

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army											Date: March 2023	
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					PE 0604802A / Weapons and Munitions - Eng Dev							
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	287.787	286.378	243.851	-	243.851	144.098	84.487	77.266	77.427	0.000	1,201.294
613: MORTAR SYSTEMS	-	-	1.036	-	-	-	-	-	-	-	0.000	1.036
BQ3: 155mm Artillery Propulsion XM654	-	28.715	23.485	16.497	-	16.497	-	-	-	-	0.000	68.697
BY1: Next Generation Combat Vehicle Ammunition	-	32.631	33.778	34.028	-	34.028	6.419	-	-	-	0.000	106.856
CE3: Precision Munition (Sniper)	-	8.936	5.182	-	-	-	-	-	-	-	0.000	14.118
DC9: 30mm MMPA M-SHORAD INC 3	-	-	-	18.936	-	18.936	11.280	7.831	5.118	4.475	0.000	47.640
EC4: Non-Standard Simulator Munitions	-	2.038	2.182	2.188	-	2.188	0.410	0.412	0.416	0.420	0.000	8.066
EL9: Ammunitions Logistics Prototyping	-	0.671	1.022	1.052	-	1.052	1.072	1.074	1.085	1.097	0.000	7.073
EP2: Shoulder-Launched Munitions	-	2.021	0.600	2.551	-	2.551	-	-	-	-	0.000	5.172
EP3: Reduced Range Ammunition - Small Caliber	-	8.639	5.214	-	-	-	-	-	-	-	0.000	13.853
EP4: One-Way Luminescence for Small Caliber Ammo	-	4.717	7.565	3.093	-	3.093	-	-	-	-	0.000	15.375
EP7: Aviation Airborne Expendable Countermeasures	-	7.251	6.363	3.194	-	3.194	3.208	0.932	-	-	0.000	20.948
EU4: 40mm HV Improved High Explosive Dual Purpose	-	4.618	2.073	-	-	-	-	-	-	-	0.000	6.691
EU6: 155mm HE Rocket Assist Project Extended Range	-	26.646	14.382	28.772	-	28.772	15.600	2.650	-	-	0.000	88.050
EU8: Improved Multi-Option Fuze	-	4.395	-	-	-	-	-	-	-	-	0.000	4.395

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
<i>2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>					<i>PE 0604802A / Weapons and Munitions - Eng Dev</i>							
<i>EW1: 40mm Low Velocity Ammunition</i>	-	3.508	2.045	0.082	-	0.082	0.110	-	-	-	0.000	5.745
<i>FA6: 30mm Lethality</i>	-	8.613	8.653	3.014	-	3.014	-	-	-	-	0.000	20.280
<i>FJ4: Cannon-Delivered Area Effects Munitions (C-DAEM)</i>	-	82.855	92.402	85.071	-	85.071	68.986	54.606	55.187	55.803	0.000	494.910
<i>FL4: Small Caliber Ammo for Next Gen Squad Weapons</i>	-	27.336	25.558	11.809	-	11.809	11.931	11.945	12.073	12.208	0.000	112.860
<i>S36: Precision Guidance Kit</i>	-	34.197	54.838	33.564	-	33.564	25.082	5.037	3.387	3.424	0.000	159.529

Note

30mm MMPA M-SHORAD INC 3 is a new start within the Weapons and Munitions - Eng Dev program in FY 2024

A. Mission Description and Budget Item Justification

Multiple Projects within this funding line are key enablers of the Army's Long Range Precision Fires Modernization Priorities: 155mm Artillery Propulsion (Project BQ3), 155mm High Explosive Rocket Assisted Projectile (Project EU6), Extended Range and Precision Guidance Kit (Project S36).

Project 613, Mortar Systems: The Mortar System and Fire Control Modernization Project funds engineering development and demonstration of new technologies that will support modernized mortar weapon and mortar fire control systems. This includes capabilities that provide commonality between current and future weapon and fire control systems to help mitigate technology shortfalls and critical capability gaps. Future mortar systems that address these gaps include remote mortar turrets for mounted mortar systems, future cannon design study and improvements, round counter design effort, high-pressure capable cannons/components, tactical vehicle integration and composite/lightweight components for mounted/dismounted systems as well any future mortar modernization efforts to improve system capability and performance to meet future capability gaps. Mortar Fire Control Systems capabilities include lightweight inertial measurement and navigation (IMU/INU) units for weapon pointing, simplified Ethernet/wireless-based digital communications interfaces, development of updated fire control software to enable commonality and modularity (plug and play capability), integration with existing/future platform interfaces to meet Modular Open Architecture Standard (MOSA), and support for commercial off-the-shelf (COTS)/modified commercial off-the-shelf (MCOTS) fire control components. This Project does not have a Fiscal Year (FY) 2024 budget request.

Project BQ3, Supercharge is a stand-alone top-zone 155 millimeter (mm) propelling charge required to achieve maximum range requirements from the Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH). Supercharge will achieve lethality overmatch out to 70 kilometers (km) with developmental extended range projectiles and will potentially increase range with compatible legacy projectiles up to thirty percent. Supercharge is composed of an earlier bag variant and later combustible cartridge case, integral metal stub case, electrically initiated primer, and advanced artillery propellant. This Project supports the accelerated Urgent Materiel Release (UMR) Supercharge (bag configuration) qualification required for Safety Release for First Unit Issued (FUI) of ERCA to perform Operational Assessment, and also supports the development of the Full Materiel Release (FMR) Supercharge that will address high technology and integration risks unique to achieving extended range to include improved design opportunities for pressure temperature curve, cannon tube wear and ensure fielding robustness. FY 2024 funding will continue to support efforts to improve propellant for longer cannon life, conduct risk reduction activities, as well as FMR Supercharge component development and testing. FY

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>2024 funding will also support the initiation of Extended Range Cannon Artillery System of Systems (ERCA SoS) integration activities. These efforts directly support the Army's Long Range Precision Fires Cross Functional Team (LRPF CFT) priorities in support of the National Defense Strategy.</p> <p>Project BY1, Next Generation Combat Vehicle Ammunition: A. Mission Description and Budget Item Justification 50x228 millimeter (mm) family of ammunition is a critical technology development in response to the Next Generation Combat Vehicle (NGCV) Abbreviated Capability Development Document for weapon qualification, platform integration, and fielding of the Optionally Manned Fighting Vehicle (OMFV) primary weapon system (XM913). This effort includes the development of three capabilities: The XM1202 Target Practice with Trace (TP-T); the XM1203 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T); and the XM1204 High Explosive Airburst with Trace (HEAB-T). The training cartridge will allow the Warfighter to train in a cost effective manner and the tactical cartridges will provide enhanced lethality at increased ranges when engaging personnel threats in the open, defilade, and under the cover of urban structures, Anti-Tank Guided Missiles (ATGM) teams, and current and projected future peer armored materiel threats. This effort is operating under Middle Tier Acquisition authority for rapid prototyping to qualify the three munitions in order to support the NGCV Cross Functional Team (CFT) timeline for First Unit Equipped (FUE). Fiscal Year (FY) 2024 funds support preparation activities for prototype fielding / materiel release on the XM1202 TP-T variant. In addition, FY 2024 funds supports conducting Developmental Test & Evaluation (DT&E), building tests assets for Live Fire Test & Evaluation (LFT&E) and preparing for prototype fielding on the XM1203 APFSDS-T variant. FY 2024 funds also supports building test assets and conducting DT&E on the XM1204 HEAB-T variant.</p> <p>Project CE3, Precision Munition (Sniper): The Precision Munition (Sniper) project is a critical technology development in response to the Precision Munition Capabilities Development Documents (CDD) for the ammunition required to support the Precision Sniper Rifle (PSR) / sniper weapons systems. The objective is to transfer the latest lethality technology into the suite of ammunition used by snipers. The Precision Munition improvement is split into three capability areas: Anti-Materiel (AM), Improved Performance Round (IPR), and Subsonic. The AM and IPR capabilities will enhance lethal effects at greater distances. The Subsonic capability will increase soldier survivability at close range by providing a low-sound signature munition that is undetectable to the enemy. There is no Fiscal Year 2024 budget request.</p> <p>Project DC9, 30mm MMPA M-SHORAD INC 3: The 30mm Multi-Mode Proximity Airburst (MMPA) Maneuver Short Range Air Defense Increment 3 (M-SHORAD INC 3) project funds the development of the XM1223 30x113mm MMPA munition. The objective is to enhance the operational effectiveness of the M-SHORAD Inc 3 platform, and any other Joint Force Fighting Vehicle that is equipped with a 30x113mm weapon system. The programmable fuze modes in the munition include proximity airburst to defeat personnel in the open and small Unmanned Aerial System (UAS) targets, proximity delay to defeat personnel in defilade, gated proximity airburst for cluttered environments, mechanical point detonate to defeat light materiel targets, and self destruct to minimize collateral damage. The XM1223 will allow the M-SHORAD Inc 3 to conduct counter-UAS missions while retaining the ability to quickly transition to ground targets. Fiscal Year (FY) 2024 funding supports XM1223 Engineering Manufacturing and Development (EMD) contract awards, development, Preliminary Design Review (PDR), and building prototypes for Design Engineering Testing (DET).</p> <p>Project EC4, Non-Standard Simulator Munitions will standardize various pyrotechnics 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 or material released and are not safe or sustainable for use by Soldiers. This effort will develop and demonstrate various pyrotechnics/ simulators to replicate both conventional and asymmetric warfare battlefield affects such as: Black smoke signature (burning vehicles, buildings, and equipment); Yellow smoke signature (chemical, biological or nuclear effects); Mini Blast to simulate hostile fire and small Improvised Explosive Devices (IEDs) during mounted operations</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>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) simulators to replicate the flight of a Rocket Propelled Grenade; Macro Pyro to simulate hostile fire, booby trap and IED Simulations indoor and outdoors; High Order Blast Effect (HiOBE) used to replicate a Vehicle Borne Improvised Explosive Device (VBIED), building explosions, and other significant explosive events; Artillery airburst simulator to replicate indirect fire; Antitank Guided Missile and Rocket (AGMR) simulator to replicate surface to air missile or shoulder launched rocket; 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 environmental concerns and safety risks associated with realistic scenario based training.</p> <p>Project EL9, 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. Fiscal Year (FY) 2023 funding will be focused on integrating commercial off the shelf and/or relatively mature technologies into ammunition resupply enablers required by the Long Range Precision Fire (LRPF) Cross Functional Team (CFT). They will be focused on ensuring that a low risk resupply process solution exists to support the success of the Extended Range Canon Artillery (ERCA).</p> <p>Project EP2, Shoulder-Launched Munitions: The Individual Assault Munition (IAM) system consists of the tactical XM919 and training devices including the XM922 sub-caliber trainer. The XM919 IAM will be a lightweight Shoulder Launched Munition (SLM) capability for combat units at the individual Soldier level. The IAM training devices including the XM922 sub-caliber trainer provide training capability that will increase the Soldier's proficiency and integration of the XM919 tactical system into combat operations. As the next generation SLM, the solution will fit within the Soldier Lethality Modernization Priority, by reducing Soldier load, while providing tactical innovation capable of extending overmatch against near-peer adversaries in a joint, multi-domain, high-intensity conflict. The tactical XM919 IAM will allow Soldiers to conduct Urban Operations and will allow Soldiers to defeat adversaries protected by field expedient structures and light armored vehicles while providing behind the wall lethality effects. This solution will be effective day or night with the ability to safely engage targets from within enclosures, increasing Soldier survivability. This solution will combine the capabilities of the existing Bunker Defeat Munition (BDM) and the AT4 Confined Space - Reduced Sensitivity (AT4CS-RS), which will reduce the logistics burden of having to maintain and train multiple systems. The Individual Assault Munition Capabilities Development Document (CDD) was approved on 11 March 2016.</p> <p>Project EP3, Reduced Range Ammunition - Small Caliber: The small caliber Reduced Range Ammunition (RRA) Project is a critical technology development in response to the 7.62 millimeter (mm) and .50 caliber Capabilities Development Documents (CDD). The overall objective of RRA is to provide training ammunition suitable for use on military installations with Surface Danger Zone (SDZ) restrictions. The relatively long maximum range of the 7.62mm and .50 caliber service ammunition poses challenges on training ranges in range restricted areas. RRA will mitigate a training gap on installations by providing a materiel solution that meets training needs while shortening and condensing the SDZ. This will allow soldiers to train with 7.62mm and .50 caliber weapons on restricted ranges. The RRA cartridge design will be compatible with all Army 7.62mm and .50 caliber weapons, but specifically optimized to work in the M240 and M2 Machine Guns. There is no Fiscal Year (FY) 2024 request.</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>Project EP4, One-Way Luminescence for Small Caliber Ammo: The One Way Luminescence (OWL) project is a critical technology development in response to the 7.62 millimeter (mm) and 5.56mm Families of Ammunition Capabilities Development Documents (CDD) and .50 Caliber Munitions CDD. Current small caliber ammunition tracer rounds are a pyrotechnic tracer mix which allows enemy forces to see the trace round and track its trajectory back to the shooter. The OWL projects objective is to develop and field a full tracer round, replace the current pyrotechnic cartridges with trace cartridges that are only visible to the shooter and soldiers in close proximity, increasing soldier survivability, and increasing lethality by incorporating Enhanced Performance Round (EPR) technology into the new tracer ammunition. 7.62mm and 5.56mm are the immediate focus; later followed by .50 Caliber cartridges and Next Generation Squad Weapons (NGSW) ammunition. Fiscal Year (FY) 2024 funding supports continuing Engineering and Manufacturing Development (EMD) and performing preparation activities for Materiel Release (MR) for the 7.62mm variant. FY 2024 funding will also support EMD efforts, performing Production Qualification Testing (PQT), and a Soldier Touch Point (STP) / User Evaluation for the 5.56mm variant.</p> <p>Project EP7, Aviation Airborne Expendable Countermeasures (AAECM) will support Integrated System Design (ISD), System Capability (SC) and Manufacturing Process Demonstrations (MPD) on expendable countermeasure flares and decoys to include the XM215 Infrared (IR) countermeasure Flare and XM20 Radio Frequency (RF) expendables. These expendable countermeasures systems are an essential part of survivability equipment for Army aircraft. Army Research Development Technology & Evaluation (RDT&E) efforts are coordinated with Program Executive Office (PEO) Aviation to address the AAECM capability, a critical enabler for enduring aircraft and the Future Vertical Lift (FVL) - Aircraft Survivability Equipment (ASE) Cross Functional Team (CFT) within Army's Top modernization priorities.</p> <p>These advanced decoys will address deficiencies in Army aircraft protection and the safety of its aircrews against advanced Man-Portable Air Defense Systems (MANPADS) and Surface-to-Air Missiles (SAM) systems. The project will also support ISD, SC and MPD on new expendable countermeasure munitions that will protect Army aircraft from advanced and proliferated current guided missile threats. Activities include modeling and simulation, flight testing, qualification testing, 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 and aircraft expendables (to include RF expendables).</p> <p>Project EU4, 40 millimeter (mm) High Velocity (HV) High Explosive Dual Purpose - Air burst (HEDP-AB) is a new capability identified as a Warfighter counter-defilade requirement in the 40mm High Velocity Improved High Explosive Dual Purpose Cartridge Capability Development Document (CDD) and will provide the Mk19 Mod 3 Grenade Machine Gun (GMG) an airburst capable cartridge with the ability of achieving required lethal effects against enemy targets in the open and in defilade while maintaining the capability to defeat unarmored and lightly armored vehicles. XM1176 HEDP-AB cartridges are manufactured by de-fuzing legacy M430A1 cartridges and installing a new airburst capable fuze onto the M430A1 warhead. In FY 2024 there is no funding request.</p> <p>Project EU6, The 155 millimeter (mm) High Explosive (HE) Rocket Assisted Projectile, Extended Range Project supports projectile development efforts to achieve ranges of 40km in current 39 caliber artillery weapon systems and longer ranges in future 58 caliber Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH) to achieve the Army's requirement of extended range lethality. The Project is executing an evolutionary approach to meet the objectives of extended range and precision. The XM1113 will replace the obsolete M549A1 in 39 caliber weapon systems and increase range from 30km to 40km. The XM1210 will be optimized for 58</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>caliber guns and allow commanders to provide accurate cannon artillery fires at ranges of 70km and greater with ERCA. The XM1113 will not have a FY 2024 budget request. FY 2024 funding will continue to support XM1210 development and qualification activities for the Full Materiel Release (FMR) configuration.</p> <p>Project EU7, Enhanced Lethality Cannon Munitions: The Enhanced Lethality Cannon Munitions (ELCM) Project will evaluate, develop, and qualify new lethality technologies for 155mm cannon artillery munitions and evaluate their effectiveness in mitigating evolving and derived capability gaps, and support transition to production. The ELCM Project supports testing and assessment of the Israeli Military Industries (IMI) Systems M999 advanced anti-personnel munition in support the Army Directed Requirement for a Rapid Bridging Solution for the replacement of the 155mm Dual Purpose Improved Conventional Munition (DPICM). This Project also accelerates the qualification of the 155mm XM1128 High Explosive Projectile, which will replace the M795 Critical Munition once qualified. Engineering efforts are ongoing and will support the evaluation of the XM1128 test data to determine that the Program is safe, suitable and operationally effective, as well as the gathering of all statutory and regulatory requirements in support of a Milestone C in FY 2021. This Project does not have a Fiscal Year (FY) 2024 budget request.</p> <p>Project EU8, Improved Multi-Option Fuze: The Improved Multi-Option Fuze Project is a technology refresh and modernization effort that provides an incremental capability with technology advancements and performance improvements on the current non-precision artillery and mortar ammunition proximity multi-option fuze that will increase robustness to electronic countermeasures (ECM), eliminates the susceptibility of reverse engineering (RE), incorporates power source advancements, improves delay mode reliability, and integrates safe & arm improvements. This Project will develop and qualify safe, affordable, reliable, Proximity Height of Burst fuzing solutions with robust Defense Exportability Features (DEF) for non-precision conventional cannon artillery and mortar munitions that are resistant to adversary exploitation via ECM and RE threats. This Project does not have a Fiscal Year (FY) 2024 budget request.</p> <p>Project EW1, The 40 millimeter (mm) Low Velocity High Explosive Air Burst (HEAB) is a new capability identified as a Warfighter counter-defilade requirement in the Capability Development Document (CDD), 40mm Low Velocity (LV) Family of Ammunition Annex. The HEAB tactical cartridge allows the Warfighter to engage targets at increased effective ranges using the 40mm M320 Grenade Launcher. The HEAB cartridge provides the grenadier with a higher probability of achieving a first shot kill against enemy personnel, coupled with the ability to defeat personnel targets in defilade positions. When deployed against point and area targets, the cartridge inflicts incapacitating effects against personnel beyond those offered by the current M433 High Explosive Dual Purpose (HEDP) cartridge. The cartridge provides lethal effects against targets with improved accuracy and greater standoff ranges resulting in increased soldier survivability. FY 2024 funds support test reports and close-out activities following Developmental Test and Evaluation (DT&E) and Soldier Touch Point (STP).</p> <p>Project FA6, 30mm Lethality: The 30 millimeter (mm) Lethality project funds the development of a suite of 30x173mm caliber cartridges, which includes a XM1182 High Explosive Airburst with Trace (HEAB-T) cartridge for increased anti-personnel effects, XM1170 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) cartridge for anti-materiel, and ballistically matched training cartridges; XM1173 Target Practice with Trace (TP-T) cartridge and XM1172 Target Practice Discarding Sabot with Trace (TPDS-T) cartridge. The objective is to enhance the operational effectiveness and lethality of the Stryker Infantry Carrier Vehicle (ICV), Next Generation Combat Vehicle (NGCV), and any Army Fighting Vehicles that are equipped with a 30x173mm weapon system. The tactical APFSDS-T cartridge will provide an organic direct fire capability to support infantry at a greater range and will improve lethality when engaging light-to-medium armored vehicles. The HEAB-T cartridge will provide the Warfighter with increased lethality against troops in the open, counter defilade, Anti-Tank Guided Missile (ATGM) teams, and troops behind urban structures. The training cartridges will be ballistically matched to the tactical cartridges, allowing the Warfighter to train in a cost effective manner. This project is a follow-on of the earlier efforts in support of the United States Army Europe (USAREUR) Operational Needs Statement (ONS) #15-20590 Stryker Increased Lethality for</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	
<p>the 2nd Cavalry Regiment (2CR). Fiscal Year (FY) 2024 funding will support execution of Live Fire Test & Evaluation (LFT&E) and Initial Operational Test & Evaluation (IOT&E).</p> <p>Project FJ4, Cannon-Delivered Area Effects Munitions (C-DAEM): The Cannon-Delivered Area Effects Munitions (C-DAEM) Project will provide United States (U.S.) ground forces with the capability to engage area personnel through armored targets, while denying threat forces full operational freedom within the targeted area. An Analysis of Alternatives (AoA) was completed in January 2018 to inform Army acquisition and investment decisions regarding replacement of the current stockpile of 155 millimeter (mm) Dual Purpose Improved Conventional Munitions (DPICM) with Department of Defense (DoD) policy compliant munitions and address anti-armor and extended range capability requirements. The Army validated two materiel solutions for C-DAEM to be pursued in parallel to support the Army's modernization priorities; C-DAEM Armor and C-DAEM DPICM Replacement. C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks. Fiscal Year (FY) 2024 funding will continue to support C-DAEM Armor development and testing activities as well as engineering efforts required to integrate the Military-Code (M-Code) Global Positioning System (GPS) Receiver into the selected C-DAEM Armor objective materiel solution(s).</p> <p>Project FL4, Small Caliber Ammo for Next Gen Squad Weapons: The Small Caliber Ammo for Next Gen Squad Weapons project is a critical technology development in response to the Soldier Lethality Cross Functional Team (SL CFT) Initial Capability Document (ICD) for the ammunition required to support the rapid prototyping, development, and fielding of the Next Generation Squad Weapons (NGSW) under the Middle Tier of Acquisition (MTA) authority for rapid prototyping/rapid fielding. The objective is to develop and Full Materiel Release (FMR) the new ammunition in parallel with the NGSW rifle and automatic rifle. The NGSW ammunition is split into multiple ammunition variants, the General Purpose (GP), the Special Purpose (SP), the Reduced Range Ammunition (RRA), Tracer Ammunition, Blank Ammunition, the Close Combat Mission Capability Kit (CCMCK) training ammunition, Drill Dummy Inert (DDI) cartridge, and High-Pressure Test (HPT) cartridge. Fiscal Year (FY) 2024 funding supports Urgent Materiel Release (UMR) preparation efforts for the GP, SP, RRA, Blank, DDI, and HPT variants. FY 2024 funds also support Live-Fire Testing and Evaluation (LFT&E) on the GP and Tracer variants. FY 2024 funds support Soldier Touch Points (STP) / User Evaluations and performing Production Qualification Testing (PQT) on the SP, RRA, and Tracer variants. Also, FY 2024 funds support design optimization efforts on the GP, Blank, DDI, and HPT variants. And, FY 2024 supports continuing the refinement, development, and maturation of the CCMCK, Blank, DDI, and HPT cartridges.</p> <p>Project S36, Precision Guidance Kit: The Long Range-Precision Guidance Kit (LR-PGK) development effort will qualify state of the art technologies for a course correcting fuze that provides precision accuracy at extended ranges for current and future 155 millimeter (mm) High Explosive (HE) projectiles by eliminating a portion of the inherent errors associated with ballistic firing solutions, which effectively reduces the number of projectiles required to execute fire missions.??LR-PGK will support projectile operation in Global Positioning System (GPS) degraded environments and compatibility with Army Modernization objectives under the Long Range Precision Fires Cross Functional Team's (LRPF CFT) new long range cannon, Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH).??The ERCA and its new long range projectiles require the LR-PGK to meet lethality requirements.??Fiscal Year (FY) 2024 funding will continue to support the fabrication of LR-PGK hardware, safety and development testing, and accomplishes a Preliminary Design Review (PDR).</p>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>
--	--

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	297.086	263.778	194.941	-	194.941
Current President's Budget	287.787	286.378	243.851	-	243.851
Total Adjustments	-9.299	22.600	48.910	-	48.910
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	25.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-9.299	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	48.910	-	48.910
• Ukraine Supplemental	-	0.600	-	-	-

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: S36: *Precision Guidance Kit*

Congressional Add: *Anti-Jam Precision Guidance Kit*

Congressional Add Subtotals for Project: S36

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	-	25.000
Congressional Add Subtotals for Project: S36	-	25.000
Congressional Add Totals for all Projects	-	25.000

Change Summary Explanation

The change for this portfolio is made up of both increases and decreases for the following programs:

Increases are: \$28.285M Precision Guidance Kit, Increase in funding in FY 2024 is to resource additional LR-PGK development and qualification activities in support of the Army's modernization priorities. \$18.8M New Start for 30mm MMPA M-SHORAD INC 3 Funding that was realigned from the platform from ROC 5L0 to us (JPEO/1B0). \$3.180M for Aviation Airborne Expendable Countermeasures to support countermeasure pattern development. \$2.540M for XM919 Shoulder Launched Munitions to complete the operational assessment. \$1.207M 155mm Artillery Propulsion to support efforts to FMR Supercharge component development, improve propellant for longer cannon life, conduct risk reduction activities and testing as well as support the initiation of Extended Range Cannon Artillery System of Systems (ERCA SoS) integration activities.

