caliber Milestone B (MS-B)	1	2020	1	2020
.50 Caliber Engineering and Manufacturing Development (EMD)	1	2020	4	2022
.50 Caliber Design Verification Test	2	2020	3	2020
.50 Caliber User Assessment	3	2020	3	2020
.50 Caliber Preliminary Design Review (PDR)	4	2020	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EB9 / 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
EB9: Tunable Pyrotechnic Aircraft Countermeasure Flares	-	-	0.884	3.000	-	3.000	2.400	-	-	-	-	6.284
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project will support research, development and testing to field new expendable countermeasure munitions that will protect Army aircraft from advanced and current guided-missile threats. Advances in the capability of threat systems necessitate development of new expendable countermeasures decoys. This program is considered essential to provide Army Aircraft and aircrews protection against surface-to-air weapon systems.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: Expendable Countermeasures to Guided Missile Threats									-	0.884	3.000	
Description: This program will develop expendable countermeasure decoys which will protect Army aircraft from surface-to-air missiles.												
FY 2015 Plans: Develop and prepare documentation for Materiel Development Decision (MDD) approval for the following countermeasure (CM) decoys. These decoys are designed to defeat specific threat types. Details of their operation are classified. a. Cloud CM b. Dazzler CM c. Advanced Seeker CM d. Radar Guided Threat Countermeasures to include improved Chaff and Active Radio Frequency (RF) Expendable Decoy												
FY 2016 Plans: Prepare documentation (scope of work, drawings) to support contract award for advanced component development activities leading to Engineering and Manufacturing Development. Conduct down select of best candidates for Milestone B decision for Cloud countermeasure and radar guided threat countermeasure.												
Accomplishments/Planned Programs Subtotals									-	0.884	3.000	
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	
• 0604802A - Weapons and Munitions -: EP7 -	-	-	1.000	-	1.000	1.450	4.400	2.000	-	-	8.850	

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>				Project (Number/Name) EB9 / <i>Tunable Pyrotechnic Aircraft Countermeasure Flares</i>			
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>
<i>Tunable Pyrotechnic Aircraft Countermeasure Flares</i>											
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											