Decreases are: -\$869K for Next Generation Combat Vehicle Ammunition Programs continue Developmental Test & Evaluation efforts and prepare for Low Rate Initial Production (LRIP), -\$735K for 155mm HE Rocket Assist Project Extended Range, -\$2.075M for 40MM Low Velocity Ammunition Decrease in funding due to the program's transition from Low Rate Initial Production (LRIP) to Full Rate Production in FY 2025, -\$77k for 30MM Lethality decreases due to completion of Milestone C and platform integration testing, -\$2.172M for Cannon-Delivered Area Effects Munitions (C-DAEM) Decrease in funding in FY 2024 due to decrease in contract costs associated with C-DAEM Armor development and GPS Receiver integration efforts., and -\$301K for Small Caliber Ammo for Next Gen Squad Weapons Decrease due to planned activities as the program shifts to FMR / production.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
613: MORTAR SYSTEMS	-	-	1.036	-	-	-	-	-	-	-	0.000	1.036
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Mortar System and Fire Control Modernization Project funds engineering development and demonstration of new technologies that will support modernized mortar weapon and mortar fire control systems. This includes capabilities that provide commonality between current and future weapon and fire control systems to help mitigate technology shortfalls and critical capability gaps. Future mortar systems that address these gaps include remote mortar turrets for mounted mortar systems, future cannon design study and improvements, round counter design effort, high-pressure capable cannons/components, tactical vehicle integration and composite/lightweight components for mounted/dismounted systems as well any future mortar modernization efforts to improve system capability and performance to meet future capability gaps. Mortar Fire Control Systems capabilities include lightweight inertial measurement and navigation (IMU/INU) units for weapon pointing, simplified Ethernet/wireless-based digital communications interfaces, development of updated fire control software to enable commonality and modularity (plug and play capability), integration with existing/future platform interfaces to meet Modular Open Architecture Standard (MOSA), and support for commercial off-the-shelf (COTS)/modified commercial off-the-shelf (MCOTS) fire control components. This Project does not have a Fiscal Year (FY) 2024 budget request.

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

	FY 2022	FY 2023	FY 2024
Title: Mortar System & Fire Control Modernization	-	0.998	-
<p>Description: Mortar Systems and Fire Control Modernization initiatives include development and demonstration of new technologies to validate production potential for future mortar systems; including remote turrets and new weapon system components, modernized lightweight pointing device, updated Line Replaceable Units (LRUs), streamlined digital communications, and updated mortar fire control software.</p> <p>FY 2023 Plans: FY 2023 funding is supporting Infantry Brigade Mortar System (IBMS) development and demonstration of a man-portable system for the Infantry Brigade Combat Teams (IBCTs) with range and lethality equal to or greater than the 120mm battalion mortar weapon system. Efforts include studies of new steel barrel materiel, new barrel design and testing to address current and future IBCT capability gaps. The design will encompass studying of new barrel technology, market surveys of new steel materiel, and prototyping and testing of newly developed barrel design concepts. The objective for the new design will be to provide extended range, reduced pressure, seamless platform integration and reduction in weight. The lightweight design will allow soldiers to perform mounted and dismounted operation seamlessly.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
There was a reduction in engineering development and demonstration of new technologies that will support modernized mortar weapon and mortar fire control systems. This includes capabilities that provide commonality between current and future weapon and fire control systems to help mitigate technology shortfalls and critical capability gaps			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	-	0.038	-
Description: Funding transferred in accordance with Title 15 USC §638			
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	-	1.036	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• AD9300: <i>Mortar Fire Control Systems Modifications</i>	2.830	4.370	7.399	-	7.399	6.241	12.431	11.029	4.984	0.000	49.284
• K99200: <i>Computer Ballistics: LHMBBC XM32</i>	2.811	3.038	2.965	-	2.965	3.036	6.640	6.643	6.648	0.000	31.781
• K99300: <i>Mortar Fire Control System</i>	17.236	4.879	8.024	-	8.024	4.770	3.803	3.823	3.825	0.000	46.360
• G02200: <i>Mortar Systems</i>	33.240	8.516	8.013	-	8.013	8.549	14.563	14.218	14.229	Continuing	Continuing

Remarks
Other Procurement, Army (OPA) Funding / Procurement of Weapons & Tracked Combat Vehicle (W&TCV)

D. Acquisition Strategy
The Mortar System and Fire Control Modernization strategy will utilize Government Owned Government Operated (GOGO) Watervliet Arsenal (WVA) facility for cannon barrel prototyping, Combat Capabilities Development Command Armament Center (DEVCOM AC) for studies and competitively awarded Department of Defense Ordnance Technology Consortium (DOTC) and/or Cornerstone Other Transaction Agreement (OTA) initiatives for hardware and software development during Engineering Manufacturing Design Phase. A Federal Acquisition Regulation (FAR) contract will be awarded to complete full rate production.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) 613 / MORTAR SYSTEMS
--	---	--

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mortar System & Fire Control Modernization - Project Manager Office Support	Various	Office of the Project Manager (PM) Combat Ammunition Systems (CAS) : Picatinny Arsenal, NJ	0.212	-		0.025	Mar 2023	-		-		-	0.000	0.237	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.038	Mar 2023	-		-		-	0.000	0.038	-
Subtotal			0.212	-		0.063		-		-		-	0.000	0.275	N/A

Remarks
Program management includes travel and documentation support.

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mortar Stowage Lift System	MIPR	Other Transaction Agreement (OTA) : TBS	-	-		0.386	Mar 2023	-		-		-	0.000	0.386	-
Subtotal			-	-		0.386		-		-		-	0.000	0.386	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mortar System & Fire Control Modernization Engineering Support	MIPR	DEVCOM Armament Center : Picatinny Arsenal, NJ and Watervliet Arsenal, NY	0.497	-		0.587	Mar 2023	-		-		-	0.000	1.084	-
Subtotal			0.497	-		0.587		-		-		-	0.000	1.084	N/A



UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023			
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) 613 / MORTAR SYSTEMS				
	Prior Years	FY 2022	FY 2023		FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	0.709	-	1.036		-	-	-	0.000	1.745	N/A	

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) 613 / MORTAR SYSTEMS	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Mortar Stowage Lift System					<div style="background-color: #0000ff; color: white; padding: 2px; text-align: center;">EMD Preliminary & Detailed Design</div> <div style="text-align: center; margin-top: 10px;">  SRR </div> <div style="text-align: center; margin-top: 10px;">  PDR </div>																							
Engineering & Manufacturing Development (EMD)																												
System Requirement Review (SRR)																												
Preliminary Design Review (PDR)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
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>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Mortar System Round Counter	1	2021	1	2021
Engineering & Manufacturing Development (EMD)	1	2020	4	2021
LRU Software Development	1	2020	4	2021
Mortar System Round Counter- System Architecture Development (Sys Eng Phase 1)	1	2020	1	2021
Preliminary Design Review (PDR)	1	2021	1	2021
EMD Detailed Design Testing (Sys Eng Phase 2)	2	2021	4	2021
Critical Design Review (CDR)	4	2021	4	2021
Mortar Stowage Lift System	1	2023	1	2023
Engineering & Manufacturing Development (EMD)'	1	2023	4	2023
System Requirement Review (SRR)	2	2023	2	2023
Preliminary Design Review (PDR)'	4	2023	4	2023

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BQ3: 155mm Artillery Propulsion XM654	-	28.715	23.485	16.497	-	16.497	-	-	-	-	0.000	68.697
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Supercharge is a stand-alone top-zone 155 millimeter (mm) propelling charge required to achieve maximum range requirements from the Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH). Supercharge will achieve lethality overmatch out to 70 kilometers (km) with developmental extended range projectiles and will potentially increase range with compatible legacy projectiles up to thirty percent. Supercharge is composed of an earlier bag variant and later combustible cartridge case, integral metal stub case, electrically initiated primer, and advanced artillery propellant. This Project supports the accelerated Urgent Materiel Release (UMR) Supercharge (bag configuration) qualification required for Safety Release for First Unit Issued (FUI) of ERCA to perform Operational Assessment, and also supports the development of the Full Materiel Release (FMR) Supercharge that will address high technology and integration risks unique to achieving extended range to include improved design opportunities for pressure temperature curve, cannon tube wear and ensure fielding robustness. FY 2024 funding will continue to support efforts to improve propellant for longer cannon life, conduct risk reduction activities, as well as FMR Supercharge component development and testing. FY 2024 funding will also support the initiation of Extended Range Cannon Artillery System of Systems (ERCA SoS) integration activities. These efforts directly support the Army's Long Range Precision Fires Cross Functional Team (LRPF CFT) priorities in support of the National Defense Strategy.

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

	FY 2022	FY 2023	FY 2024
Title: 155mm Artillery Propulsion Supercharge	28.715	22.627	16.497
Description: The top-zone propelling charge for XM907E2 Extended Range Cannon with Slide-block breech for use with Extended Range Cannon Artillery (ERCA) to gain range overmatch for 155mm artillery.			
FY 2023 Plans: FY 2023 funding will conclude safety qualification of the UMR Supercharge, improve propellant for longer cannon life, conduct risk reduction activities and continue component development and testing of the FMR Supercharge.			
FY 2024 Plans: FY 2024 funding will continue to support efforts to FMR Supercharge component development, improve propellant for longer cannon life, conduct testing as well as support the initiation of Extended Range Cannon Artillery System of Systems (ERCA SoS) integration activities. ERCA SoS includes Supercharge and Stub Charge Propulsion System, 155mm XM1210 HE Projectile, Course Correcting Precision Fuze (LR-PGK/PGK-ER) and EPIAFS Fuze Setter.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Decrease in FY 2024 funding due to completion of safety qualification of the UMR Supercharge in FY 2023.			
Title: SBIR/STTR Transfer	-	0.858	-
FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	28.715	23.485	16.497

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E99350: 155MM ARTILLERY SUPERCHARGE	0.010	7.802	16.469	-	16.469	28.604	43.894	62.178	62.178	0.000	221.135

Remarks
A Procurement of Ammunition, Army (PAA) budget line item, Standard Study Number (SSN) E99350, will resource procurement of the Supercharge to deliver Safety Release quantities for First Unit Issued (FUI) to support the Extended Range Cannon Artillery (ERCA) Operational Assessment (OA) as well as future Urgent Materiel Release (UMR) and Full Materiel Release (FMR) quantities.

D. Acquisition Strategy
The Supercharge Project consists of critical technology prototyping, testing, and demonstration of two variants: (1) the UMR Supercharge (2-piece Bag configuration) to support the acceleration of the Extended Range Cannon Artillery (ERCA) to achieve precision lethality at 70km and greater with follow-on UMR, and (2) the FMR Supercharge, which will address high technology and integration risks unique to achieving increased range.

The UMR Supercharge will utilize several competitively awarded Defense Ordnance Technology Consortium (DOTC) Other Transaction Agreement (OTA) Initiatives for the maturation and integration of components. These contracts will execute UMR Supercharge through qualification testing as well as transition to procurement of quantities required for Safety Release for First Unit Issued (FUI) of ERCA to perform Operational Assessment. Federal Acquisition Regulation (FAR) based production contract(s) will be awarded for UMR quantities.

The FMR Supercharge will also utilize several competitively awarded DOTC OTA Initiatives for design risk reduction of the various new and existing Supercharge components, system integration, developmental testing and qualification. Propulsion risk reduction activities will be applied to address UMR Supercharge temperature sensitivity, energy, tube wear, rough handling robustness and muzzle pressure/blast overpressure. FAR based production contract(s) will be awarded.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654
--	---	--

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	Office of the Project Manager (PM) Combat Ammunition Systems (CAS) : Picatinny Arsenal, NJ	-	0.300	Oct 2021	0.300	Oct 2022	0.300	Oct 2023	-		0.300	0.000	0.900	-
SBIR/STTR Transfer	Various	Various : N/A	-	-		0.858		-		-		-	0.000	0.858	-
Subtotal			-	0.300		1.158		0.300		-		0.300	0.000	1.758	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Combustible Case Components	MIPR	DoD Ordnance Technology Consortium (DOTC): Armtec : Coachella, CA	-	4.259	Nov 2021	3.000	Nov 2022	1.200	Nov 2023	-		1.200	0.000	8.459	-
Main Charge Propellants	MIPR	DoD Ordnance Technology Consortium (DOTC): General Dynamics Ordnance and Tactical Systems - Valleyfield : Salaberry-de-Valleyfield, Quebec, Canada	-	3.434	Oct 2021	1.368	Nov 2022	4.493	Nov 2023	-		4.493	0.000	9.295	-
Electric Primers	MIPR	Day & Zimmermann Lone Star LLC : Texarkana, TX	-	0.425	Apr 2022	0.225	Mar 2023	0.200	Mar 2024	-		0.200	0.000	0.850	-
Packaging	MIPR	DoD Ordnance Technology Consortium (DOTC):	-	0.522	Apr 2022	0.550	Mar 2023	0.250	Mar 2024	-		0.250	0.000	1.322	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654
--	---	--

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Savit Corporation : Rockaway, NJ													
Main Load Assemble & Pack	MIPR	DoD Ordnance Technology Consortium (DOTC): General Dynamics Ordnance and Tactical Systems - Marion, IL : Marion, IL	-	1.650	Nov 2021	2.500	Nov 2022	0.417	Nov 2023	-		0.417	0.000	4.567	-
Supercharge FMR Risk Reduction	TBD	Various/ TBS : TBS	-	4.700	Mar 2022	3.934	Mar 2023	0.424	Mar 2024	-		0.424	0.000	9.058	-
Projectile and Fuze Hardware	Various	Various : Various	-	5.818	Nov 2021	3.800	Mar 2023	1.069	Mar 2024	-		1.069	0.000	10.687	-
Software Engineering	Reqn	Leidos, Inc. : Reston, Virginia	-	1.350	Aug 2022	1.200	Aug 2023	0.500	Aug 2024	-		0.500	0.000	3.050	-
Subtotal			-	22.158		16.577		8.553		-		8.553	0.000	47.288	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	-	4.210	Nov 2021	3.750	Nov 2022	2.654	Nov 2023	-		2.654	0.000	10.614	-
Subtotal			-	4.210		3.750		2.654		-		2.654	0.000	10.614	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Supercharge UMR Qualification	MIPR	Army Test & Evaluation	-	1.647	Nov 2021	1.000	Nov 2022	-		-		-	0.000	2.647	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				
	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	
Urgent Materiel Release (UMR) Supercharge																													
Qualification Testing for Safety Release	[Blue Bar]																												
ERCA System of Systems (SoS) Developmental Testing (DT) ...									[Blue Bar]																				
Critical Design Review (CDR)	3 CDR																												
Safety Release Decision Point (DP) / Contract Award									4 Safety Release DP / Award																				
EMD / Qualification / SR / OA Deliveries	[Blue Bar]																												
Safety Release for ERCA FUI																									7 Safety Release for ERCA FUI				
ERCA FUI																									10 ERCA FUI				
UMR Award																									6 UMR Award				
Full Materiel Release (FMR) Supercharge																													
Engineering Manufacturing & Development (EMD)	[Blue Bar]																												
Propellant Optimization	[Blue Bar]																												
Propellant PDR									5 PDR																				

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BQ3 / 155mm Artillery Propulsion XM654

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Propellant CDR												8 CDR																
Charge Design																												
Charge Design PDR												9 PDR																
Charge Design CDR															11 CDR													
Qualification Testing																												
FMR																											12 FMR	

Note
 UMR Supercharge is pursuing a Safety Release to support ERCA System of Systems Operational Assessment. All Safety Release, UMR and FMR quantities will be procured with the associated Procurement of Ammunition, Army (PAA) funding.

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) BQ3 / <i>155mm Artillery Propulsion XM654</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Urgent Materiel Release (UMR) Supercharge	1	2022	1	2022
Preliminary Design Review (PDR)	1	2021	1	2021
Prototype Development & Testing	1	2021	4	2021
Qualification Testing for Safety Release	1	2022	2	2023
ERCA System of Systems (SoS) Developmental Testing (DT) / Operational Assessment (OA)	3	2023	1	2026
Critical Design Review (CDR)	2	2022	2	2022
Safety Release Decision Point (DP) / Contract Award	3	2023	3	2023
EMD / Qualification / SR / OA Deliveries	3	2022	4	2024
Safety Release for ERCA FUI	4	2024	4	2024
ERCA FUI	1	2025	1	2025
UMR Award	1	2024	1	2024
Full Materiel Release (FMR) Supercharge	1	2022	1	2022
Engineering Manufacturing & Development (EMD)	2	2022	4	2027
Propellant Optimization	2	2022	4	2025
Propellant PDR	3	2023	3	2023
Propellant CDR	4	2024	4	2024
Charge Design	2	2022	3	2025
Charge Design PDR	4	2024	4	2024
Charge Design CDR	3	2025	3	2025
Qualification Testing	1	2026	1	2028
FMR	1	2028	1	2028

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BY1: Next Generation Combat Vehicle Ammunition	-	32.631	33.778	34.028	-	34.028	6.419	-	-	-	0.000	106.856
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

50x228 millimeter (mm) family of ammunition is a critical technology development in response to the Next Generation Combat Vehicle (NGCV) Abbreviated Capability Development Document for weapon qualification, platform integration, and fielding of the Optionally Manned Fighting Vehicle (OMFV) primary weapon system (XM913). This effort includes the development of three capabilities: The XM1202 Target Practice with Trace (TP-T); the XM1203 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T); and the XM1204 High Explosive Airburst with Trace (HEAB-T). The training cartridge will allow the Warfighter to train in a cost effective manner and the tactical cartridges will provide enhanced lethality at increased ranges when engaging personnel threats in the open, defilade, and under the cover of urban structures, Anti-Tank Guided Missiles (ATGM) teams, and current and projected future peer armored materiel threats. This effort is operating under Middle Tier Acquisition authority for rapid prototyping to qualify the three munitions in order to support the NGCV Cross Functional Team (CFT) timeline for First Unit Equipped (FUE). Fiscal Year (FY) 2024 funds support preparation activities for prototype fielding / materiel release on the XM1202 TP-T variant. In addition, FY 2024 funds supports conducting Developmental Test & Evaluation (DT&E), building tests assets for Live Fire Test & Evaluation (LFT&E) and preparing for prototype fielding on the XM1203 APFSDS-T variant. FY 2024 funds also supports building test assets and conducting DT&E on the XM1204 HEAB-T variant.

The total cost of the Next Generation Combat Vehicle Ammunition (NGCV) Middle Tier of Acquisition effort is \$310.9 million from FY2020 to FY2028, including RDT&E (\$128.804M) and Procurement (\$182.182M). NGCV RDT&E and Procurement are fully funded across the Future Years Defense Program (FY2024-2028).

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

	FY 2022	FY 2023	FY 2024
Title: 50x228mm Ammunition Development	32.631	32.545	34.028
Description: Qualify 50mm Target Practice with Trace (TP-T), Armor Piercing Fin-Stabilized Discarding Sabot with Trace (APFSDS-T), and High Explosive Airburst with Trace (HEAB-T) ammunition through the rapid prototyping phase.			
FY 2023 Plans: Funding will support DET2 for the APFSDS-T and HEAB-T cartridges for performance testing for support of CDR. Funding will also support the Developmental Test and Evaluation (DT&E) for the TP-T and APFSDS-T cartridges in support of Milestone C.			
FY 2024 Plans: Fiscal Year (FY) 2024 funds support preparation activities for prototype fielding / materiel release on the XM1202 TP-T variant. In addition, FY 2024 funds supports conducting Developmental Test & Evaluation (DT&E), building tests assets for Live Fire Test &			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Evaluation (LFT&E) and preparing for prototype fielding on the XM1203 APFSDS-T variant. FY 2024 funds also supports building test assets and initiating DT&E on the XM1204 HEAB-T variant. FY 2023 to FY 2024 Increase/Decrease Statement: Programs continue Developmental Test & Evaluation efforts and prepare for Low Rate Initial Production (LRIP).			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638 FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638	-	1.233	-
Accomplishments/Planned Programs Subtotals	32.631	33.778	34.028

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E80011: Next Generation Combat Vehicle Ammunition	-	-	28.000	-	28.000	19.967	42.177	46.019	46.019	0.000	182.182

Remarks

D. Acquisition Strategy
Department of Defense Ordnance and Technology Consortium (DOTC) Other Transaction Agreements (OTAs) will be used for rapid prototyping on the three 50 x 228mm ammunition variants: TP-T, APFSDS-T, and HEAB-T. This will consist of Design Engineering Testing (DET), technical reviews, and Developmental Test and Evaluation (DT&E). For APFSDS-T, one contractor was awarded and will complete the rapid prototyping process. For TP-T two contractors were awarded and will complete rapid prototyping process. For HEAB-T, two contractors were awarded rapid prototyping agreements and a down selection decision will be made in FY 2023; then one HEAB-T contractor will complete the rapid prototyping process. The DOTC agreements will conclude upon achieving Milestone C for each cartridge: TP-T and APFSDS-T in FY 2024; and HEAB-T in FY 2025.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				BY1 / Next Generation Combat Vehicle Ammunition							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
SBIR/STTR Transfer	TBD	Various : Various	-	-		1.233		-		-		-	0.000	1.233	-
Subtotal			-	-		1.233		-		-		-	0.000	1.233	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
50x228mm APFSDS-T Ammunition Development & Test Evaluation Hardware Contract	C/CPFF	General Dynamics Ordnance and Tactical Systems (GDOTS) : Marion, Illinois	2.000	1.929	May 2022	0.412	Mar 2023	1.800	Jan 2024	-		1.800	Continuing	Continuing	Continuing
50x228mm TP-T Ammunition Development & Test Evaluation Hardware Contract	C/CPFF	General Dynamics Ordnance and Tactical Systems : Marion, Illinois	1.000	1.480	Mar 2022	0.092	Mar 2023	-		-		-	Continuing	Continuing	Continuing
50x228mm TP-T Ammunition Development & Test Evaluation Hardware Contract	C/CPFF	Northrop Grumman Innovation Systems (NGIS) : Plymouth, MN	1.000	1.333	Mar 2022	0.240	Mar 2023	-		-		-	Continuing	Continuing	Continuing
50x228mm HEAB-T Ammunition Design Engineering Test Hardware Contract	C/CPFF	General Dynamics Ordnance and Tactical Systems : Marion, Illinois	5.989	5.989	Jan 2022	11.388	Mar 2023	9.750	Jan 2024	-		9.750	Continuing	Continuing	Continuing
50x228mm HEAB-T Ammunition Design Engineering Test Hardware Contract	C/CPFF	Northrop Grumman Innovation Systems (NGIS) : Plymouth, MN	5.989	5.976	Jan 2022	11.389	Mar 2023	9.750	Jan 2024	-		9.750	Continuing	Continuing	Continuing
50X228 HEAB-T Warhead Fabrication Optimization	Option/CPFF	Combat Capabilities Development Command - Chemical Biological Center (CCDC-	-	1.751		-		4.250	Jan 2024	-		4.250	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				BY1 / Next Generation Combat Vehicle Ammunition								
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
		CBC) : Rock Island, II														
Subtotal			15.978	18.458		23.521		25.550		-		25.550	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
50x228mm Ammo Engineering Support	MIPR	Development Command - Armaments Center (DEVCOM - AC) : Picatinny Arsenal, NJ	2.498	3.369	Dec 2021	2.840	Dec 2022	3.190	Nov 2023	-		3.190	Continuing	Continuing	Continuing	
Subtotal			2.498	3.369		2.840		3.190		-		3.190	Continuing	Continuing	N/A	
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
50x228mm Design Engineering Testing	MIPR	Aberdeen Proving Ground (APG) : Aberdeen, MD	3.700	5.258	Dec 2021	2.000	Dec 2022	-		-		-	Continuing	Continuing	Continuing	
50x228mm Design Engineering Testing	MIPR	Yuma Proving Ground (YPG) : Yuma, AZ	-	2.337	Feb 2022	1.184	Feb 2023	-		-		-	Continuing	Continuing	Continuing	
50x228mm Developmental Test and Evaluation (DT&E)	MIPR	Aberdeen Proving Ground (APG) : Aberdeen, MD	-	3.209	Aug 2022	3.000	Apr 2023	5.288	Nov 2023	-		5.288	Continuing	Continuing	Continuing	
Subtotal			3.700	10.804		6.184		5.288		-		5.288	Continuing	Continuing	N/A	

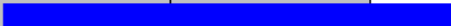












UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023					
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition					
	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	22.176	32.631		33.778		34.028		-		34.028	Continuing	Continuing	N/A

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	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				
50mm TP-T Rapid Prototyping																																
	<i>50mm TP-T Rapid Prototyping</i>																															
50mm TP-T Design Engineering Test (DET) Build																																
	<i>50mm TP-T DET Build</i>																															
50mm TP-T Design Engineering Test (DET)																																
	<i>50mm TP-T DET</i>																															
50mm TP-T Critical Design Review (CDR)																																
	<i>50mm TP-T CDR</i>																															
50mm TP-T Development Test & Evaluation (DT&E) Build																																
	<i>50mm TP-T DT&E Build</i>																															
50mm TP-T Development Test & Evaluation (DT&E)																																
									<i>50mm TP-T DT&E</i>																							
50mm TP-T Milestone C																																
																	<i>50mm TP-T MS-C</i>															
50mm TP-T Prototype Fielding																																
																	<i>50mm TP-T Prototype Fielding</i>															
50mm APFSDS-T Rapid Prototyping																																
	<i>50mm APFSDS-T Rapid Prototyping</i>																															
50mm APFSDS-T Design Engineering Test 1 (DET 1) Build																																
	<i>50mm APFSDS-T DET Build</i>																															
50mm APFSDS-T Design Engineering Testing 1 (DET 1)																																
	<i>50mm APFSDS-T DET 1</i>																															
50mm APFSDS-T Design Engineering Test 2 (DET 2) Build																																
									<i>50mm APFSDS-T DET 2 Build</i>																							
50mm APFSDS-T Design Engineering Testing 2 (DET 2)																																
																	<i>50mm APFSDS-T DET 2</i>															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) BY1 / Next Generation Combat Vehicle Ammunition