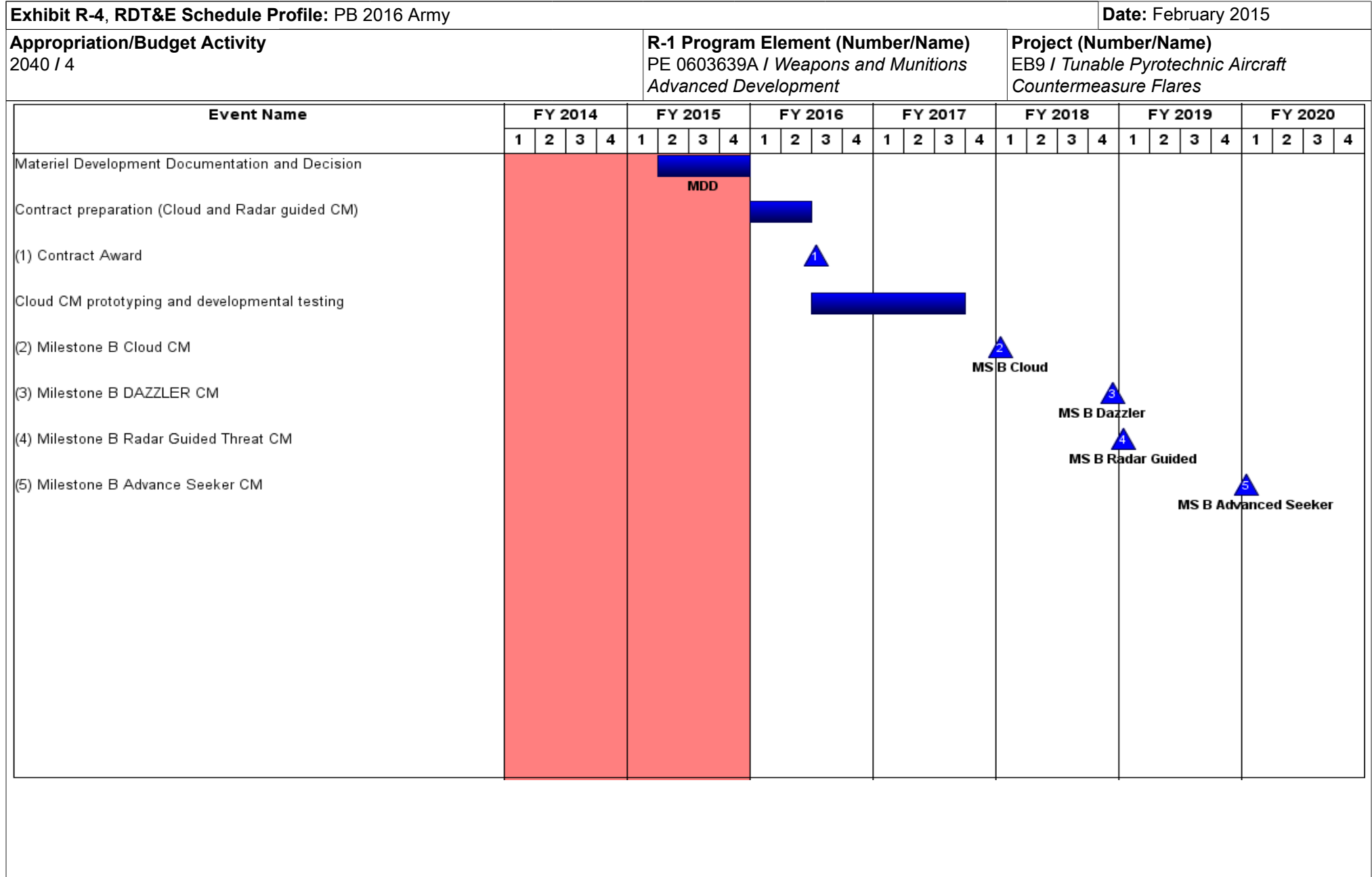
UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EB9 / 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 Close Combat Systems : Picatinny Arsenal	0.000	-		0.277		0.193		-		0.193	-	0.470	-
Subtotal			0.000	-		0.277		0.193		-		0.193	-	0.470	-
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
Contract Award	TBD	ACC : Picatinny Arsenal	0.000	-		-		1.300	Apr 2016	-		1.300	-	1.300	-
Subtotal			0.000	-		-		1.300		-		1.300	-	1.300	-
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
Engineering Support	MIPR	ARDEC : Picatinny Arsenal	0.000	-		0.607		0.817		-		0.817	-	1.424	-
Subtotal			0.000	-		0.607		0.817		-		0.817	-	1.424	-
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	AED : Redstone Arsenal	0.000	-		-		0.690		-		0.690	-	0.690	-
Subtotal			0.000	-		-		0.690		-		0.690	-	0.690	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army										Date: February 2015			
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>					Project (Number/Name) EB9 / <i>Tunable Pyrotechnic Aircraft Countermeasure Flares</i>			
	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	-		0.884		3.000		-		3.000	-	3.884	-
Remarks													