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				
	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	
50mm APFSDS-T Critical Design Review (CDR)							▲ 2		50mm APFSDS-T CDR																				
50mm APFSDS-T Development Test & Evaluation (DT&E) Build									■																				
50mm APFSDS-T Development Test & Evaluation (DT&E)													■																
50mm APFSDS-T Milestone C													▲ 5																
50mm APFSDS-T Prototype Fielding													■																
50mm HEAB-T Rapid Prototyping									■																				
50mm HEAB-T Design Engineering Testing 1 (DET 1) Build									■																				
50mm HEAB-T Design Engineering Testing 1 (DET 1)													■																
50mm HEAB-T Design Engineering Testing 2 (DET 2) Build																	■												
50mm HEAB-T Design Engineering Testing 2 (DET 2)																					■								
50mm HEAB-T Critical Design Review (CDR)																									▲ 3				
50mm HEAB-T Development Test & Evaluation (DT&E) Build																	■												
50mm HEAB-T Development Test & Evaluation (DT&E)																													

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) BY1 / <i>Next Generation Combat Vehicle Ammunition</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
50mm HEAB-T Milestone C													6															
50mm HEAB-T Prototype Fielding													50mm HEAB-T MS-C				50mm HEAB-T Prototype Fielding											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) BY1 / <i>Next Generation Combat Vehicle Ammunition</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
50mm TP-T Rapid Prototyping Award	1	2021	1	2021
50mm TP-T Rapid Prototyping	1	2021	2	2024
50mm TP-T Design Engineering Test (DET) Build	3	2021	1	2022
50mm TP-T Design Engineering Test (DET)	1	2022	2	2022
50mm TP-T Critical Design Review (CDR)	2	2022	2	2022
50mm TP-T Development Test & Evaluation (DT&E) Build	2	2022	1	2023
50mm TP-T Development Test & Evaluation (DT&E)	2	2023	3	2023
50mm TP-T Milestone C	2	2024	2	2024
50mm TP-T Prototype Fielding	2	2024	4	2025
50mm APFSDS-T Rapid Prototyping Award	2	2021	2	2021
50mm APFSDS-T Rapid Prototyping	2	2021	3	2024
50mm APFSDS-T Design Engineering Test 1 (DET 1) Build	3	2021	2	2022
50mm APFSDS-T Design Engineering Testing 1 (DET 1)	3	2022	4	2022
50mm APFSDS-T Design Engineering Test 2 (DET 2) Build	4	2022	2	2023
50mm APFSDS-T Design Engineering Testing 2 (DET 2)	2	2023	3	2023
50mm APFSDS-T Critical Design Review (CDR)	3	2023	3	2023
50mm APFSDS-T Development Test & Evaluation (DT&E) Build	3	2023	1	2024
50mm APFSDS-T Development Test & Evaluation (DT&E)	1	2024	3	2024
50mm APFSDS-T Milestone C	3	2024	3	2024
50mm APFSDS-T Prototype Fielding	3	2024	1	2026
50mm HEAB-T Rapid Prototyping Award	4	2020	4	2020
50mm HEAB-T Rapid Prototyping	4	2020	3	2025

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) BY1 / <i>Next Generation Combat Vehicle Ammunition</i>
--	--	--

Events	Start		End	
	Quarter	Year	Quarter	Year
50mm HEAB-T Design Engineering Testing 1 (DET 1) Build	4	2021	2	2022
50mm HEAB-T Design Engineering Testing 1 (DET 1)	3	2022	3	2022
50mm HEAB-T Design Engineering Testing 2 (DET 2) Build	3	2022	2	2023
50mm HEAB-T Design Engineering Testing 2 (DET 2)	2	2023	3	2023
50mm HEAB-T Critical Design Review (CDR)	4	2023	4	2023
50mm HEAB-T Development Test & Evaluation (DT&E) Build	1	2024	4	2024
50mm HEAB-T Development Test & Evaluation (DT&E)	4	2024	2	2025
50mm HEAB-T Milestone C	4	2025	4	2025
50mm HEAB-T Prototype Fielding	4	2025	1	2027

Note

- Notes:
- Target Practice with Trace (TP-T)
 - Armor-Piercing Fin-Stabilized Discarding Sabot with Trace (APFSDS-T)
 - High Explosive Airburst with trace (HEAB-T)

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) CE3 / Precision Munition (Sniper)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
CE3: Precision Munition (Sniper)	-	8.936	5.182	-	-	-	-	-	-	-	0.000	14.118
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Precision Munition (Sniper) project is a critical technology development in response to the Precision Munition Capabilities Development Documents (CDD) for the ammunition required to support the Precision Sniper Rifle (PSR) / sniper weapons systems. The objective is to transfer the latest lethality technology into the suite of ammunition used by snipers. The Precision Munition improvement is split into three capability areas: Anti-Materiel (AM), Improved Performance Round (IPR), and Subsonic. The AM and IPR capabilities will enhance lethal effects at greater distances. The Subsonic capability will increase soldier survivability at close range by providing a low-sound signature munition that is undetectable to the enemy. There is no Fiscal Year 2024 budget request.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Develop and Improve Ammunition for Sniper Weapons Systems.</p> <p>Description: Develop, demonstrate, and qualify new sniper ammunition to defeat hard targets for the Precision Sniper Rifle (PSR) and other sniper weapons systems. Integrate latest lethality technology into the current suite of sniper ammunition for the Precision Sniper Rifle (PSR) and other sniper weapons systems. Integrate latest lethality technology into the current subsonic ammunition for the Precision Sniper Rifle (PSR) and other sniper weapons systems.</p> <p>FY 2023 Plans: Continue development of the Anti-Materiel (AM) munitions; manufacture and evaluate prototype AM concepts. Continue evaluating and maturing industry and/or Government Subsonic Munitions and IPR prototype solutions.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There is no FY 2024 budget request.</p>	8.936	4.993	-
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.189	-
Accomplishments/Planned Programs Subtotals	8.936	5.182	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) CE3 / <i>Precision Muniton (Sniper)</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy The Precision Muniton (Sniper) utilizes Other Transaction Authority (OTA) to acquire and/or mature US Government design. Contracts to acquire parts and raw materials are competitive. The Government is prototyping and testing projectiles.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				CE3 / Precision Munition (Sniper)								
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
SBIR/STTR	TBD	Various : Various	-	-		0.189		-		-		-	0.000	0.189	-	
Subtotal			-	-		0.189		-		-		-	0.000	0.189	N/A	
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Anti-Materiel Development Contracts	C/FFP	Vista : Anoka, Minnesota	-	3.146	Sep 2022	2.193	Feb 2023	-		-		-	Continuing	Continuing	Continuing	
Improved Performance Round Development Contracts	C/FFP	Vista : Anoka, Minnesota	-	0.500	Sep 2022	-		-		-		-	Continuing	Continuing	Continuing	
Subsonic Development Contracts	C/FFP	Vista : Anoka, Minnesota	-	0.500	Sep 2022	-		-		-		-	Continuing	Continuing	Continuing	
Subtotal			-	4.146		2.193		-		-		-	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Anti-Materiel Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	-	1.600	Apr 2022	2.100	Oct 2022	-		-		-	Continuing	Continuing	Continuing	
Improved Performance Round Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	-	0.500	Apr 2022	0.100	Oct 2022	-		-		-	Continuing	Continuing	Continuing	

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) CE3 / Precision Munition (Sniper)
--	---	---

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subsonic Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	-	0.500	Apr 2022	0.100	Oct 2022	-		-		-	Continuing	Continuing	Continuing
Subtotal			-	2.600		2.300		-		-		-	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Lethality Testing and Analysis	MIPR	US Army Research Lab (ARL) : Aberdeen, Maryland	-	1.900	Apr 2022	0.500	Oct 2022	-		-		-	Continuing	Continuing	Continuing
Cartridge Case Analysis and Testing	MIPR	Naval Surface Warfare Crane : Crane, Indiana	-	0.290		-		-		-		-	0.000	0.290	-
Subtotal			-	2.190		0.500		-		-		-	Continuing	Continuing	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	8.936	5.182	-	-	-	Continuing	Continuing	N/A

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) CE3 / Precision Munition (Sniper)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Matériel Development Decision	1 MDD																											
Anti-Matériel (AM) Munitions Rapid Development and Fielding																												
Anti-Matériel (AM) Munitions Prototype Build and Test																												
Improved Performance Round (IPR) Design Evaluations																												
Subsonic Engineering Study																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) CE3 / <i>Precision Munition (Sniper)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Matériel Development Decision	2	2022	2	2022
Anti-Matériel (AM) Munitions Rapid Development and Fielding	2	2022	2	2023
Anti-Matériel (AM) Munitions Prototype Build and Test	2	2023	4	2023
Improved Performance Round (IPR) Design Evaluations	2	2022	4	2023
Subsonic Engineering Study	2	2022	4	2023

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
DC9: 30mm MMPA M-SHORAD INC 3	-	-	-	18.936	-	18.936	11.280	7.831	5.118	4.475	0.000	47.640
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

30mm MMPA M-SHORAD INC 3 is a new start within the Weapons and Munitions - Eng Dev program in FY 2024.

A. Mission Description and Budget Item Justification

30mm Multi-Mode Proximity Airburst (MMPA) Maneuver Short Range Air Defense Increment 3 (M-SHORAD INC 3): The 30mm MMPA M-SHORAD INC 3 / Project DC9 funds the development of the XM1223 30x113mm MMPA munition. The objective is to enhance the operational effectiveness of the M-SHORAD Inc 3 platform, and any other Joint Force Fighting Vehicle that is equipped with a 30x113mm weapon system. The programmable fuze modes in the munition include proximity airburst to defeat personnel in the open and small Unmanned Aerial System (UAS) targets, proximity delay to defeat personnel in defilade, gated proximity airburst for cluttered environments, mechanical point detonate to defeat light materiel targets, and self destruct to minimize collateral damage. The XM1223 will allow the M-SHORAD Inc 3 to conduct counter-UAS missions while retaining the ability to quickly transition to ground targets. Fiscal Year (FY) 2024 funding supports XM1223 Engineering Manufacturing and Development (EMD) contract awards, development, Preliminary Design Review (PDR), and building prototypes for Design Engineering Testing (DET).

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

	FY 2022	FY 2023	FY 2024
Title: EMD 30x113mm MMPA Munition	-	-	18.936
Description: Develop, demonstrate, and qualify a new munition for the M-SHORAD and other Joint Force Fighting Vehicles equipped with a XM914 weapon system.			
FY 2024 Plans: Achieve Milestone B (MS-B), contract award up to two contractors, conduct Preliminary Design Review (PDR), and develop prototypes for Design Engineering Tests.			
FY 2023 to FY 2024 Increase/Decrease Statement: Project DC9 is a New Start in FY 2024.			
Accomplishments/Planned Programs Subtotals	-	-	18.936

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

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) DC9 / <i>30mm MMPA M-SHORAD INC 3</i>

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

Remarks

D. Acquisition Strategy

Proposals will be requested from Industry to develop a 30x113mm Multi-Mode Proximity Airburst (MMPA) tactical cartridge that will meet Army Performance Specifications and Maneuver Short Range Air Defense Increment 3 (M-SHORAD Inc 3) Lethality Annex Requirements. The Government will award up to two contracts using either an Other Transaction Agreement (OTA) or a Federal Acquisition Regulation (FAR)-based contract to support development for Design Engineering Tests (DET) and Developmental Test & Evaluation (DT&E) prior to Milestone C in FY 2027. The government will have the option to award contracts for production.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3
--	---	--

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
MMPA EMD Contract 1	C/CPFF	To Be Selected : To Be Determined	-	-		-		8.114	Jan 2024	-		8.114	Continuing	Continuing	Continuing
MMPA EMD Contract 2	C/CPFF	To Be Selected : To Be Determined	-	-		-		8.114	Jan 2024	-		8.114	Continuing	Continuing	Continuing
MMPA Fuze Setter Development	C/CPFF	To Be Selected : To Be Determined	-	-		-		1.000	Feb 2024	-		1.000	0.000	1.000	-
Subtotal			-	-		-		17.228		-		17.228	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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 DEVCOM AC	MIPR	Development Command - Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	-	-		-		1.446	Jan 2024	-		1.446	Continuing	Continuing	Continuing
Subtotal			-	-		-		1.446		-		1.446	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Fuze Setter Testing	MIPR	Aberdeen Test Center (Aberdeen Proving Grounds) : Aberdeen, MD	-	-		-		0.262	Jan 2024	-		0.262	Continuing	Continuing	Continuing
Subtotal			-	-		-		0.262		-		0.262	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3			
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	-	-	18.936	-	18.936	Continuing	Continuing	N/A		

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
MMPA Milestone B (MS-B)									1 ▲ MS-B																			
Contract Awards																	2 ▲ Contract Awards											
Engineering Manufacturing and Development (EMD)																	EMD											
Ammo Design Engineering Testing (DET)																												
Design Down-Select																												
Critical Design Review (CDR)																												
Developmental Test & Evaluation (DT&E)																												
Soldier Touch Point (STP)																												
Milestone C (MS-C)																												
Low Rate Initial Production (LRIP) Contract Award																												
Low Rate Initial Production (LRIP)																												
Live Fire Test & Evaluation (LFT&E)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) DC9 / 30mm MMPA M-SHORAD INC 3

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MMPA Milestone B (MS-B)	2	2024	2	2024
Contract Awards	2	2024	2	2024
Engineering Manufacturing and Development (EMD)	2	2024	4	2027
Ammo Design Engineering Testing (DET)	3	2025	4	2025
Design Down-Select	1	2026	1	2026
Critical Design Review (CDR)	1	2026	1	2026
Developmental Test & Evaluation (DT&E)	4	2026	2	2027
Soldier Touch Point (STP)	1	2027	1	2027
Milestone C (MS-C)	4	2027	4	2027
Low Rate Initial Production (LRIP) Contract Award	1	2028	1	2028
Low Rate Initial Production (LRIP)	1	2028	1	2030
Live Fire Test & Evaluation (LFT&E)	3	2028	1	2029

Note

MMPA - Multi-Mode Proximity Airburst

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EC4: Non-Standard Simulator Munitions	-	2.038	2.182	2.188	-	2.188	0.410	0.412	0.416	0.420	0.000	8.066
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project EC4 Non-Standard Simulator Munitions will standardize various pyrotechnics 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 or material released and are not safe or sustainable for use by Soldiers. This effort will develop and demonstrate various pyrotechnics/simulators to replicate both conventional and asymmetric warfare battlefield effects such as:

- Black smoke signature (burning vehicles, buildings, and equipment);
- Yellow smoke signature (chemical, biological or nuclear effects);
- Mini Blast 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) simulators to replicate the flight of a Rocket Propelled Grenade;
- Macro Pyro to simulate hostile fire, booby trap and IED Simulations indoor and outdoors;
- High Order Blast Effect (HiOBE) used to replicate a Vehicle Borne Improvised Explosive Device (VBIED), building explosions, and other significant explosive events;
- Artillery airburst simulator to replicate indirect fire;
- Antitank Guided Missile and Rocket (AGMR) simulator to replicate surface to air missile or shoulder launched rocket;
- 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 environmental concerns and safety risks associated with realistic scenario-based training. FY 2024 funding will support the development of RPG on a wire, Mini Blast, Tracer, and HiOBE.

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

	FY 2022	FY 2023	FY 2024
Title: Standardize Special Use Ammunition	2.038	2.102	2.188
Description: Standardize non-standard pyrotechnic battlefield effects currently used by CTCs.			
FY 2023 Plans: FY 2023 supports Yellow Smoke, Black Smoke, and Mini Blast preparations to release the TC and FMR package. RPG will conduct qualification testing. The Tracer will be undergoing testing support activities and the HiOBE will continue Engineering and Manufacturing Development (EMD) activities.			
FY 2024 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
FY 2024 will support the completion of RPG and Mini Blast EMD and prepare Milestone C documentation. Tracer fire back and HiOBE EMD will continue.			
FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding required for continued development of the suite of non standard simulator ammunition.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	-	0.080	-
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	2.038	2.182	2.188

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E88404: SIMULATORS, Non-Standard, Special Effects, f/CTCs	-	0.296	0.296	-	0.296	0.297	0.296	0.297	0.297	0.000	1.779
• E48417: SIMULATOR, TARGET KILL, XM175	-	-	0.652	-	0.652	0.520	0.464	0.424	0.204	0.000	2.264
• E91114: SIMULATOR, LAUNCHING, ANTITANK GUIDED MISSILE AND	-	-	0.476	-	0.476	0.425	0.405	0.391	0.305	0.000	2.002
• E91116: SIMULATOR, PROJECTILE AIR BURST, EXPLOSIVE: XM181	-	-	0.473	-	0.473	0.164	0.405	0.391	0.305	0.000	1.738
• E50311: SIMULATOR, CHEM ATTACK, YELLOW SMOKE	-	-	0.056	-	0.056	0.048	0.045	0.043	0.029	0.000	0.221
• E48413: SIMULATOR, INDOOR WEAPONS FIRE	-	-	0.000	-	0.000	0.133	0.128	0.124	0.100	Continuing	Continuing
• E48416: SIMULATOR, HIGH ORDER BLAST EFFECT (HIOBE)	-	-	0.000	-	0.000	-	0.389	0.392	0.382	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	
			Base	OCO	Total					Complete	Total Cost
• E48415: SIMULATOR, INCOMING ROCKET PROPELLED GRENADE (RPG)	-	-	0.000	-	0.000	-	0.177	0.201	0.159	Continuing	Continuing
• E48418: SIMULATOR, SMALL ARMS TRACER FIRE-BACK	-	-	0.000	-	0.000	-	-	0.200	0.203	Continuing	Continuing
• E48414: SIMULATOR, OUTDOOR WEAPONS FIRE	-	-	0.000	-	0.000	-	-	0.157	0.133	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Acquisition strategy is to incrementally develop and field a family of special use ammunition. Initial special use ammunition to be fielded will be the Artillery Airburst/Antitank Guided Missile and Rocket (AGMR), and Black Smoke simulators followed by additional training simulators as required in the Future Army System of Integrated Targets (FASIT) Capability Production Document (CPD).

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EC4 / Non-Standard Simulator Munitions								
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.080		-		-		-	0.000	0.080	-	
Subtotal			-	-		0.080		-		-		-	0.000	0.080	N/A	
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
HiOBE Developmental Hardware	C/CPFF	TBD : TBD	-	-		-		0.602	May 2024	-		0.602	0.000	0.602	-	
Tracer Developmental Hardware	C/FFP	SAIC : Reston, VA	-	0.408	May 2022	0.591	Dec 2022	-		-		-	0.000	0.999	-	
RPG on a Wire Hardware	C/FFP	SAIC : Reston, VA	-	0.437	Nov 2022	-		-		-		-	0.000	0.437	-	
Subtotal			-	0.845		0.591		0.602		-		0.602	0.000	2.038	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	DEVCOM Armaments Center : Picatinny Arsenal, NJ	4.195	1.093	Apr 2022	1.154	Jan 2023	1.229	Oct 2023	-		1.229	Continuing	Continuing	-	
Human Systems Integration (HSI) Support	MIPR	Combat Capabilities Development Command Analysis Center (DAC) : Aberdeen Proving Grounds, MD	-	0.098	May 2022	-		-		-		-	0.000	0.098	-	
Mini Blast Test Hardware Shipping	C/FFP	Shipping : Picatinny Arsenal, NJ	-	0.002	Sep 2022	-		-		-		-	0.000	0.002	-	
Subtotal			4.195	1.193		1.154		1.229		-		1.229	Continuing	Continuing	N/A	

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
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 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Artillery Airburst and Antitank Guided Missile and Rocket	[Redacted]				[Redacted]																							
Artillery and AGMR Type Classification									[Redacted]				[Redacted]															
Artillery and AGMR Production									[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]			
Black Smoke																												
Black Smoke Technology Development and Maturation	[Redacted]				[Redacted]																							
Black Smoke Milestone C									9	[Redacted]																		
Black Smoke Production									[Redacted]				[Redacted]				[Redacted]				[Redacted]							
Yellow Smoke																												
Yellow Smoke Technology Development	[Redacted]				[Redacted]																							
Yellow Smoke Engineering and Manufacturing Development	[Redacted]				[Redacted]																							
Yellow Smoke Milestone C									10	[Redacted]																		
Yellow Smoke Production									[Redacted]				[Redacted]				[Redacted]				[Redacted]							
RPG																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
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 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
RPG Technology Development	[Redacted]																											
	RPG Tech Development																											
RPG Engineering and Manufacturing Development	[Redacted]				[Redacted]																							
					RPG EMD																							
RPG Milestone C									▲ 11 RPG MS-C																			
RPG Production																	[Redacted]				[Redacted]							
																	RPG Production											
Mini Blast																												
Mini Blast Technology Development	[Redacted]																											
	Mini Blast Tech Development																											
Mini Blast Engineering and Manufacturing Development	[Redacted]				[Redacted]																							
					Mini Blast EMD																							
Mini Blast Milestone C									▲ 12 Mini Blast MS-C																			
Mini Blast Production																	[Redacted]				[Redacted]							
																	Mini Blast Production											
Tracer																												
Tracer Technology Development	[Redacted]																											
	Tracer Tech Development																											
Tracer Engineering and Manufacturing Development					[Redacted]				[Redacted]																			
					Tracer EMD																							
Tracer Milestone C													▲ 13 Tracer MS-C															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
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 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Tracer Production																												
High Order Blast Effect (HiOBE)																												
HiOBE Technology Development																												
HiOBE Engineering and Manufacturing Development																												
HiOBE Milestone C																												
HiOBE Production																												
Micro Pyro																												
Micro Pyro Technology Development																												
Micro Pyro Engineering and Manufacturing Development																												
Micro Pyro Milestone C																												
Micro Pyro Production																												
Macro Pyro																												
Macro Pyro Technology Development																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
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 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Macro Pyro Engineering and Manufacturing Development																												
Macro Pyro Milestone C																												
Macro Pyro Production																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
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

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Artillery Airburst and Antitank Guided Missile and Rocket (AGMR)	4	2022	4	2022
Artillery and AGMR Type Classification	4	2021	4	2022
Artillery and AGMR Production	1	2024	4	2028
Black Smoke	4	2022	4	2022
Black Smoke Technology Development and Maturation	4	2019	2	2023
Black Smoke Milestone C	4	2023	4	2023
Black Smoke Production	1	2024	4	2028
Yellow Smoke	4	2022	4	2022
Yellow Smoke Technology Development	2	2020	2	2022
Yellow Smoke Engineering and Manufacturing Development	2	2022	2	2023
Yellow Smoke Milestone C	4	2023	4	2023
Yellow Smoke Production	1	2024	4	2028
RPG	4	2022	4	2022
RPG Technology Development	2	2020	2	2022
RPG Engineering and Manufacturing Development	2	2022	2	2024
RPG Milestone C	4	2024	4	2024
RPG Production	1	2026	4	2028
Mini Blast	4	2022	4	2022
Mini Blast Technology Development	2	2020	2	2022
Mini Blast Engineering and Manufacturing Development	2	2022	2	2024
Mini Blast Milestone C	4	2024	4	2024
Mini Blast Production	2	2026	4	2028

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

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
--	---	--

Events	Start		End	
	Quarter	Year	Quarter	Year
Tracer	4	2022	4	2022
Tracer Technology Development	2	2022	1	2023
Tracer Engineering and Manufacturing Development	2	2023	1	2025
Tracer Milestone C	2	2025	2	2025
Tracer Production	1	2027	1	2032
High Order Blast Effect (HiOBE)	4	2022	4	2022
HiOBE Technology Development	2	2022	1	2023
HiOBE Engineering and Manufacturing Development	2	2023	3	2025
HiOBE Milestone C	4	2025	4	2025
HiOBE Production	1	2026	4	2030
Micro Pyro	1	2026	1	2026
Micro Pyro Technology Development	3	2025	1	2026
Micro Pyro Engineering and Manufacturing Development	1	2026	4	2027
Micro Pyro Milestone C	4	2027	4	2027
Micro Pyro Production	1	2028	4	2034
Macro Pyro	4	2022	4	2022
Macro Pyro Technology Development	3	2026	1	2027
Macro Pyro Engineering and Manufacturing Development	1	2027	4	2028
Macro Pyro Milestone C	4	2028	4	2028
Macro Pyro Production	1	2029	1	2034

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EL9: Ammunitions Logistics Prototyping	-	0.671	1.022	1.052	-	1.052	1.072	1.074	1.085	1.097	0.000	7.073
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project EL9 Ammunitions Logistics Prototyping 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. Fiscal Year (FY) 2024 funding will be focused on integrating commercial off the shelf and/or relatively mature technologies into ammunition resupply enablers required by the Long Range Precision Fire (LRPF) Cross Functional Team (CFT). They will be focused on ensuring that a low risk resupply process solution exists to support the success of the Extended Range Canon Artillery (ERCA).