UNCLASSIFIED



UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) EB9 / <i>Tunable Pyrotechnic Aircraft Countermeasure Flares</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Development Documentation and Decision	2	2015	4	2015
Contract preparation (Cloud and Radar guided CM)	1	2016	2	2016
Contract Award	3	2016	3	2016
Cloud CM prototyping and developmental testing	3	2016	3	2017
Milestone B Cloud CM	1	2018	1	2018
Milestone B DAZZLER CM	4	2018	4	2018
Milestone B Radar Guided Threat CM	1	2019	1	2019
Milestone B Advance Seeker CM	1	2020	1	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army									Date: February 2015				
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EC2 / XM1158 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	
EC2: XM1158 for Small Caliber Ammo	-	-	4.913	7.700	-	7.700	-	3.800	-	-	-	16.413	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
Note In FY 2015 Project 643639 EC2 was a new start. In FY 2017 the program will transition to PE 654802 Project EP5. The title for Advanced Armor Piercing (ADVAP) is now titled XM1158.													
A. Mission Description and Budget Item Justification The overall objective of the XM1158 Small Caliber Ammo program is to develop and field a 7.62mm XM1158 cartridge variant followed by a 5.56mm cartridge variant that will provide overmatch capability to defeat advanced light armored threats within typical machine gun ranges. Current XM1158 ammunition performance has been stagnant over the last 20 years, which has led to known deficiencies against current and future hard target threats. The 7.62mm XM1158 cartridge will be designed specifically for use in the M240 Machine Gun and will replace the older M993 Armor Piercing cartridge.													
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016		
Title: XM1158 Small Caliber Ammo									-	4.913	7.700		
Description: Develop, demonstrate, and qualify an XM1158 Small Caliber Ammo 7.62mm and 5.56mm cartridges in order to defeat threat targets and provide overmatch capability versus a broad spectrum of hard targets.													
FY 2015 Plans: FY 2015 work will include optimization of the projectile design through advanced modeling, simulation, and test iterations, along with alternate material studies, manufacturing studies and propellant requirement investigation.													
FY 2016 Plans: FY 2016 work includes maturing catridge design and manufacturing as well as demonstrating Technology Readiness Level (TRL) 6.													
Accomplishments/Planned Programs Subtotals									-	4.913	7.700		
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		
• PE 654802 Project EP5: PE 654802 Project EP5	-	-	-	-	-	10.600	9.500	13.900	7.200	-	41.200		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>				Project (Number/Name) EC2 / <i>XM1158 for Small Caliber Ammo</i>			
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											
<p>The 7.62mm and 5.56mm XM1158 program will use a Government design developed in-house. Multiple component contracts will be awarded to purchase raw materials and propellant. The 7.62mm prototype XM1158 projectiles will be manufactured and tested in FY 2015. In FY 2016, design optimization and prototype manufacturing will occur. Upon successful Technology Readiness Level (TRL) 6 completion, Milestone B (MS-B) will occur in 1st QTR FY 2017 leading to fabrication and testing of qualification hardware. The 5.56mm cartridge will follow in FY 2018 and mirror a similar strategy and schedule as the 7.62mm.</p>											
E. Performance Metrics											
N/A											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>				Project (Number/Name) EC2 / XM1158 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	Cost To Complete	Total Cost	Target Value of Contract
Raw Materials Contract TBD	C/FFP	TBD : TBD	0.000	-		0.750		1.500		-		1.500	Continuing	Continuing	-
Propellant Contract TBD	C/FFP	TBD : TBD	0.000	-		0.250		0.750		-		0.750	Continuing	Continuing	-
PM-MAS Labor & Travel	MIPR	Picatinny Arsenal : New Jersey	0.000	-		0.200		0.200		-		0.200	Continuing	Continuing	-
Subtotal			0.000	-		1.200		2.450		-		2.450	-	-	-

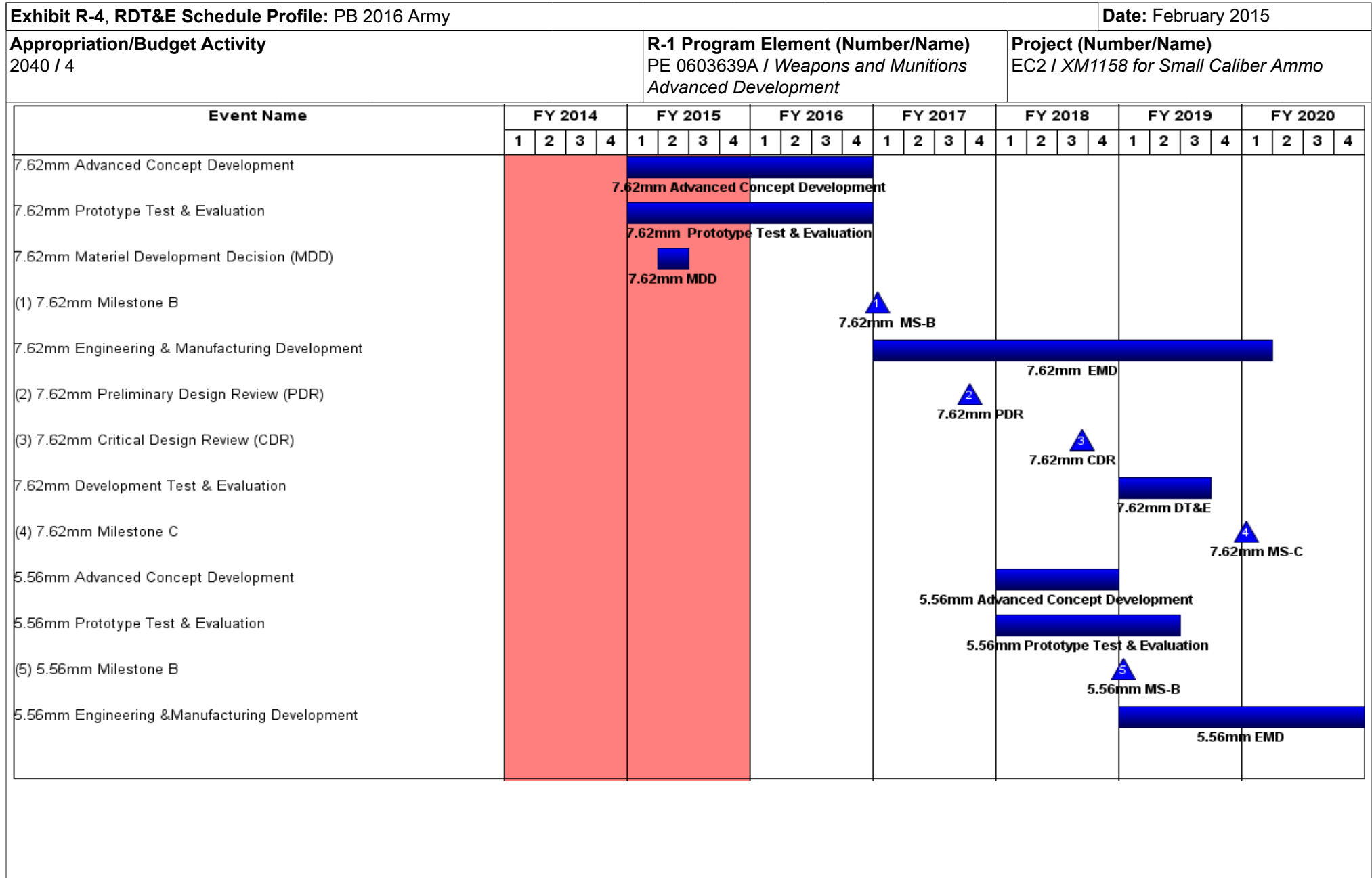
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ARDEC	MIPR	Picatinny Arsenal : New Jersey	0.000	-		1.313		1.944		-		1.944	Continuing	Continuing	-
ARL	MIPR	Aberdeen : Maryland	0.000	-		1.000		1.478		-		1.478	Continuing	Continuing	-
Subtotal			0.000	-		2.313		3.422		-		3.422	-	-	-

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
ARL	MIPR	Aberdeen : Maryland	0.000	-		1.400		1.828		-		1.828	Continuing	Continuing	-
Subtotal			0.000	-		1.400		1.828		-		1.828	-	-	-

			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	-		4.913		7.700		-		7.700	-	-	-

Remarks															

UNCLASSIFIED



UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																					
Appropriation/Budget Activity 2040 / 4										R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development								Project (Number/Name) EC2 / XM1158 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
(1) 5.56mm Preliminary Design Review (PDR)																														5.56mm PDR				5.56mm CDR			
(2) 5.56mm Critical Design Review (CDR)																																					