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

	FY 2022	FY 2023	FY 2024
Title: Munitions Survivability and Logistics Enablers	0.671	0.985	1.052
Description: This program will develop ammunition logistics systems that improve munitions survivability and logistics			
FY 2023 Plans: Assess the JPEO A&A portfolio for transition opportunities for munitions health monitoring prototypes that have been validated to a Technical Readiness Level (TRL) 6 maturity. Mature and/or develop previously investigated prototype systems focused on tactical Cannon Artillery operations that will improve the operational availability of ammunition and associated components at the tactical edge. The systems will ensure artillery ammunition is prepared, protected, and monitored prior to use to improve the security and survivability of the ammunition supply chain.			
FY 2024 Plans: Integrate mature commercial off the shelf environmental sensors to provide a capability for munitions health monitoring during tactical transportation and distribution in formations forward of the Ammunition Support Areas (ASA). Leverage recently completed JPEO A&A RDT&E system engineering studies/analysis to inform operational temperature exposure thresholds as critical selection criteria of commercial technologies. Integration efforts will primarily focus on tactical Cannon Artillery operations to improve operational availability of ammunition and associated components at the tactical edge. The surveillance system to be			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>transitioned to PM SPHS will ensure artillery ammunition is prepared, protected, and monitored prior to use to improve the security and survivability of the ammunition supply chain within the formation.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There was a slight increase in program funding due to increased contractor support to Integrate mature commercial off the shelf environmental sensors to provide a capability for munitions health monitoring during tactical transportation and distribution in formations forward of the Ammunition Support Areas (ASA).</p>			
<p>Title: SBIR/STTR Transfer</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.037	-
Accomplishments/Planned Programs Subtotals	0.671	1.022	1.052

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

Remarks

D. Acquisition Strategy
The acquisition strategy is to work directly with the relevant PMs (Combat Ammunition Systems (CAS) & Self Propelled Howitzer (SPH)) to support the development of a resupply system/process to meet the needs of the Extended Range Canon Artillery (ERCA) system. The resultant capabilities will then be transitioned to the appropriate PM for further maturation and/or fielding.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

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
--	---	---

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.037		-		-		-	0.000	0.037	-
Subtotal			-	-		0.037		-		-		-	0.000	0.037	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor	C/TBD	TBD : TBD	-	0.475	Jan 2022	0.785	Jan 2023	-		-		-	0.000	1.260	-
Contractor	TBD	CR Tactical : Pittsburgh, PA	-	-		-		0.447	Jan 2024	-		0.447	0.000	0.447	-
Contractor	TBD	Cybernet : Ann Arbor, MI	-	-		-		0.400	Nov 2023	-		0.400	0.000	0.400	-
Subtotal			-	0.475		0.785		0.847		-		0.847	0.000	2.107	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEVCOM, Armaments Center	MIPR	Picatinny Arsenal : NJ	1.521	0.196	Oct 2021	0.200	Mar 2023	0.205	Mar 2023	-		0.205	0.000	2.122	-
Subtotal			1.521	0.196		0.200		0.205		-		0.205	0.000	2.122	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		1.521	0.671	1.022	1.052	1.052	0.000	4.266	N/A

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
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 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	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				
System Development - Tactical Munitions Monitoring																																
System Development - Instrumented Ammo Stowage (CAT)																																
System Development - Instrumenting Distribution Enablers...																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
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

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
System Development - Munitions Health Monitoring System (RRAPDS)	2	2018	4	2021
System Development - Next Generation Temperature/Humidity Sensor	3	2020	4	2021
System Development - Tactical Munitions Monitoring	1	2022	4	2023
System Development - Instrumented Ammo Stowage (CAT)	1	2024	1	2026
System Development - Instrumenting Distribution Enablers (PLS)	2	2024	2	2026

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP2 / Shoulder-Launched Munitions			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EP2: <i>Shoulder-Launched Munitions</i>	-	2.021	0.600	2.551	-	2.551	-	-	-	-	0.000	5.172
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This development effort will combine the capabilities of the existing M141 Bunker Defeat Munition (BDM) and the 84MM Anti-Tank 4 Confined Space - Reduced Sensitivity (AT4CS-RS), eliminating the mission risk associated with having to choose between two different capability SLMs, reducing the logistics and training burdens associated with multiple systems. The Individual Assault Munition (IAM) system consists of the tactical XM919 IAM munition and training devices including the XM922 sub-caliber trainer, sub-caliber tracer ammunition, Field Handling Trainer (FHT), Field Tactical Trainer (FTT) and Soldier Virtual Trainers (SVT). The tactical XM919 IAM supports the close fight in urban and complex terrain, allowing Soldiers a fire-from-enclosure (FFE) capability to defeat field expedient structures such as earth and timber bunkers, reinforced concrete, adobe and triple brick walls with behind the wall lethality effects as well as defeating light armored vehicles. The IAM training devices provide training capability to increase the Soldier's proficiency and integration of the XM919 tactical system into combat operations. The XM919 IAM enables the Army's Soldier Lethality Modernization Line of Effort (LOE) by reducing Soldier load, while providing tactical innovation capable of extending overmatch against peer/near-peer adversaries in a joint, multi-domain, high-intensity conflict.

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

	FY 2022	FY 2023	FY 2024
Title: XM919 Individual Assault Munition (IAM)	2.021	0.600	2.551
Description: The XM919 IAM program entered the Engineering and Manufacturing Development (EMD) Phase (MDD approved in 3QFY2020) and obtained Shoulder Launched Munition test hardware (production-ready systems) in support of market research (to include live test firings) to inform the CDD-Update. The market research data will also support MS C decision. A competitive 5-year Indefinite Delivery/Indefinite Quantity (ID/IQ) production contract will be awarded following MS C. The XM919 IAM program will conduct a User Excursion (Soldier Touch Point in lieu of Operational Test) prior to Type Classification and Full Materiel Release.			
FY 2023 Plans: FY 2023 funding supports Milestone C package completion, Procurement Package execution, Draft RFP release, Industry Day #3, RFP release, and developing the Life-Cycle Sustainment Plans for the XM919 and training devices.			
FY 2024 Plans: FY 2024 funding is required to procure test hardware and conduct the User Excursion test event (Soldier Touch Point in lieu of an Operational Test (OT)).			
FY 2023 to FY 2024 Increase/Decrease Statement:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP2 / Shoulder-Launched Munitions

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
FY 2024 funding increase needed to procure test hardware and execute User Excursion.			
Accomplishments/Planned Programs Subtotals	2.021	0.600	2.551

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E36412: SHOULDER LAUNCHED INDIVIDUAL ASSAULT MUNITION(IAM)	-	-	12.051	-	12.051	-	-	-	-	0.000	12.051

Remarks

D. Acquisition Strategy
 The Individual Assault Munition (IAM) acquisition strategy is a two phased approach that consists of an accelerated system assessment phase (EMD) and a production phase. The system assessment phase surveyed industry and assessed available mature tactical and training hardware solutions through live test firings and soldier touch points. The data collected from the system assessment phase is informing the IAM CDD-Update and a Milestone C production decision. Upon a successful production decision, the second phase will commence through a competitive 5-year ID/IQ production contract award. The tactical XM919 IAM will replace the AT4CS-RS and BDM shoulder launched munition systems. The IAM training devices including the XM922 sub-caliber trainer, XM922 sub-caliber tracer ammunition, Field Handling Trainer (FHT), Field Tactical Trainer (FTT) and Soldier Virtual Trainers (SVT) will replace AT4CS-RS and BDM training devices.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP2 / Shoulder-Launched Munitions
--	---	---

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Individual Assault Munition (IAM) Test Hardware	C/FFP	TBD : TBD	-	-		-		0.822	Apr 2024	-		0.822	0.000	0.822	-
Subtotal			-	-		-		0.822		-		0.822	0.000	0.822	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tactical Engineering Support - Gov	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	4.129	1.961	Jul 2022	0.600	Dec 2022	0.866	Oct 2023	-		0.866	0.000	7.556	-
Trainer Engineering Support - Gov	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	0.054	-		-		-		-		-	0.000	0.054	-
Engineering Support - Gov	MIPR	TACOM : Warren, MI	0.036	0.060	Jan 2023	-		-		-		-	0.000	0.096	-
Subtotal			4.219	2.021		0.600		0.866		-		0.866	0.000	7.706	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
User Excursion (in lieu of OT)	MIPR	Various : Various	-	-		-		0.863	Jul 2024	-		0.863	0.000	0.863	-
Subtotal			-	-		-		0.863		-		0.863	0.000	0.863	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			4.219	2.021	0.600	2.551	-	2.551	0.000	9.391	N/A

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP2 / Shoulder-Launched Munitions

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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 Contract	[Redacted]																											
	EMD Contract																											
Live Test Firing	[Redacted]																											
	Live Test Firing																											
User Jury (Soldier Touch Point)	[Redacted]																											
	User Jury																											
Capability Development Document Update					[Redacted]																							
					CDD-U																							
Environmental Testing					[Redacted]																							
					Environmental Testing																							
Industry Day									1																			
									Industry Day																			
Milestone C													2															
													MS-C															
Contract Award													3															
													Award															
Low Rate Initial Production													[Redacted]															
													LRIP															
User Excursion (in lieu of OT)													[Redacted]															
													User Excursion (in lieu of OT)															
First Article Test/Production Verification Testing													[Redacted]															
													FAT/FVT															
Full Materiel Release																	4											
																	FMR											
Full Rate Production																					[Redacted]							
																					FRP							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
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>Shoulder-Launched Munitions</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Individual Assault Munition (IAM) Milestone B	3	2020	3	2020
Engineering and Manufacturing Development Contract	4	2020	3	2022
Live Test Firing	4	2021	3	2022
User Jury (Soldier Touch Point)	4	2021	1	2022
Capability Development Document Update	4	2022	1	2024
Environmental Testing	4	2022	1	2023
Industry Day	1	2024	1	2024
Milestone C	3	2024	3	2024
Contract Award	3	2024	3	2024
Low Rate Initial Production	3	2024	4	2026
User Excursion (in lieu of OT)	3	2024	3	2025
First Article Test/Production Verification Testing	4	2024	3	2025
Full Materiel Release	4	2026	4	2026
Full Rate Production	1	2027	1	2033

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EP3: <i>Reduced Range Ammunition - Small Caliber</i>	-	8.639	5.214	-	-	-	-	-	-	-	0.000	13.853
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The small caliber Reduced Range Ammunition (RRA) Project is a critical technology development in response to the 7.62 millimeter (mm) and .50 caliber Capabilities Development Documents (CDD). The overall objective of RRA is to provide training ammunition suitable for use on military installations with Surface Danger Zone (SDZ) restrictions. The relatively long maximum range of the 7.62mm and .50 caliber service ammunition poses challenges on training ranges in range restricted areas. RRA will mitigate a training gap on installations by providing a materiel solution that meets training needs while shortening and condensing the SDZ. This will allow soldiers to train with 7.62mm and .50 caliber weapons on restricted ranges. The RRA cartridge design will be compatible with all Army 7.62mm and .50 caliber weapons, but specifically optimized to work in the M240 and M2 Machine Guns. There is no Fiscal Year (FY) 2024 request.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Engineering and Manufacturing Development 7.62mm</p> <p>Description: EMD Activities for 7.62mm Reduced Range Ammunition.</p> <p>FY 2023 Plans: Complete EMD, complete PQT, and continue performing activities to prepare for transition of manufacturing to the LCAAP in preparation for Low-Rate Initial Production (LRIP).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There is no FY 2024 request as the technology transitions to production in 2024.</p>	5.014	1.793	-
<p>Title: Engineering and Manufacturing Development .50 Caliber</p> <p>Description: EMD Activities for .50 Cal Reduced Range Ammunition.</p> <p>FY 2023 Plans: Complete EMD effort, complete safety release testing, complete PQT, and conduct a LUA.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There is no FY 2024 request as the technology transitions to production in 2024.</p>	3.625	3.231	-
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p>	-	0.190	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<i>FY 2023 Plans:</i> Funding transferred in accordance with Title 15 USC §638			
<i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	8.639	5.214	-

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• F57515: CTG, 7.62 REDUCED RANGE AMMUNITION	-	-	1.000	-	1.000	-	-	-	-	0.000	1.000
• E07307: 50 Caliber Reduce Range Ammunition (RRA)	-	-	1.000	-	1.000	-	29.907	22.789	40.344	0.000	94.040

Remarks
Procurement of Ammunition, Army F57515 and E07307: These funding lines supports the procurement of Reduced Range Ammunition.

D. Acquisition Strategy
After 7.62mm Milestone (MS) B in FY 2019, the Government awarded competitive Engineering and Manufacturing Development (EMD) contracts. Upon completing Production Qualification Testing (PQT), the government down-selected to a single contractor to complete EMD. The .50 Caliber program followed a similar strategy. The Government awarded multiple competitive contracts for the .50 Caliber EMD.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EP3 / Reduced Range Ammunition - Small Caliber							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
SBIR/STTR	TBD	Various : Various	-	-		0.190		-		-		-	0.000	0.190	-
Subtotal			-	-		0.190		-		-		-	0.000	0.190	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Development Contract 7.62mm	Option/CPFF	Nammo Tally : Mesa, Arizona	3.013	0.800	Nov 2022	-		-		-		-	Continuing	Continuing	Continuing
Development Contract .50 Cal	Option/CPFF	General Dynamics : St. Petersburg, Florida	1.862	0.600	Dec 2022	0.615	Jan 2023	-		-		-	Continuing	Continuing	Continuing
Subtotal			4.875	1.400		0.615		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
DEVCOM-AC Engineering Support 7.62mm	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	4.313	0.950	Oct 2021	1.093	Oct 2022	-		-		-	Continuing	Continuing	Continuing
DEVCOM-AC Engineering Support .50 Cal	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	2.690	1.075	Oct 2021	1.100	Oct 2022	-		-		-	Continuing	Continuing	Continuing
US Army Research Lab (ARL) 7.62mm	MIPR	US Army Research Lab (ARL) : Aberdeen, Maryland	0.470	0.614	Mar 2022	0.400	Oct 2022	-		-		-	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EP3 / Reduced Range Ammunition - Small Caliber							
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
US Army Research Lab (ARL) .50 Cal	MIPR	US Army Research Lab (ARL) : Aberdeen, Maryland	0.400	0.500	Mar 2022	0.301	Oct 2022	-		-		-	Continuing	Continuing	Continuing
Subtotal			7.873	3.139		2.894		-		-		-	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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 Tests 7.62mm LUA	MIPR	U.S. Army Test Center : Aberdeen, Maryland	0.400	0.600	Jun 2022	-		-		-		-	0.000	1.000	-
Production Qualification Testing (PQT 7.62mm)	MIPR	Aberdeen Test Center : Aberdeen, Maryland	-	1.450	May 2022	0.300	Nov 2022	-		-		-	Continuing	Continuing	Continuing
User Evaluation .50 Cal	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	0.640	0.600	Sep 2022	0.415	Dec 2022	-		-		-	Continuing	Continuing	Continuing
Production Qualification Testing (PQT) .50 Cal	MIPR	Aberdeen Test Center : Aberdeen, Maryland	-	1.450	May 2022	0.800	Nov 2022	-		-		-	Continuing	Continuing	Continuing
Subtotal			1.040	4.100		1.515		-		-		-	Continuing	Continuing	N/A
Project Cost Totals			13.788	8.639		5.214		-		-		-	Continuing	Continuing	N/A
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
7.62mm Engineering and Manufacturing Development (EMD)	[Blue Bar]				[Blue Bar]																							
	7.62mm EMD																											
7.62mm Pre-Production Qualification Test (PPQT)	[Blue Bar]																											
	7.62mm PPQT																											
7.62mm Developmental Test and Evaluation (DT&E)	[Blue Bar]																											
	7.62mm DT&E																											
7.62mm Soldier Touch Point (STP)	[Blue Bar]																											
	7.62mm STP																											
7.62mm Critical Design Review (CDR)			[Blue Triangle]																									
			2																									
			7.62mm CDR																									
7.62mm Production Qualification Test (PQT)					[Blue Bar]																							
					7.62mm PQT																							
7.62mm Milestone C (MS C)							[Blue Triangle]																					
							3																					
							7.62mm MS C																					
.50 Caliber Engineering and Manufacturing Development (EMD)	[Blue Bar]				[Blue Bar]																							
	.50 Cal EMD																											
.50 Caliber Critical Design Review (CDR)	[Blue Triangle]																											
	1																											
	.50 Cal CDR																											
.50 Caliber Safety Release Testing					[Blue Bar]																							
					.50 Cal Safety Release Testing																							
.50 Caliber Production Qualification Test (PQT)					[Blue Bar]																							
					.50 Cal PQT																							
.50 Caliber Limited User Evaluation (LUA)							[Blue Bar]																					
							.50 Cal LUA																					
.50 Caliber Milestone C (MS C)								[Blue Triangle]																				
								4																				
								.50 Cal MS C																				

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Multiple Concept Design Evaluations	1	2017	4	2018
7.62mm Materiel Development Decision (MDD)	4	2017	4	2017
7.62mm Design Verification Test (DVT)	2	2018	3	2018
7.62mm Milestone B (MS B)	1	2019	1	2019
7.62mm Transitions from BA04 EL7 to BA05 EP3	1	2019	1	2019
7.62mm Engineering and Manufacturing Development (EMD)	1	2019	2	2023
7.62mm Preliminary Design Review (PDR)	2	2020	2	2020
7.62mm Pre-Production Qualification Test (PPQT)	3	2021	1	2022
7.62mm Developmental Test and Evaluation (DT&E)	3	2021	1	2022
7.62mm Soldier Touch Point (STP)	4	2021	1	2022
7.62mm Critical Design Review (CDR)	2	2022	2	2022
7.62mm Production Qualification Test (PQT)	4	2022	2	2023
7.62mm Milestone C (MS C)	2	2023	2	2023
.50 Caliber Project Starts on BA04 EL7	1	2018	1	2018
.50 Caliber Multiple Concept Design Evaluations	1	2018	1	2020
.50 Caliber Materiel Development Decision (MDD)	2	2018	2	2018
.50 Caliber Design Verification Test (DVT)	2	2019	3	2019
.50 Caliber Milestone B (MS B)	1	2020	1	2020
.50 Caliber Transitions from BA04 EL7 to BA05 EP3	1	2020	1	2020
.50 Caliber Engineering and Manufacturing Development (EMD)	1	2020	4	2023
.50 Caliber Preliminary Design Review (PDR)	2	2021	2	2021
.50 Caliber Pre-Production Qualification Test (PPQT)	1	2021	3	2021

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP3 / Reduced Range Ammunition - Small Caliber
--	---	--

Events	Start		End	
	Quarter	Year	Quarter	Year
.50 Caliber Critical Design Review (CDR)	1	2022	1	2022
.50 Caliber Safety Release Testing	4	2022	3	2023
.50 Caliber Production Qualification Test (PQT)	4	2022	3	2023
.50 Caliber Limited User Evaluation (LUA)	2	2023	2	2023
.50 Caliber Milestone C (MS C)	4	2023	4	2023

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EP4: One-Way Luminescence for Small Caliber Ammo	-	4.717	7.565	3.093	-	3.093	-	-	-	-	0.000	15.375
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The One Way Luminescence (OWL) project is a critical technology development in response to the 7.62 millimeter (mm) and 5.56mm Families of Ammunition Capabilities Development Documents (CDD) and .50 Caliber Munitions CDD. Current small caliber ammunition tracer rounds are a pyrotechnic tracer mix which allows enemy forces to see the trace round and track its trajectory back to the shooter. The OWL projects objective is to develop and field a full tracer round, replace the current pyrotechnic cartridges with trace cartridges that are only visible to the shooter and soldiers in close proximity, increasing soldier survivability, and increasing lethality by incorporating Enhanced Performance Round (EPR) technology into the new tracer ammunition. 7.62mm and 5.56mm are the immediate focus; later followed by .50 Caliber cartridges and Next Generation Squad Weapons (NGSW) ammunition. Fiscal Year (FY) 2024 funding supports continuing Engineering and Manufacturing Development (EMD) and performing preparation activities for Materiel Release (MR) for the 7.62mm variant. FY 2024 funding will also support EMD efforts, performing Production Qualification Testing (PQT), and a Soldier Touch Point (STP) / User Evaluation for the 5.56mm variant.

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

	FY 2022	FY 2023	FY 2024
<p>Title: EMD 7.62mm</p> <p>Description: EMD efforts for the 7.62mm variant.</p> <p>FY 2023 Plans: Complete EMD efforts, perform PQT, and perform activities to prepare for transition of manufacturing to the LCAAP in preparation for LRIP.</p> <p>FY 2024 Plans: Continue EMD and perform preparation activities for Materiel Release (MR).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Reduction due to less planned activities in 2024 as the program transitions from development to production.</p>	-	1.326	0.614
<p>Title: EMD 5.56mm</p> <p>Description: EMD efforts for the 5.56mm variants.</p> <p>FY 2023 Plans: Continue EMD efforts, conduct PQT, and conduct a STP / User Evaluation.</p> <p>FY 2024 Plans:</p>	4.602	5.963	2.479

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP4 / <i>One-Way Luminescence for Small Caliber Ammo</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Complete EMD efforts, perform PQT, and execute a STP / User Evaluation. FY 2023 to FY 2024 Increase/Decrease Statement: Reduction due to less planned activities in 2024 as the program nears completion of development before transitioning to production.				
Title: Prototype and Concept Evaluation for Other Small Caliber Ammunition Description: Supports concept development/evaluation of applying OWL tracer solutions to other small caliber ammunition; including .50 Caliber ammunition.		0.115	-	-
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638 FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638		-	0.276	-
Accomplishments/Planned Programs Subtotals		4.717	7.565	3.093
C. Other Program Funding Summary (\$ in Millions) N/A Remarks				
D. Acquisition Strategy The OWL concept will be developed through Government and Industry prototyping efforts. Technology Readiness Assessments (TRAs) were conducted in FY 2017 and FY 2018 to evaluate the industry and Government concepts in order to proceed with the 7.62mm EMD. The 5.56mm, NGSW, and .50 Caliber cartridges follows the 7.62mm schedule with EMD starting in FY 2021 for the 5.56mm variant after conducting a TRA and achieving Technology Readiness Level 6 (TRL6) in FY 2020. The new tracer cartridges will replace legacy tracers in each of the various small caliber configurations.				

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo
--	---	---

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR/STTR	TBD	Various : Various	-	-		0.276		-		-		-	0.000	0.276	-
Subtotal			-	-		0.276		-		-		-	0.000	0.276	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Lake City Army Ammunition Plant Tech Integration PH II (5.56mm)	Option/ FFP	OLIN Winchester Corporation : Independence, MO	-	1.061	Jun 2022	-		-		-		-	0.000	1.061	-
OWL Manufacturing Tooling Development (5.56mm)	Option/ CPFF	JAK Tool Engineering Solutions : Cranbury, NJ	1.571	-		0.195	Jan 2023	-		-		-	0.000	1.766	-
EMD PH I Contract (5.56mm)	Option/ CPFF	OLIN Winchester Corporation : Independence, MO	3.000	1.885	Feb 2022	2.820	Feb 2023	-		-		-	0.000	7.705	-
Subtotal			4.571	2.946		3.015		-		-		-	0.000	10.532	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DEVCOM-AC Engineering Support 7.62mm	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	4.834	-		0.500	Oct 2022	0.400	Oct 2023	-		0.400	0.000	5.734	-
DEVCOM-AC Engineering Support 5.56mm	MIPR	Development Command Armaments Center (DEVCOM-AC) :	1.546	0.831	Oct 2021	1.800	Oct 2022	1.730	Oct 2023	-		1.730	0.000	5.907	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

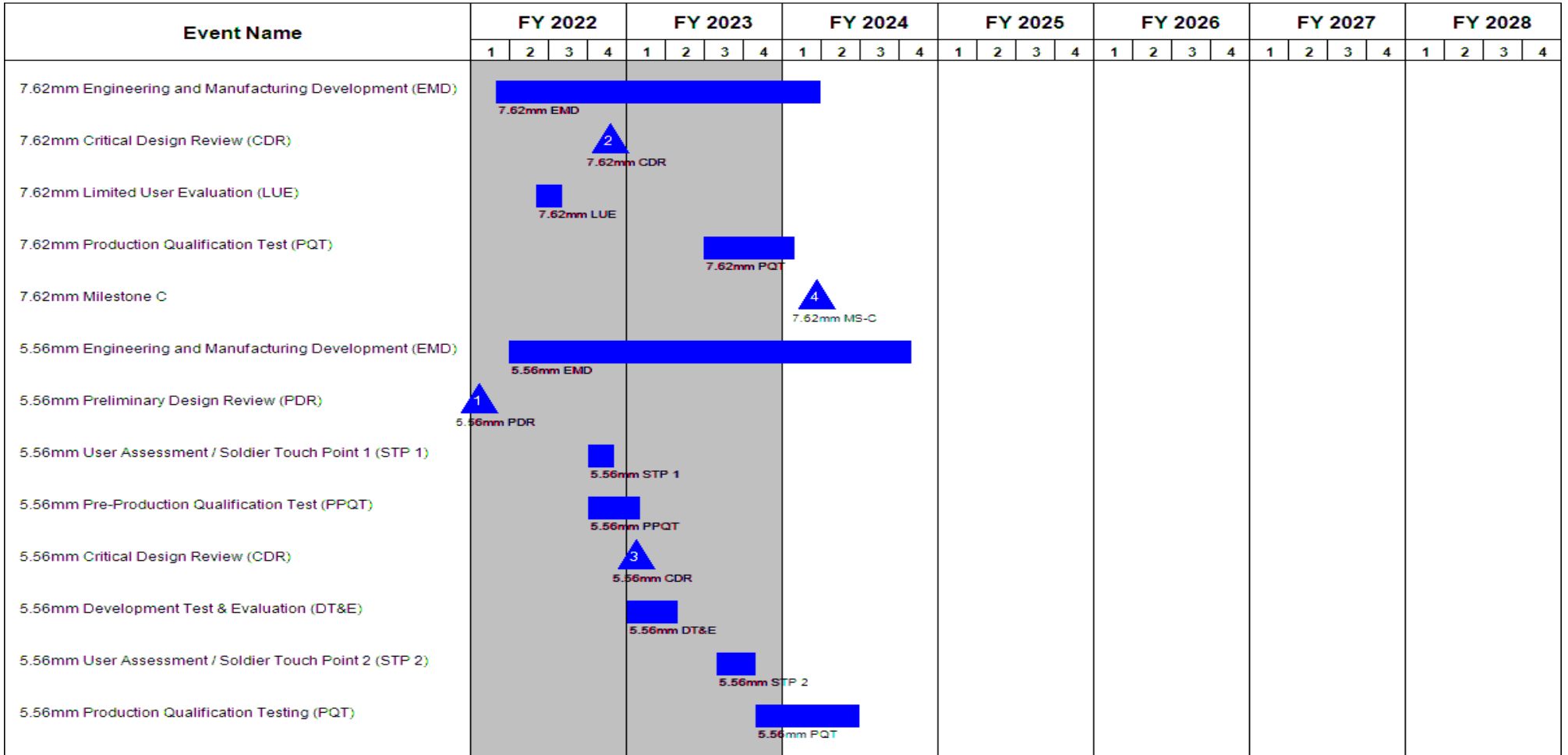
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo
--	---	---

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Picatinny Arsenal, New Jersey													
OWL Solutions/Evaluation	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	0.095	0.115	Oct 2021	-		-		-		-	0.000	0.210	-
Subtotal			6.475	0.946		2.300		2.130		-		2.130	0.000	11.851	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Production Qualification Testing (PQT) 7.62mm	MIPR	Aberdeen Test Center : Aberdeen, MD	-	-		0.826	Mar 2023	0.214	Oct 2023	-		0.214	0.000	1.040	-
Radar Testing (5.56mm)	MIPR	US Army Research Lab : Aberdeen, MD	0.075	-		0.195	Oct 2022	-		-		-	0.000	0.270	-
Pre-Production Qualification Testing (PPQT) 5.56mm	MIPR	Aberdeen Test Center : Aberdeen, MD	-	0.627	May 2022	-		-		-		-	0.000	0.627	-
Soldier Touch Point 1 (5.56mm)	MIPR	US Army Maneuver Battle Labs : Fort Benning, GA	-	0.198	Jun 2022	-		-		-		-	0.000	0.198	-
Soldier Touch Point 2 (5.56mm)	MIPR	US Army Maneuver Battle Labs : Fort Benning, GA	-	-		0.150	Dec 2022	-		-		-	0.000	0.150	-
Soldier Touch Point 3 (5.56mm)	MIPR	US Army Maneuver Battle Labs : Fort Benning, GA	-	-		-		0.200	Oct 2023	-		0.200	0.000	0.200	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo



UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
5.56mm User Assessment / Soldier Touch Point 3 (STP 3)									■																			
5.56mm Milestone C (MS-C)									▲																			
Prototype & Concept Evaluation for Other Small Caliber Ammo									■																			
									5.56mm STP 3																			
									5																			
									5.56mm MS-C																			
									Concept Design Evaluation																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EP4 / <i>One-Way Luminescence for Small Caliber Ammo</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
7.62mm Materiel Development Decision (MDD)	4	2016	4	2016
7.62mm Multiple Concept Design Evaluation	1	2015	1	2019
7.62mm Milestone B (MS-B)	1	2019	1	2019
7.62mm Transitions from BA04 EB8 to BA05 EP4	1	2019	1	2019
7.62mm Engineering and Manufacturing Development (EMD)	1	2019	1	2024
7.62mm Design Verification Test	2	2019	3	2019
7.62mm Preliminary Design Review (PDR)	3	2019	3	2019
7.62mm Development Test & Evaluation (DT&E)	3	2020	3	2021
7.62mm User Assessment	4	2020	1	2021
7.62mm Pre-Production Qualification Test (PPQT)	4	2020	2	2021
7.62mm Critical Design Review (CDR)	4	2022	4	2022
7.62mm Limited User Evaluation (LUE)	2	2022	3	2022
7.62mm Production Qualification Test (PQT)	3	2023	1	2024
7.62mm Milestone C	1	2024	1	2024
5.56mm Materiel Development Decision (MDD)	3	2018	3	2018
5.56mm Project Starts on BA04 EB8	3	2018	3	2018
5.56mm Multiple Concept Design Evaluation	4	2018	4	2020
5.56mm Cavity Design Test	1	2020	3	2020
5.55 Technology Readiness Level 6 (TRL 6)	4	2020	4	2020
5.56mm Milestone B (MS-B)	1	2021	1	2021
5.56mm Transitions from BA04 EB8 to BA05 EP4	1	2021	1	2021
5.56mm Engineering and Manufacturing Development (EMD)	1	2021	4	2024

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP4 / One-Way Luminescence for Small Caliber Ammo
--	---	---

Events	Start		End	
	Quarter	Year	Quarter	Year
5.56mm Design Verification Test	3	2021	4	2021
5.56mm Preliminary Design Review (PDR)	1	2022	1	2022
5.56mm User Assessment / Soldier Touch Point 1 (STP 1)	4	2022	4	2022
5.56mm Pre-Production Qualification Test (PPQT)	4	2022	1	2023
5.56mm Critical Design Review (CDR)	1	2023	1	2023
5.56mm Development Test & Evaluation (DT&E)	1	2023	2	2023
5.56mm User Assessment / Soldier Touch Point 2 (STP 2)	3	2023	4	2023
5.56mm Production Qualification Testing (PQT)	4	2023	2	2024
5.56mm User Assessment / Soldier Touch Point 3 (STP 3)	2	2024	2	2024
5.56mm Milestone C (MS-C)	4	2024	4	2024
Prototype & Concept Evaluation for Other Small Caliber Ammo	1	2020	4	2022

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EP7: Aviation Airborne Expendable Countermeasures	-	7.251	6.363	3.194	-	3.194	3.208	0.932	-	-	0.000	20.948
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project EB9 / Aviation Airborne Expendable Countermeasures within PE 0603639A / Tank and Medium Caliber Ammunitions transitions to Engineering and Manufacturing Development (EMD) under Project EP7 / Aviation Airborne Expendable Countermeasures within PE 0604802A / Weapons and Munitions - Eng Dev.

A. Mission Description and Budget Item Justification

Aviation Airborne Expendable Countermeasures (AAECM) will support Integrated System Design (ISD), System Capability (SC) and Manufacturing Process Demonstrations (MPD) on expendable countermeasure flares and decoys to include the XM215 Infrared (IR) countermeasure Flare and XM20 Radio Frequency (RF) expendables. These expendable countermeasures systems are an essential part of survivability equipment for Army aircraft. Army Research Development Technology & Evaluation (RDT&E) efforts are coordinated with Program Executive Office (PEO) Aviation to address the AAECM capability, a critical enabler for enduring aircraft and the Future Vertical Lift (FVL) - Aircraft Survivability Equipment (ASE) Cross Functional Team (CFT) within Army's Top modernization priorities.

These advanced decoys will address deficiencies in Army aircraft protection and the safety of its aircrews against advanced Man-Portable Air Defense Systems (MANPADS) and Surface-to-Air Missiles (SAM) systems. The project will also support ISD, SC and MPD on new expendable countermeasure munitions that will protect Army aircraft from advanced and proliferated current guided missile threats. Activities include modeling and simulation, flight testing, qualification testing, 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 and aircraft expendables (to include RF expendables). FY 2024 will support initial pattern development (XM215) and enhanced pattern development (XM20) for aircraft platforms.

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

	FY 2022	FY 2023	FY 2024
Title: Improvements to Countermeasure Flares	7.251	6.131	3.194
Description: This program will develop XM215 Infrared and XM20 Radio Frequency expendable countermeasure flare/decoy to defeat specific threats of interest and qualify them for Army use. This program will also develop countermeasure patterns/cocktails solutions to integrate these new expendables into Army's rotary wing and fixed wing aircraft.			
FY 2023 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>FY 2023 Funding will support XM20 modeling and simulation, procurement of test assets and flight testing and for XM215 test assets and Energetic Material Qualification Board (EMQB)</p> <p>FY 2024 Plans: FY 2024 funding will support modeling and simulation, additional procurement of test assets and flight testing for the XM20. Funding will also support XM215 test assets, Production Qualification Testing (PQT), Final Hazards Classification (FHC) and Insensitive Munitions (IM) testing</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: There was a decrease in program funding due to completion of XM215 environmental testing, developmental testing, and flight testing in addition to XM20 flight testing.</p>			
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.232	-
Accomplishments/Planned Programs Subtotals	7.251	6.363	3.194

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• EB9: Aviation Airborne Expendable Countermeasures	5.327	-	0.000	-	0.000	-	-	-	-	0.000	5.327
• E49101: Flare, Aircraft Countermeasure, RF (Passive)	-	1.036	8.083	-	8.083	14.978	-	-	-	0.000	24.097
• E49102: Flare, Aircraft Countermeasure, XM215	-	-	0.000	-	0.000	0.860	0.538	8.279	9.574	0.000	19.251

Remarks
Project EB9 Aviation Airborne Expendable Countermeasures within PE 0604802A / Weapons and Munitions - Eng Dev supports the XM20 Radio Frequency (RF) AAECM capability development.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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>Aviation Airborne Expendable Countermeasures</i>

D. Acquisition Strategy

During the Materiel Solution Analysis (MSA), Milestone A phase, prototypes developed by the US Government (USG) and contractors were tested and evaluated against initial CDD requirements. The contractor developed XM20 design and the USG developed XM215 design were selected to enter into Engineering and Manufacturing Development (EMD), Milestone B phase, to finalize the design based on lessons learned from the MSA flight test and CDD requirements. Test assets are being procure from industry via Other Transaction Authority (OTA) contract mechanism in FY 2021 to support EMD. Final XM20 and XM215 and configurations to support production after MS C will be procured via Full and Open FAR based contracts.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EP7 / Aviation Airborne Expendable Countermeasures							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.232	Jan 2023	-		-		-	0.000	0.232	-
Subtotal			-	-		0.232		-		-		-	0.000	0.232	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
XM215 Development Government	MIPR	CCDC Armaments Center : Picatinny Arsenal, NJ	1.906	0.823	Mar 2022	-		-		-		-	0.000	2.729	-
XM215 Development Contractor 1	C/CPFF	Kilgore : Toone, TN	1.378	0.363	Apr 2022	-		-		-		-	0.000	1.741	-
Subtotal			3.284	1.186		-		-		-		-	0.000	4.470	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
XM215 Engineering Support	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	2.758	2.368	Mar 2022	0.582	Jan 2023	-		-		-	0.000	5.708	-
XM20 Engineering Support	MIPR	DEVCOM Armaments Center : Picatinny Arsenal, NJ	-	-		0.500	May 2023	1.168	Oct 2023	-		1.168	Continuing	Continuing	-
Subtotal			2.758	2.368		1.082		1.168		-		1.168	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
XM215 Flight Testing	MIPR	Various : Various	-	3.152	Apr 2022	-		-		-		-	0.000	3.152	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
XM215 Infrared Development																												
XM215 Engineering and Manufacturing Development																												
XM215 Prototype Build																												
XM215 Flight Test 2																												
XM215 Developmental and Operational Testing																												
XM215 Milestone C																												
XM215 Low Rate Initial Production																												
XM215 Pattern Development																												
XM215 UH60/AH64 Seeker Bowl																												
XM215 CH47/FW Seeker Bowl																												
XM215 Full Rate Production																												
XM20 Radio Frequency Development																												
XM20 Development Contract																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
XM20 Critical Design Review	▲ 1 XM20 CDR																											
XM20 Developmental Testing	■ XM20 DT																											
XM20 Test Hardware					■ XM20 Test Hardware																							
XM20 UH60 Developmental Testing							■ XM20 UH60 DTE																					
XM20 UH60/AH64CH47 Radar Cross Section Testing									■ XM20 UH60/AH64CH47 RCS																			
XM20 Milestone C											▲ 3 XM20 MS-C																	
XM20 Low Rate Initial Production													■ XM20 LRIP															
XM20 AH64/CH47 Developmental Testing													■ XM20 AH64/CH47 DTE															
XM20 UH60 Initial Operational Test and Evaluation													■ XM20 UH60 IOTE															
XM20 AH64/CH47 Initial Operational Test and Evaluation																	■ XM20 AH64/CH47 IOTE											
XM20 Production																					■ XM20 FRP							

Note
Project EB9 / Aviation Airborne Expendable Countermeasures within PE 0603639A / Tank and Medium Caliber Ammunitions transitions to Engineering and Manufacturing Development (EMD) under Project EP7 / Aviation Airborne Expendable Countermeasures within PE 0604802A / Weapons and Munitions - Eng Dev.

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
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>Aviation Airborne Expendable Countermeasures</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
XM215 Infrared Development	1	2019	4	2031
XM215 Milestone A	1	2019	1	2019
XM215 Prototyping	1	2019	2	2020
XM215 Down Select	3	2019	3	2019
XM215 Testing Efforts (Stability/Heat/Cold)	3	2019	2	2020
XM215 Flight Testing	1	2020	2	2020
XM215 Milestone B	2	2020	2	2020
XM215 Engineering and Manufacturing Development	2	2020	4	2023
XM215 Design Verification Test	2	2021	3	2021
XM215 Flight Test	2	2021	2	2021
XM215 Prototype Build	3	2021	4	2023
XM215 Flight Test 2	1	2023	1	2023
XM215 Developmental and Operational Testing	2	2023	4	2023
XM215 Milestone C	1	2024	1	2024
XM215 Low Rate Initial Production	1	2024	4	2026
XM215 Pattern Development	1	2024	1	2026
XM215 UH60/AH64 Seeker Bowl	3	2024	1	2025
XM215 CH47/FW Seeker Bowl	3	2025	1	2026
XM215 Full Rate Production	1	2027	4	2031
XM20 Radio Frequency Development	1	2019	4	2031
XM20 Milestone A	1	2019	1	2019
XM20 Prototype Development	1	2019	4	2019

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EP7 / Aviation Airborne Expendable Countermeasures
--	---	--

Events	Start		End	
	Quarter	Year	Quarter	Year
XM20 Demonstrations	2	2019	3	2019
XM20 Technology Maturation and Risk Reduction	1	2020	2	2021
XM20 Flight Testing	2	2020	2	2020
XM20 Modeling and Simulation	3	2020	4	2020
XM20 Data Analysis	1	2021	2	2021
XM20 Milestone B	2	2021	2	2021
XM20 Development Contract	2	2021	4	2022
XM20 Critical Design Review	2	2022	2	2022
XM20 Developmental Testing	2	2022	4	2022
XM20 Test Hardware	1	2023	2	2026
XM20 UH60 Developmental Testing	4	2023	1	2024
XM20 UH60/AH64CH47 Radar Cross Section Testing	3	2024	4	2024
XM20 Milestone C	1	2025	1	2025
XM20 Low Rate Initial Production	2	2025	4	2026
XM20 AH64/CH47 Developmental Testing	3	2025	4	2025
XM20 UH60 Initial Operational Test and Evaluation	3	2025	4	2025
XM20 AH64/CH47 Initial Operational Test and Evaluation	2	2026	4	2026
XM20 Production	1	2027	4	2031

Note

Project EB9 Aviation Airborne Expendable Countermeasures within Program Element (PE) 0603639A Tank and Medium Caliber Ammunitions transitions to EMD under Project EP7 Aviation Airborne Expendable Countermeasures within PE 0604802A Weapons and Munitions - Eng Dev.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EU4 / 40mm HV Improved High Explosive Dual Purpose			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EU4: 40mm HV Improved High Explosive Dual Purpose	-	4.618	2.073	-	-	-	-	-	-	-	0.000	6.691
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

40 millimeter (mm) High Velocity (HV) High Explosive Dual Purpose - Air burst (HEDP-AB) is a new capability identified as a Warfighter counter-defilade requirement in the 40mm High Velocity Improved High Explosive Dual Purpose Cartridge Capability Development Document (CDD) and will provide the Mk19 Mod 3 Grenade Machine Gun (GMG) an airburst capable cartridge with the ability of achieving required lethal effects against enemy targets in the open and in defilade while maintaining the capability to defeat unarmored and lightly armored vehicles. XM1176 HEDP-AB cartridges are manufactured by de-fuzing legacy M430A1 cartridges and installing a new airburst capable fuze onto the M430A1 warhead. In FY 2024 there is no funding request.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Engineering and Manufacturing Development (EMD)</p> <p>Description: Award EMD contracts to support Design Engineering Testing (DET) and Developmental Test & Evaluation (DT&E) of the 40mm dual purpose airburst capability.</p> <p>FY 2023 Plans: FY 2023 funding supports activities in preparation for Live Fire Testing & Evaluation (LFT&E) that is required due to the program being on Director Operational Test and Evaluation (DOT&E) Oversight.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: In FY 2024 there is no funding request.</p>	4.618	1.997	-
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.076	-
Accomplishments/Planned Programs Subtotals	4.618	2.073	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 / 40mm HV Improved High Explosive Dual Purpose

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	Total Cost
			Base	OCO	Total					Complete	
• E70505: CTG, 40MM, HV HEDP-AB, XM1176	13.844	15.853	0.000	-	0.000	2.898	3.147	13.106	13.214	0.000	62.062

Remarks

D. Acquisition Strategy

The 40mm HV HEDP-AB cartridge was developed through a competitive EMD program. Milestone B approval was followed by a competitive award for the EMD phase which included DET 1 and DET 2 and an option for DT&E. One contractor was awarded to develop an air burst capable fuze to be retrofitted onto the currently fielded, High Explosive Dual Purpose cartridges and develop a Programming Unit. Test results will support the documentation for Milestone C. After Milestone C is achieved, a contract option will be awarded for Low Rate Initial Production 1 (LRIP-1) followed by options for Low Rate Initial Production 2 (LRIP-2) and Production Year 1 (PY1).

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EU4 I 40mm HV Improved High Explosive Dual Purpose								
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
SBIR/STTR	TBD	Various : Various	-	-		0.076		-		-		-	0.000	0.076	-	
Subtotal			-	-		0.076		-		-		-	0.000	0.076	N/A	
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Project Manager Maneuver Ammunition Systems (PM MAS)	MIPR	Picatinny Arsenal : NJ	0.542	-		0.500	Nov 2022	-		-		-	0.000	1.042	-	
Subtotal			0.542	-		0.500		-		-		-	0.000	1.042	N/A	
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
DEVCOM-AC Engineering Support	MIPR	Development Command - Armaments Center (DEVCOM-AC) : Picatinny Arsenal, NJ	7.414	2.084	Oct 2021	0.924	Nov 2022	-		-		-	0.000	10.422	-	
Subtotal			7.414	2.084		0.924		-		-		-	0.000	10.422	N/A	
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	
Limited User Evaluation (LUE)	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.448	-		-		-		-		-	0.000	0.448	-	

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 / 40mm HV Improved High Explosive Dual Purpose

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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)	[Redacted]																											
Developmental Test & Evaluation (DT&E) Build	[Redacted]																											
Developmental Test & Evaluation (DT&E)	[Redacted]																											
Limited User Evaluation (LUE)																												
Milestone C																												
Low Rate Initial Production (LRIP) Contract Award																												
Low Rate Initial Production (LRIP)																												
Live Fire Test & Evaluation (LFT&E)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU4 I 40mm HV Improved High Explosive Dual Purpose

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B Support Documents	2	2017	4	2018
Milestone B	4	2018	4	2018
Engineering and Manufacturing Development (EMD)	4	2018	4	2022
Test Readiness Review for Design Engineering Test 1	4	2019	4	2019
Design Engineering Test (DET) 1	1	2020	2	2020
Test Readiness Review for Design Engineering Test 2	2	2020	2	2020
Design Engineering Test (DET) 2	3	2020	4	2020
Developmental Test & Evaluation (DT&E) Contract Award	4	2020	4	2020
Critical Design Review (CDR)	1	2021	1	2021
Developmental Test & Evaluation (DT&E) Build	3	2021	2	2022
Developmental Test & Evaluation (DT&E)	2	2022	4	2023
Limited User Evaluation (LUE)	4	2023	4	2023
Milestone C	4	2023	4	2023
Low Rate Initial Production (LRIP) Contract Award	4	2023	4	2023
Low Rate Initial Production (LRIP)	4	2023	3	2024
Live Fire Test & Evaluation (LFT&E)	2	2024	4	2024

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EU6: 155mm HE Rocket Assist Project Extended Range	-	26.646	14.382	28.772	-	28.772	15.600	2.650	-	-	0.000	88.050
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The 155 millimeter (mm) High Explosive (HE) Rocket Assisted Projectile, Extended Range Project supports projectile development efforts to achieve ranges of 40km in current 39 caliber artillery weapon systems and longer ranges in future 58 caliber Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH) to achieve the Army's requirement of extended range lethality. The Project is executing an evolutionary approach to meet the objectives of extended range and precision. The XM1113 will replace the obsolete M549A1 in 39 caliber weapon systems and increase range from 30km to 40km. The XM1210 will be optimized for 58 caliber guns and allow commanders to provide accurate cannon artillery fires at ranges of 70km and greater with ERCA. The XM1113 will not have a FY 2024 budget request. FY 2024 funding will continue to support XM1210 development and qualification activities for the Full Materiel Release (FMR) configuration.

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

	FY 2022	FY 2023	FY 2024
Title: 155mm High Explosive Rocket Assisted Projectile (RAP) Extended Range	26.646	13.857	28.772
Description: The XM1113 will replace the obsolete M549A1 in 39 caliber weapon systems and increase range from 30km to 40km. The XM1210, previously known as XM1113 Extended Range (XM1113ER), will be optimized for 58 caliber guns and allow commanders to provide accurate cannon artillery fires at ranges of 70km and greater with ERCA.			
FY 2023 Plans: FY 2023 funding will support the completion of XM1113 qualification activities, engineering efforts to evaluate test data to ensure that the projectile is safe, suitable and operationally effective as well as the gathering of all statutory and regulatory requirements in support of a Milestone C and Full Materiel Release (FMR). FY 2023 funding will also support XM1210 qualification and firing tables testing required for Safety Release for First Unit Issued (FUI) to support the ERCA Operational Assessment, Urgent Materiel Release (UMR) qualification activities and the initiation of FMR development activities.			
FY 2024 Plans: FY 2024 Funding will support XM1210 development and qualification activities for the Full Materiel Release (FMR) configuration.			
FY 2023 to FY 2024 Increase/Decrease Statement: Increase in funding in FY 2024 due to increased contract and test costs associated with XM1210 development and qualification efforts.			
Title: SBIR/STTR Transfer	-	0.525	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army	Date: March 2023
--	-------------------------

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
--	---	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Description: Funding transferred in accordance with Title 15 USC §638			
FY 2023 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	26.646	14.382	28.772

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• E66501: PROJ, 155mm ARTY HE RAP, XM1113	77.264	68.588	26.688	-	26.688	23.317	43.625	49.376	48.632	0.000	337.490
• E27121: PROJ, 155MM ARTY HE RAP, M1210	-	17.489	2.932	-	2.932	18.219	22.195	31.854	31.854	0.000	124.543

Remarks
Procurement of Ammunition, Army (PAA) budget line items, Standard Study Numbers E66501 and E27121, have been established to resource the procurement of XM1113 and XM1210 quantities.

D. Acquisition Strategy
The 155mm HE Rocket Assisted Projectile, Extended Range Project is utilizing a competitively awarded DoD Ordnance Technology Consortium (DOTC) Other Transaction Agreement (OTA) initiative with GD-OTS to support the accelerated timeline to develop and qualify the XM1113 for 39 caliber weapon systems as well as 58 caliber Extended Range Cannon Artillery (ERCA) compatibility efforts. A separate competitively awarded DOTC OTA initiative with GD-OTS is being utilized for XM1210 development and qualification activities required to achieve ranges of 70km and greater with ERCA. The Project will complete XM1210 qualification efforts in support of Safety Release for First Unit Issued (FUI) for the ERCA Increased Range Operational Assessment and Urgent Materiel Release (UMR). XM1113 is planning a MS-C/TS-STD in 1QFY24. A Federal Acquisition Regulation (FAR) based production contract award will occur in support of UMR, Low Rate Initial Production (LRIP) and Full Rate Production (FRP).

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
--	---	---

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	Office of the Project Manager (PM) Combat Ammunition Systems (CAS) : Picatinny Arsenal, NJ	1.620	0.100	Oct 2021	0.100	Oct 2022	0.100	Oct 2023	-		0.100	0.000	1.920	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.525		-		-		-	0.000	0.525	-
Subtotal			1.620	0.100		0.625		0.100		-		0.100	0.000	2.445	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DOTC - XM1113 and XM1210 Engineering and Manufacturing Development (EMD)	MIPR	DoD Ordnance Technology Consortium Other Transaction Agreement (DOTC OTA) : Various	73.682	19.078	Nov 2021	6.929	Nov 2022	24.422	Nov 2023	-		24.422	0.000	124.111	-
Subtotal			73.682	19.078		6.929		24.422		-		24.422	0.000	124.111	N/A

Remarks
Increase in EMD contract costs to support additional activities required to achieve Full Materiel Release.