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) EC2 / <i>XM1158 for Small Caliber Ammo</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Advanced Concept Development	1	2015	4	2016
7.62mm Prototype Test & Evaluation	1	2015	4	2016
7.62mm Materiel Development Decision (MDD)	2	2015	2	2015
7.62mm Milestone B	1	2017	1	2017
7.62mm Engineering & Manufacturing Development	1	2017	1	2020
7.62mm Preliminary Design Review (PDR)	4	2017	4	2017
7.62mm Critical Design Review (CDR)	3	2018	3	2018
7.62mm Development Test & Evaluation	1	2019	3	2019
7.62mm Milestone C	1	2020	1	2020
5.56mm Advanced Concept Development	1	2018	4	2018
5.56mm Prototype Test & Evaluation	1	2018	2	2019
5.56mm Milestone B	1	2019	1	2019
5.56mm Engineering & Manufacturing Development	1	2019	4	2021
5.56mm Preliminary Design Review (PDR)	3	2019	3	2019
5.56mm Critical Design Review (CDR)	3	2020	3	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EC3 / Ammunition 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
EC3: Ammunition Logistics Prototyping	-	-	1.769	3.571	-	3.571	3.203	3.382	3.901	3.582	-	19.408
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY15 Project EC3 is a new start.

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 Health and Inventory Monitoring Systems	-	1.769	1.390
Description: Performance and reliability of certain munitions can be degraded by the environmental exposure history they have experienced in their lifetime. This program will develop simple to complex environmental health and inventory monitoring systems to improve reliability and asset visibility and enable effective Condition Based Management for Ammunition.			
FY 2015 Plans: Designed prototype components of an ammunition packaging mounted environmental health monitoring system that will facilitate improved ammunition management. Matured passive time/temperature exposure sensor design.			
FY 2016 Plans: Fabricate environmental health monitoring system prototypes and conduct engineering testing. Integrate passive time/temperature exposure sensor with grenade systems and conduct operational demonstration.			
Title: Munitions Containerization Systems	-	-	0.596
Description: For each family of munitions containers, optimize prototype container systems for automation compatibility, combat unit load quantity, sustainability/recyclability, Insensitive Munitions/explosives safety, environmental protection, load			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015	
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) EC3 / <i>Ammunition Logistics Prototyping</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015
reconfiguration, unitization, and standardized interfaces. This will improve ammunition distribution efficiency while minimizing environmental and operational impacts.			
FY 2016 Plans: Mature the design of advanced lightweight cylindrical ammunition container packaging and conduct an operational evaluation.			
Title: Insensitive Munitions (IM) Integration Description: Optimize multiple IM technologies to improve munitions survivability and warfighter safety. Advanced IM Technologies will be developed in the areas of warhead, propulsion and propellants, explosives, packaging, and barriers. Efforts will increase the number of IM compliant ammunition items fielded in order to mitigate munitions reaction to fast cook-off, slow cook-off, fragment impact, sympathetic reaction, bullet impact, and shaped charge jet. FY 2016 Plans: Develop IM booster explosives to replace booster materials in fuzes as well as in supplemental and auxiliary charges. Develop IM propellants for Mortar and Tank ammunition and warhead venting technology for the 120mm High Energy Mortar round.		-	-
Accomplishments/Planned Programs Subtotals		-	1.769
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics N/A			

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development						Project (Number/Name) EC3 / Ammunition 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 1 - RRAPDS	C/CPIF	TBD : TBD	0.000	-		0.675		0.700		-		0.700	-	1.375	-
Contractor 2 - RRAPDS	C/CPIF	TBD : TBD	0.000	-		0.674		0.700		-		0.700	-	1.374	-
Contract-Low Cost Thermal Indicator	SS/CPFF	Innosense : Torrance, CA	0.000	-		0.100		-		-		-	-	0.100	-
Contract-Plastic Cylindrical Container	MIPR	TBD : TBD	0.000	-		-		0.220		-		0.220	-	0.220	-
Contract-Insensitive Munitions	MIPR	TBD : TBD	0.000	-		-		0.200		-		0.200	-	0.200	-
Subtotal			0.000	-		1.449		1.820		-		1.820	-	3.269	-
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	-		0.320		1.454		-		1.454	-	1.774	-
Subtotal			0.000	-		0.320		1.454		-		1.454	-	1.774	-
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
Aberdeen Test and Evaluation Center (ATEC)	MIPR	Aberdeen : MD	0.000	-		-		0.297		-		0.297	-	0.297	-
Subtotal			0.000	-		-		0.297		-		0.297	-	0.297	-
			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	-		1.769		3.571		-		3.571	-	5.340	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army							Date: February 2015			
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development			Project (Number/Name) EC3 / Ammunition Logistics Prototyping			
	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										

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015														
Appropriation/Budget Activity 2040 / 4										R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development								Project (Number/Name) EC3 / Ammunition 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		
Advanced Concept Development-Munitions Health Monitoring-1																														
Advanced Concept Development-Munitions Health Monitoring-1A																														
Advanced Concept Development-Munitions Health Monitoring-2																														
Advanced Concept Development-Munitions Containerization-1																														
Advanced Concept Development-Munitions Containerization-1A																														
Advanced Concept Development-Munitions Containerization-2																														
Advanced Concept Development-Insensitive Munitions																														

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) EC3 / <i>Ammunition Logistics Prototyping</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Advanced Concept Development-Munitions Health Monitoring-1	2	2015	2	2017
Advanced Concept Development-Munitions Health Monitoring-1A	3	2017	4	2019
Advanced Concept Development-Munitions Health Monitoring-2	2	2015	4	2016
Advanced Concept Development-Munitions Containerization-1	2	2016	4	2017
Advanced Concept Development-Munitions Containerization-1A	1	2018	4	2019
Advanced Concept Development-Munitions Containerization-2	1	2017	2	2020
Advanced Concept Development-Insensitive Munitions	2	2016	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EL6 / 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
EL6: Individual Assault Munition (IAM)	-	-	-	-	-	-	-	1.896	8.469	-	-	10.365
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
<p>Note N/A</p> <p>A. Mission Description and Budget Item Justification N/A</p> <p>B. Accomplishments/Planned Programs (\$ in Millions) N/A</p> <p>C. Other Program Funding Summary (\$ in Millions) N/A</p> <p>Remarks</p> <p>D. Acquisition Strategy Not applicable for this item.</p> <p>E. Performance Metrics N/A</p>												

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>						Project (Number/Name) EL6 / <i>Individual Assault Munition (IAM)</i>			

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	Various	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

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																			
Appropriation/Budget Activity 2040 / 4								R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development								Project (Number/Name) EL6 / 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																																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development	Project (Number/Name) EL6 / Individual Assault Munition (IAM)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
na	4	2014	4	2014

UNCLASSIFIED

[illegible]

Note

N/A

A. Mission Description and Budget Item Justification

N/A

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

N/A

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

N/A

Remarks

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>				Project (Number/Name) EL7 / <i>Reduced Range Small Caliber Training Ammunition</i>					


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
Reduced Range Small Caliber Training Ammunition	TBD	TBD/TBD : TBD	0.001	-		-		-		-		-		-	0.001	-
Subtotal			0.001	-		-		-		-		-		-	0.001	-

Remarks N/A																
-----------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

			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																
----------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																							
Appropriation/Budget Activity 2040 / 4										R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development								Project (Number/Name) EL7 / 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		
(1) MS-B																		MS-B																					
																																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development	Project (Number/Name) EL7 / Reduced Range Small Caliber Training Ammunition

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MS-B	1	2017	1	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EL8 / LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER			
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
EL8: LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER	-	-	-	2.400	-	2.400	-	-	-	-	-	2.400
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program will be a new start in FY 2016. The program will transition to PE 654802 Project EP6 in FY 2017.

A. Mission Description and Budget Item Justification

The overall objective of the Lightweight Small Caliber Ammunition (LSCA) program is to develop and field 7.62mm LSCA cartridges that will provide the same capabilities as the M80A1 and M62A1 cartridges while achieving up to twenty percent weight savings at the cartridge level. The LSCA cartridge will be designed to be compatible with all Army 7.62mm weapons, but specifically optimized to work in the M240 Machine Gun. After the 7.62mm cartridge is matured a .50 Caliber variant will be developed.