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	Combat Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	8.525	2.818	Nov 2021	2.253	Nov 2022	2.500	Nov 2023	-		2.500	0.000	16.096	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
--	---	---

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fire Control Software Integration	MIPR	U.S. Army Communications-Electronics Command (CECOM) : Aberdeen, MD	0.200	-		-		0.250	Nov 2023	-		0.250	0.000	0.450	-
Subtotal			8.725	2.818		2.253		2.750		-		2.750	0.000	16.546	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Qualification Testing	MIPR	Army Test and Evaluation Command (ATEC) Yuma Proving Ground (YPG) : Yuma, AZ	6.840	4.650	Mar 2022	4.575	Jan 2023	1.500	Jan 2024	-		1.500	0.000	17.565	-
Subtotal			6.840	4.650		4.575		1.500		-		1.500	0.000	17.565	N/A

Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract			
Project Cost Totals			90.867	26.646		14.382		28.772		-		28.772	0.000	160.667	N/A

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
XM1113 High Explosive Rocket Assisted Projectile																												
XM1113 HE RAP Engineering Manufacturing Development (EMD)																												
39 cal Qualification																												
39 cal Safety and Robustness Improvement Activities																												
39 cal Critical Design Review (CDR)	▲ 1 39 cal CDR																											
39 cal Urgent Materiel Release (UMR) Deliveries																												
39 cal Milestone C													▲ 3 39 cal MS-C															
39 cal Full Materiel Release (FMR)																	▲ 7 39 cal FMR											
XM1210 HE RAP Extended Range																												
XM1210 HE RAP Extended Range EMD																												
XM1210 Development Testing	■ XM1210 Development Testing																											
XM1210 UMR Critical Design Review (CDR)	▲ 2 XM1210 UMR CDR																											
XM1210 UMR and Safety Testing																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				
	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	
XM1210 Milestone B									5 ▲ XM1210 MS-B																				
XM1210 FMR Development									[Redacted]																				
XM1210 SR Deliveries for Soldier Touch Points/OA									[Redacted]																				
Safety Release for ERCA First Unit Issued (FUI)									4 ▲ SR for ERCA FUI																				
ERCA System of Systems (SoS) Developmental Testing (DT) OA									[Redacted]																				
XM1210 UMR									6 ▲ XM1210 UMR																				
XM1210 FMR CDR													8 ▲ XM1210 FMR CDR																
XM1210 FMR Qualification Testing													[Redacted]																
XM1210 Milestone C																	10 ▲ XM1210 MS-C												
XM1210 Initial Operational Test & Evaluation (IOT&E)																	9 ▲ XM1210 IOT&E												
XM1210 FMR																					11 ▲ XM1210 FMR								
Precision Guidance Aft (PG-Aft) - Congressional Add																													
PG-Aft Development & Testing	[Redacted]																												

Note
XM1113 will achieve lethality against targets at 40km range. XM1210 (formerly XM1113ER) will achieve 70+km out of ERCA.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EU6 / <i>155mm HE Rocket Assist Project Extended Range</i>
<p>FY 2021 Congressional Add supported the completion of Precision Guidance Aft development and test efforts to include fuze survivability when fired out of the ERCA weapon system. Knowledge points achieved are being utilized to support long range precision fuze development efforts executed on Program Element 0604802A, Project S36, Precision Guidance Kit, and provide a risk mitigation alternative to support the ERCA System of Systems Operational Assessment.</p> <p>Safety Release (SR) Operational Assessment (OA) Developmental Testing (DT)</p>		

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
XM1113 High Explosive Rocket Assisted Projectile	1	2019	4	2023
XM1113 HE RAP Engineering Manufacturing Development (EMD)	4	2019	1	2023
39 cal Qualification	4	2019	1	2023
39 cal Safety and Robustness Improvement Activities	1	2021	3	2022
39 cal Critical Design Review (CDR)	2	2022	2	2022
39 cal Urgent Materiel Release (UMR) Deliveries	3	2023	1	2024
39 cal Milestone C	1	2024	1	2024
39 cal Full Materiel Release (FMR)	2	2025	2	2025
XM1210 HE RAP Extended Range	3	2021	4	2023
XM1210 HE RAP Extended Range EMD	2	2020	1	2027
XM1210 Development Testing	1	2021	2	2022
XM1210 Preliminary Design Review (PDR)	2	2021	2	2021
XM1210 UMR Critical Design Review (CDR)	3	2022	3	2022
XM1210 UMR and Safety Testing	4	2023	1	2024
XM1210 Milestone B	2	2024	2	2024
XM1210 FMR Development	4	2023	2	2026
XM1210 SR Deliveries for Soldier Touch Points/OA	1	2024	2	2025
Safety Release for ERCA First Unit Issued (FUI)	1	2024	1	2024
ERCA System of Systems (SoS) Developmental Testing (DT)/OA	1	2024	1	2026
XM1210 UMR	4	2024	4	2024
XM1210 FMR CDR	2	2025	2	2025
XM1210 FMR Qualification Testing	3	2025	1	2027

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU6 / 155mm HE Rocket Assist Project Extended Range
--	--	--

Events	Start		End	
	Quarter	Year	Quarter	Year
XM1210 Milestone C	2	2026	2	2026
XM1210 Initial Operational Test & Evaluation (IOT&E)	2	2026	2	2026
XM1210 FMR	1	2027	1	2027
Precision Guidance Aft (PG-Aft) - Congressional Add	1	2020	1	2022
PG-Aft Development & Testing	1	2020	4	2022

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU8 / Improved Multi-Option Fuze
--	---	--

COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EU8: Improved Multi-Option Fuze	-	4.395	-	-	-	-	-	-	-	-	0.000	4.395
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Improved Multi-Option Fuze Project is a technology refresh and modernization effort that provides an incremental capability with technology advancements and performance improvements on the current non-precision artillery and mortar ammunition proximity multi-option fuze that will increase robustness to electronic countermeasures (ECM), eliminates the susceptibility of reverse engineering (RE), incorporates power source advancements, improves delay mode reliability, and integrates safe & arm improvements. This Project will develop and qualify safe, affordable, reliable, Proximity Height of Burst fuzing solutions with robust Defense Exportability Features (DEF) for non-precision conventional cannon artillery and mortar munitions that are resistant to adversary exploitation via ECM and RE threats. This Project does not have a Fiscal Year (FY) 2024 budget request.

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

	FY 2022	FY 2023	FY 2024
Title: Improved Multi-Option Fuze Development	4.395	-	-
Description: Develop and qualify improved multi-option fuze technologies.			
Accomplishments/Planned Programs Subtotals	4.395	-	-

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• E99909: Multi-Option Fuze, Artillery M782	13.653	-	19.000	-	19.000	19.050	29.359	29.954	30.549	0.000	141.565

Remarks

FY 2022 Procurement of Ammunition, Army (PAA) funding will be executed on Standard Study Number (SSN) E99909, Multi-Option Fuze, Artillery (MOFA) M782 for the procurement of MOFA fuzes.

D. Acquisition Strategy

The Improved Multi-Option Fuze Project currently utilizes the DoD Ordnance Technology Consortium Other Transaction Agreement (DOTC OTA) with incrementally funded Engineering and Manufacturing Development (EMD) contracts for improved and modernized Multi-Option Fuze Artillery (MOFA) II detailed designs and the fabrication of hardware through FY 2022. The Improved Multi-Option Fuze Project will enhance the existing multi-option fuzes for cannon artillery and mortar munitions programs of record. Detailed government-owned Technical Data Packages (TDPs) will enable "build to print" designs to facilitate competitive Federal Acquisition

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EU8 / <i>Improved Multi-Option Fuze</i>
Regulation (FAR) based contracting for procurement. Qualified MOFA II will be a Technology Readiness Level 8 (TRL-8) TC design with a mature technical design packages for production. Parallel Improved Multi-Option Fuze Mortar (iMOFM) effort will be a qualified TRL-8 design for incorporation into mortar cartridge production.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
2040 / 5						PE 0604802A / Weapons and Munitions - Eng Dev				EU8 / Improved Multi-Option Fuze					
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
MOFA II Development & PQT Support	MIPR	DoD Ordnance Technology Consortium (DOTC) : Various	16.702	0.350	Nov 2021	-		-		-		-	0.000	17.052	-
iMOFM Fuze Test Hardware & Qualification	MIPR	DoD Ordnance Technology Consortium (DOTC) : Various	2.332	0.478	Jan 2022	-		-		-		-	0.000	2.810	-
Subtotal			19.034	0.828		-		-		-		-	0.000	19.862	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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	Combat Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	5.453	1.217	Nov 2021	-		-		-		-	0.000	6.670	-
Fuze Engineering Support	C/LH	SAVIT Corporation : Rockaway, NJ	-	0.150	May 2022	-		-		-		-	0.000	0.150	-
Subtotal			5.453	1.367		-		-		-		-	0.000	6.820	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Improved Multi-Option Fuze Test and Evaluations	MIPR	Combat Capabilities Development Command Armaments Center	-	0.250	Dec 2021	-		-		-		-	0.000	0.250	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU8 / Improved Multi-Option Fuze
--	---	--

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		(DEVCOM AC) : Picatinny Arsenal, NJ													
Improved Multi-Option Fuze Test and Evaluations	MIPR	Army Test and Evaluation Command (ATEC) Yuma Proving Ground (YPG) : Yuma, AZ	1.095	1.250	Jan 2022	-		-		-		-	0.000	2.345	-
Improved Multi-Option Fuze Test and Evaluations	MIPR	Army Test and Evaluation Command (ATEC) Aberdeen Proving Ground (APG) : Aberdeen, MD	0.040	0.120	Nov 2021	-		-		-		-	0.000	0.160	-
Improved Multi-Option Fuze Test and Evaluations	MIPR	White Sands Missile Range (WSMR) : White Sands, NM	0.635	0.330	Dec 2021	-		-		-		-	0.000	0.965	-
Improved Multi-Option Fuze Cyber Security Testing	MIPR	TBD : TBD	-	0.250	Apr 2023	-		-		-		-	0.000	0.250	-
Subtotal			1.770	2.200		-		-		-		-	0.000	3.970	N/A

Remarks
The test location for MOFA II Cyber Security Testing will be determined based on informed requirements by April 2023.

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	26.257	4.395	-	-	-	-	0.000	30.652	N/A

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU8 / Improved Multi-Option Fuze

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
MOFA II																												
MOFA II Safety, Reliability, Environmental, Qualificatio...	[Redacted]																											
MOFA II Milestone C																												
iMOFM																												
Fabricate iMOFM System Level Qualification Hardware	[Redacted]																											
iMOFM Qualification Testing	[Redacted]																											
iMOFM Engineering Change Proposal (ECP)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EU8 / Improved Multi-Option Fuze

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Fabricate Prototypes	3	2018	3	2019
Conduct Evaluations and Design Reviews	2	2019	4	2019
MOFA II	3	2019	4	2022
Fabricate MOFA II System Level Qualification Hardware	2	2020	4	2021
MOFA II Safety, Reliability, Environmental, Qualification Testing	1	2021	3	2022
MOFA II Milestone C	3	2022	3	2022
iMOFM	2	2020	4	2022
Fabricate iMOFM System Level Qualification Hardware	3	2020	2	2022
iMOFM Qualification Testing	4	2021	3	2022
iMOFM Engineering Change Proposal (ECP)	4	2022	4	2022

Note

Multi-Option Fuze Artillery (MOFA)
improved Multi-Option Fuze Mortar (iMOFM)

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) EW1 / 40mm Low Velocity Ammunition			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
EW1: 40mm Low Velocity Ammunition	-	3.508	2.045	0.082	-	0.082	0.110	-	-	-	0.000	5.745
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The 40 millimeter (mm) Low Velocity High Explosive Air Burst (HEAB) is a new capability identified as a Warfighter counter-defilade requirement in the Capability Development Document (CDD), 40mm Low Velocity (LV) Family of Ammunition Annex. The HEAB tactical cartridge allows the Warfighter to engage targets at increased effective ranges using the 40mm M320 Grenade Launcher. The HEAB cartridge provides the grenadier with a higher probability of achieving a first shot kill against enemy personnel, coupled with the ability to defeat personnel targets in defilade positions. When deployed against point and area targets, the cartridge inflicts incapacitating effects against personnel beyond those offered by the current M433 High Explosive Dual Purpose (HEDP) cartridge. The cartridge provides lethal effects against targets with improved accuracy and greater standoff ranges resulting in increased soldier survivability. Fiscal Year (FY) 2024 funds support test reports and close-out activities following Developmental Test and Evaluation (DT&E) and Soldier Touch Point (STP).

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

	FY 2022	FY 2023	FY 2024
<p>Title: 40mm LV HEAB, XM1166</p> <p>Description: Engineering Manufacturing Development (EMD) of the 40mm LV HEAB munition.</p> <p>FY 2023 Plans: FY 2023 funding will support activities in preparation of Developmental Test & Evaluation (DT&E), support for Milestone C, the execution of a Soldier Touch Point, and support of a follow-on Low-Rate Initial Production (LRIP) contract.</p> <p>FY 2024 Plans: FY 2024 funds support test reports and close-out activities following Developmental Test and Evaluation (DT&E) and a final STP will be conducted to support FMR.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funds decrease as the program transitions from development to production.</p>	3.508	1.970	0.082
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>	-	0.075	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Low Velocity Ammunition

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	3.508	2.045	0.082

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E71005: CTG, 40MM, LV HEAB, XM1166	10.500	13.888	2.021	-	2.021	2.768	-	11.061	11.048	0.000	51.286

Remarks

D. Acquisition Strategy

The HEAB cartridge will be developed through a competitive Engineering and Manufacturing Development (EMD) Program. Potential designs were evaluated as part of the pre-EMD activities using a Cooperative Research and Development Agreement (CRADA) with contractors. For EMD, the Government awarded two contracts utilizing an Other Transaction Agreement (OTA) through Department of Defense (DoD) Ordnance Technology Consortium (DOTC). The EMD phase will consist of a series of Design Engineering Tests (DET) to assess the Contractors' design progress and ability of achieving the program objectives. Any shortcomings and deficiencies will be addressed prior to Developmental Test & Evaluation (DT&E). After DT&E and a successful Milestone C, the Government will award a single contract for Low Rate Initial Production (LRIP) and four production year options utilizing a follow-on Federal Acquisition Regulation (FAR) based contract.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				EW1 / 40mm Low Velocity Ammunition							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
SBIR/STTR	TBD	Various : Various	-	-		0.075		-		-		-	0.000	0.075	-
Subtotal			-	-		0.075		-		-		-	0.000	0.075	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
LV HEAB XM1166 Contractor 1	C/CPFF	Day & Zimmerman, Inc (DZI) : Middletown, IA	22.179	1.372	Jan 2022	-		-		-		-	Continuing	Continuing	Continuing
Project Manager Maneuver Ammunition Systems (PM MAS)	Various	Picatiny Arsenal : Picatiny Arseanl, NJ	-	-		-		0.082	Oct 2023	-		0.082	0.000	0.082	-
Subtotal			22.179	1.372		-		0.082		-		0.082	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
LV HEAB XM1166 - Engineering Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatiny Arsenal, NJ	7.563	1.228	Nov 2021	-		-		-		-	Continuing	Continuing	Continuing
LV HEAB XM1166 - Lethality Analysis	MIPR	Data & Analysis Center (DAC) : Aberdeen Proving Ground, Md	-	0.100	Nov 2021	-		-		-		-	0.000	0.100	-
Subtotal			7.563	1.328		-		-		-		-	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Low Velocity Ammunition
--	---	--

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LV HEAB XM1166 Developmental Test and Evaluation (DT&E)	MIPR	Aberdeen Test Center (ATC) : Aberdeen, MD	-	0.707	Dec 2021	1.798	Jan 2023	-		-		-	0.000	2.505	-
Soldier Touch Point 3 & 4 (STP 3 & 4)	MIPR	Aberdeen Test Center (ATC) : Aberdeen, MD	-	0.101	Apr 2022	0.172	Apr 2022	-		-		-	0.000	0.273	-
Subtotal			-	0.808		1.970		-		-		-	0.000	2.778	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		29.742	3.508	2.045	0.082	0.082	Continuing	Continuing	N/A

Remarks
Notes:
Low Velocity (LV)
High Explosive Air Burst (HEAB)

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) EW1 / 40mm Low Velocity Ammunition

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
40mm HEAB XM1166 Engineering Manufacturing Development	[Blue Bar]				[Grey Bar]																							
	HEAB EMD																											
40mm HEAB XM1166 Critical Design Review	[Blue Triangle 1]				[Grey Bar]																							
	HEAB CDR																											
40mm HEAB XM1166 Subsystem Testing	[Blue Bar]				[Grey Bar]																							
	HEAB SUBSYSTEM TEST																											
40mm Soldier Touch Point 3 (STP3)	[Blue Square]				[Grey Bar]																							
	STP3																											
40mm HEAB XM1166 DT&E					[Blue Bar]																							
					HEAB DT&E																							
40mm Soldier Touch Point 4 (STP4)					[Blue Square]																							
					STP4																							
40mm HEAB XM1166 Milestone C					[Blue Triangle 2]																							
					HEAB MS-C																							
40mm HEAB XM1166 Low Rate Initial Production									[Blue Bar]																			
									HEAB LRIP																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) EW1 / <i>40mm Low Velocity Ammunition</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
40mm HEAB XM1166 Cooperative Research & Development Agreement (CRADA) Testing	3	2017	1	2018
40mm HEAB XM1166 Milestone B	4	2018	4	2018
40mm HEAB XM1166 Engineering Manufacturing Development	4	2018	4	2022
40mm HEAB XM1166 Preliminary Design Review	2	2019	2	2019
40mm HEAB XM1166 Design Engineering Test DET 1	1	2020	2	2020
40mm Soldier Touch Point 1 (STP1)	1	2020	2	2020
40mm HEAB XM1166 Design Engineering Test DET 2	4	2020	2	2021
40mm Soldier Touch Point 2 (STP2)	2	2021	2	2021
40mm HEAB XM1166 Critical Design Review	3	2022	3	2022
40mm HEAB XM1166 Design Engineering Test DET 3	3	2021	4	2021
40mm HEAB XM1166 Subsystem Testing	1	2022	3	2022
40mm Soldier Touch Point 3 (STP3)	4	2022	4	2022
40mm HEAB XM1166 DT&E	2	2023	4	2023
40mm Soldier Touch Point 4 (STP4)	3	2023	3	2023
40mm HEAB XM1166 Milestone C	4	2023	4	2023
40mm HEAB XM1166 Low Rate Initial Production	1	2024	4	2024

Note

millimeter (mm)
 Low Velocity (LV)
 High Explosive Air Burst (HEAB)

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
--	---	--

COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
FA6: 30mm Lethality	-	8.613	8.653	3.014	-	3.014	-	-	-	-	0.000	20.280
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The 30 millimeter (mm) Lethality project funds the development of a suite of 30x173mm caliber cartridges, which includes a XM1182 High Explosive Airburst with Trace (HEAB-T) cartridge for increased anti-personnel effects, XM1170 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) cartridge for anti-materiel, and ballistically matched training cartridges; XM1173 Target Practice with Trace (TP-T) cartridge and XM1172 Target Practice Discarding Sabot with Trace (TPDS-T) cartridge. The objective is to enhance the operational effectiveness and lethality of the Stryker Infantry Carrier Vehicle (ICV), Next Generation Combat Vehicle (NGCV), and any Army Fighting Vehicles that are equipped with a 30x173mm weapon system. The tactical APFSDS-T cartridge will provide an organic direct fire capability to support infantry at a greater range and will improve lethality when engaging light-to-medium armored vehicles. The HEAB-T cartridge will provide the Warfighter with increased lethality against troops in the open, counter defilade, Anti-Tank Guided Missile (ATGM) teams, and troops behind urban structures. The training cartridges will be ballistically matched to the tactical cartridges, allowing the Warfighter to train in a cost effective manner. This project is a follow-on of the earlier efforts in support of the United States Army Europe (USAREUR) Operational Needs Statement (ONS) #15-20590 Stryker Increased Lethality for the 2nd Cavalry Regiment (2CR). Fiscal Year (FY) 2024 funding will support execution of Live Fire Test & Evaluation (LFT&E) and Initial Operational Test & Evaluation (IOT&E).

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

	FY 2022	FY 2023	FY 2024
<p>Title: 30X173mm Armor-Piercing Fin-Stabilized Discarding with Sabot Trace (APFSDS-T) and Target Practice Discarding Sabot with Trace (TPDS-T)</p> <p>Description: Qualify 30x173mm armor piercing tactical and training cartridges for use on Stryker ICV, NGCV or other Army Future Fighting Vehicles.</p> <p>FY 2023 Plans: FY 2023 primary activities will include Live Fire Test & Evaluation (LFT&E) hardware fabrication/test assets/targets and conducting Milestone C decision.</p> <p>FY 2024 Plans: FY 2024 primary activities will include Live Fire Test & Evaluation (LFT&E).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding decreases due to completion of Milestone C. Remaining activities will include LFT&E.</p>	1.445	3.653	1.124
Title: 30x173mm HEAB-T and TP-T	7.168	4.684	1.890

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: Develop and qualify a 30x173mm airburst cartridge and trainer for use on Stryker Infantry Combat Vehicles (ICV), Next Generation Combat Vehicles (NGCV), or other Army Future Fighting Vehicles.</p> <p>FY 2023 Plans: FY 2023 primary activities will include integration testing, conducting Milestone C decision, and Live Fire Test & Evaluation (LFT&E) hardware fabrication/test assets/targets.</p> <p>FY 2024 Plans: FY 2024 primary activities will include Live Fire Test & Evaluation (LFT&E) and Initial Operational Test & Evaluation (IOT&E).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding decreases due to completion of Milestone C and platform integration testing. Remaining activities will include LFT&E and IOT&E.</p>			
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	0.316	-
Accomplishments/Planned Programs Subtotals	8.613	8.653	3.014

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E07610: CTG, 30MM, Progrmabl Air Burst Mun, Mk310, Linked	-	8.910	16.891	-	16.891	16.869	19.372	17.694	18.072	0.000	97.808
• E07306: CTG, 30mm TP-T, MK239, Single	0.826	30.439	24.582	-	24.582	21.388	22.590	25.631	26.002	0.000	151.458
• E07406: CTG, 30mm Hi Expl Incendry-T(HEI-T), Mk238 Series	-	8.603	0.406	-	0.406	0.271	0.268	0.269	0.311	0.000	10.128
• E09191: CTG, 30mm TPDS-T, MK317 (SABOT Trng), Single	6.000	32.078	18.575	-	18.575	13.487	13.631	14.138	13.834	0.000	111.743

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	Total Cost
			Base	OCO	Total					Complete	
• E09292: CTG, 30mm APFSDS-T, MK258, Single	7.000	37.133	6.919	-	6.919	16.361	12.830	9.781	9.557	0.000	99.581

Remarks

D. Acquisition Strategy

30X173mm APFSDS-T and TPDS-T: Proposals were requested from Industry to develop a 30x173mm APFSDS-T anti-materiel tactical cartridge (XM1170) and a 30x173mm TPDS-T ballistically matched training cartridge (XM1172) that will meet Army Performance Specifications and Stryker Lethality Annex Requirements. The Government awarded two contracts utilizing an Other Transaction Agreement (OTA) through Department of Defense (DoD) Ordnance Technology Consortium (DOTC) to support development, Design Engineering Tests (DET) and down-selected to one contract for Developmental Test & Evaluation (DT&E) in support of Milestone C. The Government will award Federal Acquisition Regulation (FAR)-based contracts for production of each cartridge.