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

	FY 2014	FY 2015	FY 2016
Title: Lightweight Small Caliber Ammunition (LSCA)	-	-	2.400
Description: Develop, demonstrate, and quantify a Lightweight Small Caliber Ammunition (LSCA) 7.62mm capability that will provide an ammunition weight savings of twenty percent to the M240 gunner, assistant gunner and ammo bearer.			
FY 2016 Plans: Mature development and demonstrate (TRL6) M80A1/M62A1 LSCA cartridges. Conduct Materiel Development Decision (MDD), Preliminary Design Review (PDR), and Milestone B (MS-B) preparations.			
Accomplishments/Planned Programs Subtotals	-	-	2.400

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
• PE 654802 Project EP6: PE 654802 Project EP6	-	-	-	-	-	4.000	4.400	4.000	2.000	-	14.400

Remarks

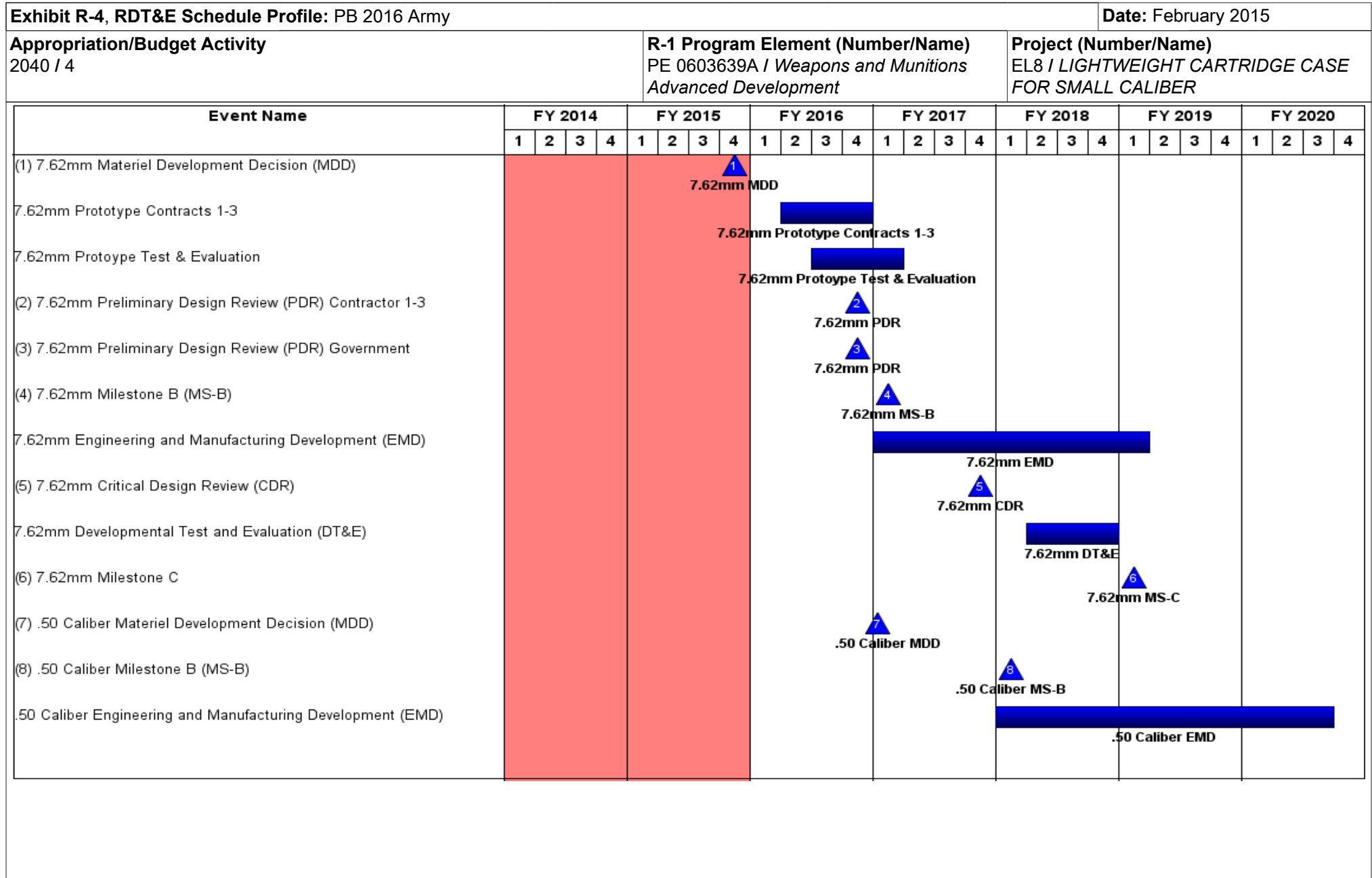
UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) EL8 / <i>LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER</i>
D. Acquisition Strategy The 7.62mm LSCA cartridge will be a contractor design that the government plans to transition to production at Lake City Army Ammunition Plant after the Full Materiel Release (FMR). The government plans to award up to three contracts for initial prototype evaluation in FY 2016. After Milestone B in 1QTR FY 2017, the government intends to award one contract under full and open competition to complete the development and transition into production. The .50 Caliber program will follow the same strategy but start in FY 2017.		
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development				Project (Number/Name) EL8 / LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER					
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
Contract 1	TBD	TBD : TBD	0.000	-		-		0.500		-		0.500	-	0.500	-
Contract 2	TBD	TBD : TBD	0.000	-		-		0.500		-		0.500	-	0.500	-
Contract 3	TBD	TBD : TBD	0.000	-		-		0.500		-		0.500	-	0.500	-
PM-MAS Labor and Travel	MIPR	Picatinny Arsenal : New Jersey	0.000	-		-		0.200		-		0.200	-	0.200	-
Subtotal			0.000	-		-		1.700		-		1.700	-	1.700	-
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 : New Jersey	0.000	-		-		0.450		-		0.450	-	0.450	-
Subtotal			0.000	-		-		0.450		-		0.450	-	0.450	-
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
Aberdeen Test Center	MIPR	Aberdeen Proving Grounds : Maryland	0.000	-		-		0.250		-		0.250	-	0.250	-
Subtotal			0.000	-		-		0.250		-		0.250	-	0.250	-
			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	-		-		2.400		-		2.400	-	2.400	-
Remarks															