30x173mm HEAB-T and TP-T: In support of the approved 30mm Multi-Function Munition Capability Development Document (CDD), the 30x173mm HEAB-T cartridge (XM1182) and the ballistically matched TP-T cartridge (XM1173) will be developed to meet the requirements. The Government awarded two contracts utilizing an Other Transaction Agreement (OTA) through Department of Defense (DoD) Ordnance Technology Consortium (DOTC) to support development, Design Engineering Tests (DET) and down-selected to one contract for Developmental Test & Evaluation (DT&E) in support of Milestone C. The Government will award a single FAR-based contract for production of the XM1182 HEAB-T and XM1173 TP-T cartridges.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
--	---	--

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR/STTR	TBD	Various : Various	-	-		0.316		-		-		-	0.000	0.316	-
Subtotal			-	-		0.316		-		-		-	0.000	0.316	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
High Explosive Airburst with Trace (HEAB-T) EMD Contract 1	C/CPFF	General Dynamics - Ordnance and Tactical Systems (GD-OTS) : Marion, IL	8.868	-		-		-		-		-	0.000	8.868	-
High Explosive Airburst with Trace (HEAB-T) EMD Contract 2	C/CPFF	Northrop Grumman Information Systems (NGIS) : Plymouth, MN	17.063	2.989	Apr 2022	-		-		-		-	0.000	20.052	-
High Explosive Airburst with Trace (HEAB-T) LFTE Assets	C/FFP	Northrop Grumman Defense Systems (NGDS) : Plymouth, MN	-	-		1.000	Jan 2023	-		-		-	0.000	1.000	-
Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) EMD Contract 1	C/CPFF	General Dynamics - Ordnance and Tactical Systems (GD-OTS) : Marion, IL	5.024	-		-		-		-		-	0.000	5.024	-
Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) EMD Contract 2	C/CPFF	Northrop Grumman Information Systems (NGIS) : Plymouth, MN	16.423	-		-		-		-		-	0.000	16.423	-
Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T) LFTE Assets	C/FFP	General Dynamics - Ordnance and Tactical Systems	-	-		0.800	Jan 2023	-		-		-	0.000	0.800	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
--	---	--

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		(GD-OTS) : Marion, IL													
Subtotal			47.378	2.989		1.800		-		-		-	0.000	52.167	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	Development Command - Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	8.961	2.758	Nov 2021	3.500	Nov 2022	1.550	Nov 2023	-		1.550	0.000	16.769	-
Subtotal			8.961	2.758		3.500		1.550		-		1.550	0.000	16.769	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
APFSDS-T / TPSD-T Developmental Test & Evaluation (DT&E)	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	0.549	Nov 2022	-		-		-		-	0.000	0.549	-
APFSDS-T Live Fire Test & Evaluation (LFTE) Test	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	-		1.203	Jul 2023	0.374	Mar 2024	-		0.374	0.000	1.577	-
HEAB-T / TP-T Developmental Test & Evaluation (DT&E)	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	2.317	Jun 2022	-		-		-		-	0.000	2.317	-
HEAB-T Platform Integration and Live Fire	MIPR	Aberdeen Test Center (ATC) :	-	-		1.834	Jul 2023	-		-		-	0.000	1.834	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
--	---	--

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test & Evaluation (LFTE) Test		Aberdeen Proving Ground, MD													
HEAB-T Live Fire Test & Evaluation (LFTE) and IOT&E	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	-	-		-		1.090	Nov 2023	-		1.090	0.000	1.090	-
Subtotal			-	2.866		3.037		1.464		-		1.464	0.000	7.367	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	56.339	8.613	8.653	3.014	-	3.014	0.000	76.619	N/A

Remarks
 Design Engineering Tests (DET)
 Engineering and Manufacturing Development (EMD)

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FA6 / <i>30mm Lethality</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
30mm APFSDS-T / TPDS-T EMD	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q4]																											
30mm APFSDS-T / TPDS-T Design Engineering Test (DET)	[Blue bar in FY 2022 Q1]																											
30mm APFSDS-T / TPDS-T Critical Design Review (CDR)	[Blue triangle '2' in FY 2022 Q3]																											
30mm APFSDS-T / TPDS-T DT&E Hardware Build	[Blue bar in FY 2022 Q3-Q4]																											
30mm APFSDS-T / TPDS-T Developmental Test & Evaluation (DT&E)	[Blue bar in FY 2023 Q1-Q2]																											
30mm APFSDS-T / TPDS-T Milestone C	[Blue triangle '4' in FY 2023 Q4]																											
30mm APFSDS-T / TPDS-T Low Rate Initial Production (LRIP)	[Blue bar in FY 2024 Q1-Q4]																											
30mm APFSDS-T Live Fire Test and Evaluation (LFT&E)	[Blue bar in FY 2024 Q3-Q4]																											
30mm HEAB-T / TP-T EMD	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q4]																											
30mm HEAB-T / TP-T Critical Design Review (CDR)	[Blue triangle '1' in FY 2022 Q1]																											
30mm HEAB-T / TP-T DT&E Build	[Blue bar in FY 2022 Q1-Q2]																											
30mm HEAB-T / TP-T Developmental Test & Evaluation (DT&E)	[Blue bar in FY 2022 Q3-Q4]																											
30mm HEAB-T / TP-T Milestone C	[Blue triangle '3' in FY 2023 Q3]																											

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
30mm HEAB-T / TP-T Low Rate Initial Production (LRIP)									HEAB-T / TP-T LRIP																			
30mm HEAB-T Integration Test									HEAB-T Integration Test																			
30mm HEAB-T Live Fire Test and Evaluation (LFT&E)									HEAB-T LFT&E																			
30mm HEAB-T Initial Operational Test and Evaluation (IOT&E)									HEAB-T IOT&E																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Development Decision (MDD)	3	2019	3	2019
30mm APFSDS-T / TPDS-T EMD Contract Award	4	2019	4	2019
30mm APFSDS-T / TPDS-T EMD	4	2019	4	2023
30mm APFSDS-T / TPDS-T DET Build	2	2020	3	2021
30mm APFSDS-T / TPDS-T Design Engineering Test (DET)	4	2021	1	2022
30mm APFSDS-T / TPDS-T Critical Design Review (CDR)	2	2022	2	2022
30mm APFSDS-T / TPDS-T DT&E Hardware Build	2	2022	4	2022
30mm APFSDS-T / TPDS-T Developmental Test & Evaluation (DT&E)	4	2022	2	2023
30mm APFSDS-T / TPDS-T Milestone C	4	2023	4	2023
30mm APFSDS-T / TPDS-T Low Rate Initial Production (LRIP)	4	2023	2	2025
30mm APFSDS-T Live Fire Test and Evaluation (LFT&E)	3	2024	4	2024
30mm HEAB-T TMRR Contract Awards	1	2019	1	2019
30mm HEAB-T Technology Maturation and Risk Reduction (TMRR)	1	2019	1	2020
30mm HEAB-T TMRR Engineering Test 1	3	2019	4	2019
30mm HEAB-T TMRR Engineering Test 2	4	2019	1	2020
30mm HEAB-T / TP-T Milestone B	2	2020	2	2020
30mm HEAB-T / TP-T EMD Contract Award	3	2020	3	2020
30mm HEAB-T / TP-T EMD	3	2020	3	2023
30mm HEAB-T / TP-T DET Build	2	2020	2	2021
30mm HEAB-T / TP-T EMD Design Engineering Test (DET)	2	2021	4	2021
30mm HEAB-T / TP-T Critical Design Review (CDR)	1	2022	1	2022
30mm HEAB-T / TP-T DT&E Build	4	2021	2	2022

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FA6 / 30mm Lethality
--	--	--

Events	Start		End	
	Quarter	Year	Quarter	Year
30mm HEAB-T / TP-T Developmental Test & Evaluation (DT&E)	2	2022	2	2023
30mm HEAB-T / TP-T Milestone C	3	2023	3	2023
30mm HEAB-T / TP-T Low Rate Initial Production (LRIP)	3	2023	4	2024
30mm HEAB-T Integration Test	4	2023	1	2024
30mm HEAB-T Live Fire Test and Evaluation (LFT&E)	2	2024	3	2024
30mm HEAB-T Initial Operational Test and Evaluation (IOT&E)	3	2024	4	2024

Note

Engineering Manufacturing Development (EMD)
 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T)
 Target Practice Discarding Sabot with Trace (TPDS-T)
 High Explosive Airburst with Trace (HEAB-T)
 Target-Practice with Trace (TP-T)
 Technology Maturation and Risk Reduction (TMRR)

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
FJ4: Cannon-Delivered Area Effects Munitions (C-DAEM)	-	82.855	92.402	85.071	-	85.071	68.986	54.606	55.187	55.803	0.000	494.910
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Cannon-Delivered Area Effects Munitions (C-DAEM) Project will provide United States (U.S.) ground forces with the capability to engage area personnel through armored targets, while denying threat forces full operational freedom within the targeted area. An Analysis of Alternatives (AoA) was completed in January 2018 to inform Army acquisition and investment decisions regarding replacement of the current stockpile of 155 millimeter (mm) Dual Purpose Improved Conventional Munitions (DPICM) with Department of Defense (DoD) policy compliant munitions and address anti-armor and extended range capability requirements. The Army validated two materiel solutions for C-DAEM to be pursued in parallel to support the Army's modernization priorities; C-DAEM Armor and C-DAEM DPICM Replacement. C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks. Fiscal Year (FY) 2024 funding will continue to support C-DAEM Armor development and testing activities as well as engineering efforts required to integrate the Military-Code (M-Code) Global Positioning System (GPS) Receiver into the selected C-DAEM Armor objective materiel solution(s).

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

	FY 2022	FY 2023	FY 2024
Title: C-DAEM Armor	76.773	84.885	85.071
Description: C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks.			
FY 2023 Plans: FY 2023 funding is continuing to support the development and testing of the selected C-DAEM Armor solution(s) for an Early Operational Capability (EOC) opportunity and engineering efforts required to integrate the M-Code Global Positioning System (GPS) Receiver into the most promising C-DAEM Armor objective materiel solution(s).			
FY 2024 Plans: FY 2024 funding will continue to support C-DAEM Armor development and testing activities as well as engineering efforts required to integrate the M-Code Global Positioning System (GPS) Receiver into the selected C-DAEM Armor objective materiel solution(s).			
FY 2023 to FY 2024 Increase/Decrease Statement: Minor increase due to economic assumptions			
Title: C-DAEM DPICM Replacement	6.082	4.144	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: C-DAEM DPICM Replacement will destroy personnel to soft-skinned targets. The Army has approved the Israeli M999 advanced anti-personnel munition, now designated the US model XM1208, as the C-DAEM DPICM Replacement solution.</p> <p>FY 2023 Plans: FY 2023 funding is continuing to support the completion of XM1208 qualification activities and support engineering efforts to evaluate test data to ensure DoD policy compliance and that the round is safe, suitable and operationally effective, as well as the gathering of all statutory and regulatory requirements in support of a Milestone C.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease in funding in FY 2024 due to completion of C-DAEM DPICM Replacement qualification testing.</p>			
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638</p>	-	3.373	-
Accomplishments/Planned Programs Subtotals	82.855	92.402	85.071

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• F90112: PROJ, ARTY, 155MM C-DAEM ARMOR	-	36.894	57.488	-	57.488	194.351	226.235	226.235	226.235	0.000	967.438
• E68604: PROJ, ARTY, 155MM C-DAEM INCREMENT II	-	-	2.500	-	2.500	36.267	-	46.517	49.534	0.000	134.818

Remarks
A Procurement of Ammunition, Army (PAA) funding line for C-DAEM Armor, Standard Study Number (SSN), F90112, PROJ, ARTY, 155MM C-DAEM ARMOR, has been established.
A PAA funding line for C-DAEM DPICM Replacement, SSN E68604, PROJ, ARTY, 155MM C-DAEM INCREMENT II, has been established.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FJ4 / <i>Cannon-Delivered Area Effects Munitions (C-DAEM)</i>

D. Acquisition Strategy

The C-DAEM Program of Record is employing an evolutionary acquisition approach to efficiently address anti-armor, extended range capability requirements and deliver DOD unexploded ordnance (UXO) policy compliant munitions.

The Analysis of Alternatives (AoA) completed on 31 January 2018 qualified a significant enhancement of operational fires effectiveness, efficiency, and maneuver support when cannon artillery was equipped with a dedicated extended range anti-armor projectile. The U.S. Government reduced risk by executing prototype testing and evaluation efforts, while utilizing the AoA results to shape the selection criteria. C-DAEM Armor used the selection criteria to sponsor competitive demonstrations for C-DAEM Armor to streamline the acquisition process. The U.S. Government has selected the most promising candidate that will address medium to heavy armored targets in accordance with the validated Capabilities Development Document (CDD) with an opportunity to field an Early Operational Capability (EOC). C-DAEM Armor is utilizing competitively awarded Defense Ordnance Technology Consortium (DOTC) Other Transaction Agreements (OTA) to further support development and testing of the selected C-DAEM Armor solution in accordance with the decisions granted at the most recent Army Requirements Oversight Council (AROC) in August 2022. C-DAEM Armor is utilizing competitively awarded DOTC OTAs to complete development and qualification activities, including the M-Code Global Positioning System (GPS) Receiver integration efforts, in support of Milestone C for Low Rate Initial Production (LRIP) and Full Rate Production (FRP).

C-DAEM DPICM Replacement is utilizing an Irregular Warfare Technical Support Directorate (IWTSD), formerly known as Combating Terrorism Technical Support Office (CTTSO), task plan with Israel Ministry of Defense (IMOD) to deliver XM1208 hardware in support of qualification activities in accordance with decisions granted at the AROC in September 2020.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)
--	---	--

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	Various	Office of the Project Manager Combat Ammunition Systems (PM CAS) : Picatinny Arsenal, NJ	0.027	0.450	Oct 2021	0.450	Oct 2022	0.400	Oct 2023	-		0.400	0.000	1.327	-
SBIR/STTR	TBD	Various : Various	-	-		3.373		-		-		-	0.000	3.373	-
Subtotal			0.027	0.450		3.823		0.400		-		0.400	0.000	4.700	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DOTC - Armor Engineering and Manufacturing Development (EMD)	MIPR	DoD Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	-	63.835	Nov 2021	71.205	Nov 2022	70.955	Nov 2023	-		70.955	0.000	205.995	-
DOTC - Armor M-Code GPS Receiver Integration	MIPR	DoD Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	-	7.780	Nov 2021	4.010	Nov 2022	3.500	Nov 2023	-		3.500	0.000	15.290	-
Subtotal			-	71.615		75.215		74.455		-		74.455	0.000	221.285	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	Combat Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	2.646	7.120	Nov 2021	7.520	Nov 2022	6.716	Nov 2023	-		6.716	0.000	24.002	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)
--	---	--

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fire Control Software Update	MIPR	Multiple : Various	2.502	-		-		-		-		-	0.000	2.502	-
Subtotal			5.148	7.120		7.520		6.716		-		6.716	0.000	26.504	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Armor Testing	MIPR	Army Test & Evaluation Command (ATEC) : Yuma, AZ	-	-		2.500	Mar 2023	3.500	Mar 2024	-		3.500	0.000	6.000	-
DPICM Replacement Testing	MIPR	Army Test & Evaluation Command (ATEC) : Yuma, AZ	-	3.670	Mar 2022	3.344	Mar 2023	-		-		-	0.000	7.014	-
Subtotal			-	3.670		5.844		3.500		-		3.500	0.000	13.014	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.175	82.855	92.402	85.071	-	85.071	0.000	265.503	N/A

Remarks
 C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks. C-DAEM Dual Purpose Improved Conventional Munition (DPICM) Replacement will destroy personnel to soft-skinned vehicles. C-DAEM Armor and DPICM Replacement are being pursued in parallel to support the Army's modernization priorities.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
C-DAEM Armor																												
Acquisition Decision Memorandum (ADM) #1	▲ 1 ADM #1																											
Engineering Manufacturing & Development (EMD)																												
ADM #2																												▲ 2 ADM #2
Integrated Baseline Review (IBR)																												▲ 3 IBR
Preliminary Design Review (PDR)																												▲ 4 PDR
Army Requirements Oversight Council (AROC) Decision																												▲ 5 AROC
Milestone B																												▲ 7 MS-B
M-Code GPS Receiver Integration																												
Design Verification Testing (DVT)																												▲ 8 CDR
Critical Design Review (CDR)																												▲ 9 EOC DP
Early Operational Capability (EOC) Decision Point (DP)																												▲ 10 IOT&E
Initial Operational Test & Evaluation (IOT&E)																												▲ 10 IOT&E

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FJ4 / Cannon-Delivered Area Effects Munitions (C-DAEM)	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Milestone C																									1 MS-C			
C-DAEM DPICM Replacement																												
Qualification and Testing																												
Unexploded Ordnance (UXO) DP																									6 UXO DP			

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FJ4 / <i>Cannon-Delivered Area Effects Munitions (C-DAEM)</i>
Note <p>In 1QFY22, the Milestone Decision Authority (MDA) for C-DAEM Armor signed an Acquisition Decision Memorandum (ADM) approving the initiation of Engineering Manufacturing and Development (EMD) and qualification activities. The U.S. Government has selected the most promising candidate that will address medium to heavy armored targets in accordance with the Capabilities Development Document (CDD) with an opportunity to field an Early Operational Capability (EOC).</p> <p>In 3QFY22, the MDA for C-DAEM Amor signed a second ADM approving the continuation of EMD activities in accordance with the program plan as the C-DAEM Armor CDD continued through the Army's validation process.</p> <p>In 1QFY23, the C-DAEM Armor CDD received approval.</p>		

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FJ4 / <i>Cannon-Delivered Area Effects Munitions (C-DAEM)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
C-DAEM Armor	1	2022	4	2026
Technology Maturation and Risk Reduction (TMRR)	1	2020	4	2021
In Process Review (IPR) #1	1	2021	1	2021
IPR #2	2	2021	2	2021
Acquisition Decision Memorandum (ADM) #1	1	2022	1	2022
Engineering Manufacturing & Development (EMD)	1	2022	4	2028
ADM #2	3	2022	3	2022
Integrated Baseline Review (IBR)	3	2022	3	2022
Preliminary Design Review (PDR)	4	2022	4	2022
Army Requirements Oversight Council (AROC) Decision	4	2022	4	2022
Milestone B	4	2023	4	2023
M-Code GPS Receiver Integration	1	2022	4	2025
Design Verification Testing (DVT)	1	2022	2	2024
Critical Design Review (CDR)	2	2024	2	2024
Early Operational Capability (EOC) Decision Point (DP)	2	2024	2	2024
Initial Operational Test & Evaluation (IOT&E)	4	2027	4	2027
Milestone C	2	2028	2	2028
C-DAEM DPICM Replacement	1	2021	4	2022
Qualification and Testing	1	2021	4	2023
Unexploded Ordnance (UXO) DP	3	2023	3	2023

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FJ4 / <i>Cannon-Delivered Area Effects Munitions (C-DAEM)</i>

Note
C-DAEM Armor will destroy moved and moving self-propelled howitzers, infantry fighting vehicles and tanks. C-DAEM Dual Purpose Improved Conventional Munition (DPICM) Replacement will destroy personnel to soft-skinned vehicles. C-DAEM Armor and DPICM Replacement are being pursued in parallel to support the Army's modernization priorities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev				Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
FL4: <i>Small Caliber Ammo for Next Gen Squad Weapons</i>	-	27.336	25.558	11.809	-	11.809	11.931	11.945	12.073	12.208	0.000	112.860
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The total cost of the Small Caliber Ammo for Next Gen Squad Weapons Middle Tier of Acquisition effort is \$144.1M million RDTE from FY2020 to FY2027. The remaining \$12.1M in FY2028 is fully funded across the Future Years Defense Program (FYDP).

A. Mission Description and Budget Item Justification

The Small Caliber Ammo for Next Gen Squad Weapons project is a critical technology development in response to the Soldier Lethality Cross Functional Team (SL CFT) Initial Capability Document (ICD) for the ammunition required to support the rapid prototyping, development, and fielding of the Next Generation Squad Weapons (NGSW) under the Middle Tier of Acquisition (MTA) authority for rapid prototyping/rapid fielding. The objective is to develop and Full Materiel Release (FMR) the new ammunition in parallel with the NGSW rifle and automatic rifle. The NGSW ammunition is split into multiple ammunition variants, the General Purpose (GP), the Special Purpose (SP), the Reduced Range Ammunition (RRA), Tracer Ammunition, Blank Ammunition, the Close Combat Mission Capability Kit (CCMCK) training ammunition, Drill Dummy Inert (DDI) cartridge, and High-Pressure Test (HPT) cartridge. Fiscal Year (FY) 2024 funding supports Urgent Materiel Release (UMR) preparation efforts for the GP, SP, RRA, Blank, DDI, and HPT variants. FY 2024 funds also support Live-Fire Testing and Evaluation (LFT&E) on the GP and Tracer variants. FY 2024 funds support Soldier Touch Points (STP) / User Evaluations and performing Production Qualification Testing (PQT) on the SP, RRA, and Tracer variants. Also, FY 2024 funds support design optimization efforts on the GP, Blank, DDI, and HPT variants. And, FY 2024 supports continuing the refinement, development, and maturation of the CCMCK, Blank, DDI, and HPT cartridges.

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

	FY 2022	FY 2023	FY 2024
Title: Rapid Prototyping GP	5.300	5.915	1.507
Description: Develop, demonstrate, and qualify new ammunition for the NGSW systems.			
FY 2023 Plans: Continue rapid prototyping efforts, conduct qualification tests and a user evaluation.			
FY 2024 Plans: Perform Urgent Materiel Release (UMR) preparation activities, initiate LFT&E, and commence design optimization effort.			
FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to planned activities as the program shifts to UMR / production.			
Title: Rapid Prototyping SP	10.876	7.300	4.052

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Description: Develop, demonstrate, and qualify new ammunition to defeat hard targets for the NGSW systems.</p> <p>FY 2023 Plans: Continuing rapid prototyping for the Special Purpose (SP) projectile and manufacture prototype ammunition required for developmental testing.</p> <p>FY 2024 Plans: Conduct qualification testing, Soldier Touch Point (STP) / User Evaluation, and perform Urgent Materiel Release (UMR) preparation activities.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to FY 2024 funds primarily supporting planned testing and support activities. Prototype builds are covered with prior FY funding.</p>				
<p>Title: Rapid Prototyping Reduced Range Ammunition (RRA) for NGSW</p> <p>Description: Develop and qualify RRA for the NGSW that will satisfy the requirement to provide training ammunition suitable for use on military installations with Surface Danger Zone (SDZ) restrictions. Two RRA variants will be developed under this effort - the NGSW RRA and the NGSW Reduced Range (RR) Tracer.</p> <p>FY 2023 Plans: Continue rapid prototyping effort to develop RRA and RR Tracer ammunition for the NGSW, perform PQT, and continue weapon and cartridge integration efforts.</p> <p>FY 2024 Plans: Conduct a Soldier Touch Point (STP) / User evaluation, complete PQT, and perform Urgent Materiel Release (UMR) preparation activities.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to planned activities as the program shifts to UMR / production.</p>		6.240	4.210	1.000
<p>Title: Rapid Prototyping Tracer Ammunition for NGSW</p> <p>Description: Rapid prototyping effort to develop and field tracer ammunition for the NGSW systems by building and evaluating competing tracer ammunition designs/concepts then down-selecting to a final tracer design.</p> <p>FY 2023 Plans:</p>		4.570	6.500	3.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Continue rapid prototyping effort to develop tracer ammunition for the NGSW, build and test tracer ammunition prototypes, and mature/refine down-selected tracer ammunition design.</p> <p>FY 2024 Plans: Continue rapid prototyping effort, conduct a STP / user evaluation, and conduct PQT and LFT&E.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease due to FY 2024 funds primarily supporting planned testing and support activities. Prototype builds are primarily covered with prior FY funding.</p>				
<p>Title: Rapid Prototyping CCMCK Training Ammo</p> <p>Description: Rapid prototyping effort to develop training ammunition for the NGSW systems by building and evaluating competing CCMCK training ammunition designs/concepts then down-selecting to a final design.</p> <p>FY 2023 Plans: Continue rapid prototyping effort to develop CCMCK training ammunition for the NGSW by evaluating CCMCK training ammunition designs/concepts.</p> <p>FY 2024 Plans: Continue rapid prototyping effort to develop CCMCK training ammunition for the NGSW, building and evaluate CCMCK training ammunition designs/concepts, mature/refine selected design/designs in preparation for developmental testing.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to planned design maturation activities.</p>		0.150	0.150	0.500
<p>Title: Rapid Prototyping Blank, DDI and HPT Cartridges</p> <p>Description: Rapid prototyping effort to develop and field Blank, DDI and HPT cartridges for the NGSW weapon systems.</p> <p>FY 2023 Plans: Continue rapid prototyping effort to mature the Blank, DDI, and HPT cartridges/designs. Conduct Production Qualification Testing (PQT) and a Soldier Touch Point (STP) / User Evaluation.</p> <p>FY 2024 Plans: Continue rapid prototyping effort to mature the Blank, DDI, and HPT cartridges/designs. Perform UMR preparation activities and commence design optimization efforts.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>		0.200	0.550	1.250

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
--	---	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Increase due to the starting the development effort to optimize each cartridge.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	-	0.933	-
Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)			
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	27.336	25.558	11.809

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E06002: NEXT GENERATION COMBAT ROUND	53.459	23.523	35.896	-	35.896	38.064	70.087	70.079	70.079	Continuing	Continuing
• E06014: NEXT GENERATION REDUCED RANGE ROUND	13.159	42.043	107.341	-	107.341	112.182	167.497	167.497	167.497	0.000	777.216
• E06015: NEXT GENERATION SQUAD WEAPON SPECIAL PURPOSE ROUND	0.427	7.858	14.488	-	14.488	21.507	33.998	33.997	33.997	Continuing	Continuing
• E60011: NEXT GENERATION BLANK ROUND	4.189	23.072	33.519	-	33.519	33.725	64.077	64.077	64.077	Continuing	Continuing

Remarks
Procurement of Ammunition, Army E06002, E06014, E06015, and E60011: These funding lines supports the procurement of ammunition for the NGSW.