UNCLASSIFIED



UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																					
Appropriation/Budget Activity 2040 / 4										R-1 Program Element (Number/Name) PE 0603639A / Weapons and Munitions Advanced Development										Project (Number/Name) EL8 / LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER																	
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
(1) .50 Caliber Preliminary Design Review (PDR)																										FY 2018											
(2) .50 Caliber Critical Design Review (CDR)																																					
.50 Caliber Developmental Test and Evaluation (DT&E)																																					
(3) .50 Caliber Milestone C																																					
																										FY 2018											
																										</											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603639A / <i>Weapons and Munitions Advanced Development</i>	Project (Number/Name) EL8 / <i>LIGHTWEIGHT CARTRIDGE CASE FOR SMALL CALIBER</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Materiel Development Decision (MDD)	4	2015	4	2015
7.62mm Prototype Contracts 1-3	2	2016	4	2016
7.62mm Prototype Test & Evaluation	3	2016	1	2017
7.62mm Preliminary Design Review (PDR) Contractor 1-3	4	2016	4	2016
7.62mm Preliminary Design Review (PDR) Government	4	2016	4	2016
7.62mm Milestone B (MS-B)	1	2017	1	2017
7.62mm Engineering and Manufacturing Development (EMD)	1	2017	1	2019
7.62mm Critical Design Review (CDR)	4	2017	4	2017
7.62mm Developmental Test and Evaluation (DT&E)	2	2018	4	2018
7.62mm Milestone C	1	2019	1	2019
.50 Caliber Materiel Development Decision (MDD)	1	2017	1	2017
.50 Caliber Milestone B (MS-B)	1	2018	1	2018
.50 Caliber Engineering and Manufacturing Development (EMD)	1	2018	3	2020
.50 Caliber Preliminary Design Review (PDR)	3	2018	3	2018
.50 Caliber Critical Design Review (CDR)	4	2019	4	2019
.50 Caliber Developmental Test and Evaluation (DT&E)	1	2020	2	2020
.50 Caliber Milestone C	3	2020	3	2020