D. Acquisition Strategy
The NGSW ammunition program will utilize the Middle Tier of Acquisition (MTA) authority for rapid prototyping/rapid fielding to develop ammunition concepts/designs for the GP variant and the SP variant. The project will utilize Government developed projectile designs that will be delivered to development contractors as Government Furnished Material (GFM). The Government selected three contractors for the weapon system development and down-selected to a single contractor in FY 2022, prior to production contract award; with a planned Urgent Materiel Release (UMR) in FY 2024 and FMR in FY 2025. Development effort for the Reduced Range and Tracer ammunition follows a similar strategy beginning in FY 2021. Follow-on development efforts for additional NGSW ammunition variants including blank, CCMCK ammunition, DDI cartridge, and HPT cartridge commenced in FY 2022.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
--	---	---

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SBIR/STTR	TBD	Various : Various	-	-		0.933		-		-		-	0.000	0.933	-
Subtotal			-	-		0.933		-		-		-	0.000	0.933	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
General Purpose Qualification and Optimization	Option/ FFP	Sig Sauer : Newington, New Hampshire	-	1.618	Apr 2022	-		-		-		-	Continuing	Continuing	Continuing
General Purpose Projectile Development	Various	Various : Various	-	-		1.568	Dec 2022	-		-		-	Continuing	Continuing	Continuing
General Purpose Optimization	TBD	To Be Determined : To Be Determined	-	-		-		0.500	Feb 2024	-		0.500	Continuing	Continuing	Continuing
Projectile and Ammo Development Contract Special Purpose	Option/ CPFF	OLIN Winchester Corporation (LCAAP) : Independence, Missouri	7.433	1.808	Jul 2022	0.615	Jul 2023	-		-		-	Continuing	Continuing	Continuing
Prototype Manufacturing Special Purpose	Various	Various : Various	-	4.141	Jan 2022	3.166	Jan 2023	-		-		-	0.000	7.307	-
Tracer Ammunition Prototype Contract	Option/ CPFF	JAK Tool Engineering Solutions : Cranbury, New Jersey	0.750	0.512	Sep 2022	-		-		-		-	0.000	1.262	-
Tracer Ammunition Prototype Manufacturing	Option/ FFP	OLIN Winchester Corporation (LCAAP) : Independence, Missouri	-	3.975	Sep 2022	3.995	Mar 2023	-		-		-	0.000	7.970	-
Reduced Range Ammunition Prototype Contract 1	Option/ CPFF	JAK Tool Engineering	1.000	-		-		-		-		-	0.000	1.000	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				FL4 / Small Caliber Ammo for Next Gen Squad Weapons							
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
		Solutions : Cranbury, New Jersey													
Reduced Range Ammunition Prototype Contract 2	Option/ FFP	OLIN Winchester Corporation : Independence, Missouri	1.000	0.574	Sep 2022	0.103	Jul 2023	-		-		-	Continuing	Continuing	Continuing
Reduced Range Ammo Development	Option/ CFFF	Concurrent Technologies Corporation (CTC) : Johnstown, Pennsylvania	-	0.816	Dec 2021	0.984	Nov 2022	-		-		-	Continuing	Continuing	Continuing
Reduced Range Ammo Weapon Integration	Option/ FFP	Sig Sauer : Newington, New Hampshire	-	2.484	Apr 2022	0.250	May 2023	-		-		-	Continuing	Continuing	Continuing
CCMCK Training Ammo Development Contracts	TBD	To Be Determined : To Be Determined	-	-		-		0.250	Feb 2024	-		0.250	0.000	0.250	-
Blank, DDI and HPT Development Contracts	TBD	To Be Determined : To Be Determined	-	-		0.250	May 2023	-		-		-	Continuing	Continuing	Continuing
Blank, DDI and HPT Optimization Contracts	TBD	To Be Determined : To Be Determined	-	-		-		0.650	Mar 2024	-		0.650	Continuing	Continuing	Continuing
Subtotal			10.183	15.928		10.931		1.400		-		1.400	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Projectile Development and Support General Purpose	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	4.163	2.932	Nov 2021	2.530	Nov 2022	0.507	Oct 2023	-		0.507	0.000	10.132	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				FL4 / Small Caliber Ammo for Next Gen Squad Weapons							
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Projectile Development and Support General Purpose	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	1.153	0.750	Mar 2022	0.750	Feb 2023	-		-		-	Continuing	Continuing	Continuing
Projectile Development and Support Special Purpose	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	5.150	1.172	Nov 2021	1.836	Nov 2022	1.602	Oct 2023	-		1.602	Continuing	Continuing	Continuing
Special Purpose Support ARL	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	-	1.500	Nov 2021	0.750	Feb 2023	0.900	Oct 2023	-		0.900	0.000	3.150	-
Reduced Range Ammunition Prototype and Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	1.050	1.616	Nov 2021	1.623	Nov 2022	0.400	Oct 2023	-		0.400	Continuing	Continuing	Continuing
Reduced Range Ammunition Support ARL	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	-	-		0.750		0.250	Oct 2023	-		0.250	Continuing	Continuing	Continuing
Tracer Ammunition Development and Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	0.350	-		1.755	Nov 2022	0.600	Oct 2023	-		0.600	Continuing	Continuing	Continuing
Tracer Ammunition Support ARL	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	-	-		0.750	Feb 2023	0.750	Jan 2024	-		0.750	Continuing	Continuing	Continuing
CCMCK Training Development and Support	MIPR	Development Command Armaments Center (DEVCOM-AC) :	-	0.150	Nov 2021	0.150	Nov 2022	0.150	Oct 2023	-		0.150	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				FL4 / Small Caliber Ammo for Next Gen Squad Weapons							
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
		Picatinny Arsenal, New Jersey													
CCMCK Training Ammo Development and Support	MIPR	Army Research Lab (ARL) : Aberdeen, Maryland	-	-		-		0.100	Dec 2023	-		0.100	Continuing	Continuing	Continuing
Blank, DDI and HPT Development and Support	MIPR	Development Command Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey	-	0.200	Nov 2021	0.300	Nov 2022	0.200	Oct 2023	-		0.200	Continuing	Continuing	Continuing
Subtotal			11.866	8.320		11.194		5.459		-		5.459	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
U.S. Army Aberdeen Test Center (ATC) General Purpose	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	0.900	-		1.550	Apr 2023	-		-		-	Continuing	Continuing	Continuing
General Purpose User Assessment	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	-	-		0.450	Apr 2023	-		-		-	0.000	0.450	-
General Purpose Live-Fire Testing	MIPR	U.S. Army Aberdeen Test Center (ATC) : Aberdeen, Maryland	-	-		-		0.500	Mar 2024	-		0.500	Continuing	Continuing	Continuing
U.S. Army Aberdeen Test Center (ATC) Special Purpose	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	0.500	-		-		1.000	Oct 2023	-		1.000	0.000	1.500	-
Army Research Lab (ARL) Testing Special Purpose	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	1.250	1.500	Dec 2021	-		-		-		-	Continuing	Continuing	Continuing
Engineering Tests Special Purpose	MIPR	Development Command	1.000	0.755	Nov 2021	-		-		-		-	Continuing	Continuing	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604802A / Weapons and Munitions - Eng Dev				FL4 / Small Caliber Ammo for Next Gen Squad Weapons							
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
		Armaments Center (DEVCOM-AC) : Picatinny Arsenal, New Jersey													
Special Purpose User Assessment	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	-	-		-		0.550	Oct 2023	-		0.550	Continuing	Continuing	Continuing
Reduced Range Ammunition Prototype Testing	MIPR	U.S. Army Aberdeen Test Center (ATC) : Aberdeen, Maryland	0.500	-		0.500	Mar 2023	-		-		-	Continuing	Continuing	Continuing
Army Research Lab (ARL) Testing Reduced Range	MIPR	Aberdeen Proving Ground : Aberdeen, Maryland	-	0.750	Dec 2021	-		-		-		-	0.000	0.750	-
Reduced Range Ammo User Assessment	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	-	-		-		0.350	Oct 2023	-		0.350	0.000	0.350	-
Tracer Live-Fire Testing	MIPR	U.S. Army Aberdeen Test Center (ATC) : Aberdeen, Maryland	-	-		-		1.200	Oct 2023	-		1.200	Continuing	Continuing	Continuing
Tracer Production Qualification Tests	TBD	To Be Determined : To Be Determined	-	-		-		0.700	Oct 2023	-		0.700	Continuing	Continuing	Continuing
User Assessment Tracer Ammunition	MIPR	Maneuver Battle Labs : Fort Benning, Georgia	-	0.083	Jun 2022	-		0.250	Oct 2023	-		0.250	0.000	0.333	-
Blank, DDI, HPT Developmental Tests	TBD	To Be Determined : To Be Determined	-	-		-		0.400	Oct 2023	-		0.400	Continuing	Continuing	Continuing
Subtotal			4.150	3.088		2.500		4.950		-		4.950	Continuing	Continuing	N/A
Project Cost Totals			26.199	27.336		25.558		11.809		-		11.809	Continuing	Continuing	N/A
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028											
	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								
Rapid Prototyping Effort General Purpose (GP)	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q4, FY 2024 Q1-Q2]																																			
	Rapid Prototyping GP																																			
Prototype & Manufacturing Integration General Purpose (GP)	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q2]																																			
	Mfg Integration GP																																			
Production Qualification Test General Purpose (GP)																	[Blue bar spanning FY 2023 Q3-Q4]																			
																	PQT GP																			
Soldier Touch Point General Purpose (GP)																	[Blue bar spanning FY 2024 Q1]																			
																	STP GP																			
Urgent Materiel Release General Purpose (UMR GP)																	[Blue triangle at FY 2024 Q1]																			
																	1 UMR GP																			
First Unit Equipped General Purpose (GP)																	[Blue triangle at FY 2024 Q1]																			
																	2 FUE GP																			
Rapid Fielding General Purpose (GP)																	[Blue bar spanning FY 2024 Q1-Q4, FY 2025 Q1-Q4, FY 2026 Q1-Q4, FY 2027 Q1-Q4, FY 2028 Q1-Q4]																			
																	Rapid Fielding GP																			
Design Optimization General Purpose (GP)																	[Blue bar spanning FY 2024 Q3-Q4]																			
																	Optimization GP																			
Live-Fire Testing and Evaluation General Purpose (GP)																	[Blue bar spanning FY 2025 Q1-Q2]																			
																	LFT&E GP																			
Full Materiel Release General Purpose (GP)																	[Blue triangle at FY 2025 Q3]																			
																	1 FMR GP																			
Rapid Prototyping Effort Special Purpose (SP)	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q4, FY 2024 Q1-Q2]																																			
	Rapid Prototyping SP																																			
Prototype & Manufacturing Integration General Purpose (SP)	[Blue bar spanning FY 2022 Q1-Q4, FY 2023 Q1-Q2]																																			
	Mfg Integration SP																																			
Production Qualification Test Special Purpose (SP)																	[Blue bar spanning FY 2024 Q1-Q2]																			
																	PQT SP																			

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Soldier Touch Point Special Purpose (SP)													■ STP SP															
Urgent Materiel Release Special Purpose (SP)													▲ 7 UMR SP															
First Unit Equipped Special Purpose (SP)													▲ 8 FUE SP															
Rapid Fielding Special Purpose (SP)													■ Rapid Fielding SP															
Design Optimization Special Purpose (SP)													■ Optimization SP															
Live-Fire Testing and Evaluation Special Purpose (SP)													■ LFT&E SP															
Full Materiel Release Special Purpose (SP)													▲ 14 FMR SP															
Rapid Prototyping Effort Reduced Range Ammo (RRA)													■ Rapid Prototyping RRA															
Prototype Manufacturing Reduced Range Ammo (RRA)													■ Prototype Manufacturing RRA															
Product Qualification Testing Reduced Range Ammo (RRA)													■ PQT RRA															
Soldier Touch Point Reduced Range Ammo (RRA)													■ STP RRA															
Urgent Materiel Release Reduced Range Ammo (RRA)													▲ 5 UMR RRA															
First Unit Equipped Reduced Range Ammo (RRA)													▲ 6 FUE RRA															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Concept Development and Evaluation Close Combat Mission ...	Development & Evaluation CCMCK																											
Developmental Testing Close Combat Mission Capability Ki...	DT CCMCK																											
Full Materiel Release Close Combat Mission Capability Ki...	13 FMR CCMCK																											
Fielding Close Combat Mission Capability Kit (CCMCK)	Fielding CCMCK																											
Rapid Prototyping Blank, DDI, and HPT	Rapid Prototyping Blank, DDI, & HPT																											
Product Qualification Testing Blank, DDI, and HPT	PQT Blank, DDI, & HPT																											
Soldier Touch Point Blank, DDI, and HPT	STP Blank, DDI, & HPT																											
Urgent Materiel Release Blank, DDI, and HPT	3 UMR Blank, DDI, and HPT																											
First Unit Equipped Blank, DDI, and HPT	4 FUE Blank, DDI, and HPT																											
Fielding Blank, DDI, and HPT	Fielding Blank, DDI, and HPT																											
Design Optimization Blank, DDI, and HPT	Optimization Blank, DDI, and HPT																											
Developmental Testing Blank, DDI, and HPT	DT Blank, DDI, and HPT																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / <i>Weapons and Munitions - Eng Dev</i>	Project (Number/Name) FL4 / <i>Small Caliber Ammo for Next Gen Squad Weapons</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Rapid Prototyping Effort General Purpose (GP)	1	2019	2	2024
Prototype & Manufacturing Integration General Purpose (GP)	4	2021	2	2023
Production Qualification Test General Purpose (GP)	2	2023	4	2023
Soldier Touch Point General Purpose (GP)	4	2023	1	2024
Urgent Materiel Release General Purpose (UMR GP)	2	2024	2	2024
First Unit Equipped General Purpose (GP)	2	2024	2	2024
Rapid Fielding General Purpose (GP)	2	2024	2	2029
Design Optimization General Purpose (GP)	3	2024	1	2025
Live-Fire Testing and Evaluation General Purpose (GP)	4	2024	2	2025
Full Materiel Release General Purpose (GP)	4	2025	4	2025
Rapid Prototyping Effort Special Purpose (SP)	1	2019	2	2025
Prototype & Manufacturing Integration General Purpose (SP)	4	2021	4	2023
Production Qualification Test Special Purpose (SP)	1	2024	2	2024
Soldier Touch Point Special Purpose (SP)	4	2024	4	2024
Urgent Materiel Release Special Purpose (SP)	2	2025	2	2025
First Unit Equipped Special Purpose (SP)	2	2025	2	2025
Rapid Fielding Special Purpose (SP)	2	2025	2	2030
Design Optimization Special Purpose (SP)	3	2025	1	2026
Live-Fire Testing and Evaluation Special Purpose (SP)	4	2025	2	2026
Full Materiel Release Special Purpose (SP)	4	2026	4	2026
Rapid Prototyping Effort Reduced Range Ammo (RRA)	1	2021	4	2024
Prototype Manufacturing Reduced Range Ammo (RRA)	1	2021	2	2023

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
--	---	---

Events	Start		End	
	Quarter	Year	Quarter	Year
Product Qualification Testing Reduced Range Ammo (RRA)	3	2023	1	2024
Soldier Touch Point Reduced Range Ammo (RRA)	2	2024	3	2024
Urgent Materiel Release Reduced Range Ammo (RRA)	4	2024	4	2024
First Unit Equipped Reduced Range Ammo (RRA)	4	2024	4	2024
Rapid Fielding Reduced Range Ammo (RRA)	4	2024	4	2029
Design Optimization Reduced Range Ammo (RRA)	2	2025	4	2025
Shoot-House Testing Reduced Range Ammo (RRA)	3	2025	1	2026
Full Materiel Release Reduced Range Ammo (RRA)	2	2026	2	2026
Rapid Prototyping Effort Tracer Ammo	1	2022	3	2025
Build and Test Tracer Ammo	1	2022	4	2024
Soldier Touch Point Tracer Ammo	3	2024	4	2024
Product Qualification Testing Tracer Ammo	4	2024	2	2025
Live-Fire Testing and Evaluation Tracer Ammo	4	2024	2	2025
Full Materiel Release Tracer Ammo	4	2025	4	2025
First Unit Equipped Tracer Ammo	4	2025	4	2025
Rapid Fielding Tracer	4	2025	4	2030
Rapid Prototyping Close Combat Mission Capability Kit (CCMCK)	1	2022	3	2026
Concept Development and Evaluation Close Combat Mission Capability Kit (CCMCK)	1	2022	3	2026
Developmental Testing Close Combat Mission Capability Kit (CCMCK)	3	2025	1	2026
Full Materiel Release Close Combat Mission Capability Kit (CCMCK)	3	2026	3	2026
Fielding Close Combat Mission Capability Kit (CCMCK)	4	2026	4	2031
Rapid Prototyping Blank, DDI, and HPT	1	2022	2	2024
Product Qualification Testing Blank, DDI, and HPT	2	2023	4	2023
Soldier Touch Point Blank, DDI, and HPT	4	2023	1	2024
Urgent Materiel Release Blank, DDI, and HPT	2	2024	2	2024

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604802A / Weapons and Munitions - Eng Dev	Project (Number/Name) FL4 / Small Caliber Ammo for Next Gen Squad Weapons
--	---	---

Events	Start		End	
	Quarter	Year	Quarter	Year
First Unit Equipped Blank, DDI, and HPT	2	2024	2	2024
Fielding Blank, DDI, and HPT	2	2024	4	2033
Design Optimization Blank, DDI, and HPT	3	2024	1	2029
Developmental Testing Blank, DDI, and HPT	4	2024	2	2025

Note
 Special Purpose (SP)
 General Purpose (GP)
 Close Combat Mission Capability Kit (CCMCK)
 Drill Dummy Inert (DDI)
 High Pressure Test (HPT)

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
S36: Precision Guidance Kit	-	34.197	54.838	33.564	-	33.564	25.082	5.037	3.387	3.424	0.000	159.529
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Long Range-Precision Guidance Kit (LR-PGK) development effort will qualify state of the art technologies for a course correcting fuze that provides precision accuracy at extended ranges for current and future 155 millimeter (mm) High Explosive (HE) projectiles by eliminating a portion of the inherent errors associated with ballistic firing solutions, which effectively reduces the number of projectiles required to execute fire missions. LR-PGK will support projectile operation in Global Positioning System (GPS) degraded environments and compatibility with Army Modernization objectives under the Long Range Precision Fires Cross Functional Team's (LRPF CFT) new long range cannon, Extended Range Cannon Artillery (ERCA) Self-Propelled Howitzer (SPH). The ERCA and its new long range projectiles require the LR-PGK to meet lethality requirements. Fiscal Year (FY) 2024 funding will continue to support the fabrication of LR-PGK hardware, safety and development testing, and accomplishes a Preliminary Design Review (PDR).

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

	FY 2022	FY 2023	FY 2024
<p>Title: Long Range-Precision Guidance Kit (LR-PGK) Development</p> <p>Description: The LR-PGK development effort will qualify state of the art technologies for operation in GPS degraded environments as well as ensure compatibility with the Extended Range Cannon Artillery (ERCA) weapon and projectiles to meet Army Modernization objectives under the Long Range Precision Fires Cross Functional Team (LRPF CFT).</p> <p>FY 2023 Plans: FY 2023 funding supports LR-PGK development testing, and development of the Full Materiel Release (FMR) design configuration.</p> <p>FY 2024 Plans: FY 2024 funding will continue to support the fabrication of LR-PGK hardware, safety and development testing, and accomplishes a Preliminary Design Review (PDR).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Increase in funding in FY 2024 due to increase in contract and test costs associated with LR-PGK development and qualification efforts.</p>	34.197	28.749	33.564
<p>Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>Description: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p>FY 2023 Plans:</p>	-	1.089	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

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 2022	FY 2023		FY 2024
Funding transferred in accordance with Title 15 USC §638				
FY 2023 to FY 2024 Increase/Decrease Statement:				
Funding transferred in accordance with Title 15 USC §638				
Accomplishments/Planned Programs Subtotals	34.197	29.838		33.564

	FY 2022	FY 2023
Congressional Add: Anti-Jam Precision Guidance Kit	-	25.000
FY 2023 Plans: FY 2023 Congressional Add supports Precision Guidance Kit Extended Range (PGK-ER) development efforts that provide a risk mitigation alternative to support the Extended Range Cannon Artillery (ERCA) System of Systems Operational Assessment and demonstrate its anti-jam capability with the 58 caliber ERCA Self-Propelled Howitzer (SPH) system.		
Congressional Adds Subtotals	-	25.000

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• E99251: LONG-RANGE PRECISION GUIDANCE KIT (LR-PGK)	24.677	37.891	8.248	-	8.248	83.657	92.244	97.686	99.185	0.000	443.588

Remarks
A Procurement of Ammunition, Army (PAA) funding for Long Range-Precision Guidance Kit (LR-PGK), Standard Study Number (SSN) E99251, was established for this effort to deliver long range precision fuzes for the Extended Range Cannon Artillery (ERCA) Operational Assessment (OA) as well as future UMR and FMR quantities.

D. Acquisition Strategy
Long Range-Precision Guidance Kit (LR-PGK) development efforts are focused on addressing performance in Global Positioning System (GPS) degraded environments as well as ensuring compatibility with the Army's new long range 155mm cannon and projectiles, which are scheduled to be fielded in the same timeframe as LR-PGK. The initial contracting strategy included competitive DoD Ordnance Technology Consortium (DOTC) Other Transaction Agreement (OTA) concept development efforts with multiple contractors in Fiscal Year (FY) 2017, followed by a DOTC Risk Reduction concept maturation phase in FY 2018 through FY 2019. This developmental program has the objective to develop and safety qualify an initial configuration to support the Extended Range Cannon Artillery (ERCA). This overlaps with the development of the configurations for Full Material Release (FMR). The FMR qualification effort will begin in FY 2027 to support Milestone C in FY 2028. The program will transition to a Federal Acquisition Regulation (FAR) based production contract to support deliveries. Subsequent to Milestone C, the program will transition to a FAR based contract for Low Rate Initial Production (LRIP) and Full Rate Production (FRP) to support the delivery of the FMR configuration quantities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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>

This Project is also utilizing a Cornerstone OTA with Northrop Grumman Defense Systems (NGDS) for Precision Guidance Kit Extended Range (PGK-ER) development efforts that provide a risk mitigation alternative to support the Extended Range Cannon Artillery (ERCA) System of Systems Operational Assessment and demonstrate its anti-jam capability with the 58 caliber ERCA Self-Propelled Howitzer (SPH) system.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

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 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Office	Various	Office of the Project Manager (PM) Combat Ammunition Systems (CAS) : Picatinny Arsenal, NJ	14.043	0.075	Oct 2021	0.100	Oct 2022	0.100	Oct 2023	-		0.100	0.000	14.318	14.067
SBIR/STTR	TBD	Various : Various	-	-		1.089		-		-		-	0.000	1.089	-
Subtotal			14.043	0.075		1.189		0.100		-		0.100	0.000	15.407	N/A

Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LR-PGK Engineering and Manufacturing Development (EMD)	MIPR	DOD Ordnance Consortium (DOTC) / BAE Systems : Various	40.593	27.003	Nov 2021	21.969	Nov 2022	25.713	Nov 2023	-		25.713	0.000	115.278	33.046
LR-PGK GPS System Maturation	MIPR	DOD Ordnance Consortium (DOTC) / L3-IEC : Various	23.754	2.794	Dec 2021	-		-		-		-	0.000	26.548	10.551
LR-PGK Software Engineering	Reqn	Leidos, Inc. : Reston, VA	0.699	0.700	Aug 2022	0.705	Aug 2023	-		-		-	0.000	2.104	-
LR-PGK Developmental Hardware	Reqn	American Ordnance, LLC : Middletown, IA	0.020	0.095	Apr 2022	0.250	Mar 2023	-		-		-	0.000	0.365	-
Cornerstone - Precision Guidance Kit Extended Range Development - Congressional Add	MIPR	Cornerstone OTA, Northrup Grumman Defense Systems : Plymouth, MN	-	-		21.000	Jun 2023	-		-		-	0.000	21.000	-
Subtotal			65.066	30.592		43.924		25.713		-		25.713	0.000	165.295	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army **Date:** March 2023

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
--	---	--

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LR-PGK Government Engineering Support	MIPR	Combat Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	47.200	3.030	Oct 2021	3.295	Oct 2022	4.651	Oct 2023	-		4.651	0.000	58.176	41.412
PGK-ER Engineering Support - Congressional Add	MIPR	Combat Capabilities Development Command Armaments Center (DEVCOM AC) : Picatinny Arsenal, NJ	-	-		2.000	Jun 2023	-		-		-	0.000	2.000	-
Subtotal			47.200	3.030		5.295		4.651		-		4.651	0.000	60.176	N/A

Remarks
Additional funding required for LR-PGK engineering support in FY 2024 to complete planned development activities leading up to Preliminary Design Review (PDR).

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LR-PGK System Development Testing	MIPR	Army Test and Evaluation Command (ATEC) Yuma Proving Ground (YPG) : Yuma, AZ	11.595	0.500	May 2022	2.430	Nov 2022	3.100	Nov 2023	-		3.100	0.000	17.625	10.442
PGK-ER Testing - Congressional Add	MIPR	Army Test and Evaluation Command (ATEC) Yuma Proving Ground (YPG) : Yuma, AZ	-	-		2.000	Sep 2023	-		-		-	0.000	2.000	-
Subtotal			11.595	0.500		4.430		3.100		-		3.100	0.000	19.625	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army								Date: March 2023			
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			
	Prior Years	FY 2022		FY 2023		FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	137.904	34.197		54.838		33.564	-	33.564	0.000	260.503	N/A

Remarks
 Defense Ordnance Technology Consortium (DOTC)
 Long Range-Precision Guidance Kit (LR-PGK)
 Engineering and Manufacturing Development (EMD)
 Army Test and Evaluation Command (ATEC)

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
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 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
Long Range Precision Guidance Kit (LR-PGK)																												
Technology Maturation and Risk Reduction (TMRR) and EMD																												
Prototype Development & Testing																												
Airframe, Guidance and Control Testing																												
Preliminary Design Review (PDR)																												
Critical Design Review (CDR)																												
Development Testing																												
Milestone B																												
Full Materiel Release (FMR) Qualification Testing																												
Milestone C																												
Initial Operation Test and Evaluation (IOT&E)																												
Precision Guidance Kit Extended Range (PGK-ER)																												
Anti-Jam (AJ) Development and Testing																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
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 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028															
	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												
Anti-Jam (AJ) Guided Flight Test (GFT)									3 AJ GFT																															
Extended Range Cannon Artillery (ERCA) Operational Asses...																																								
ERCA OA Deliveries																																								
ERCA System of Systems (SoS) Developmental Testing (DT) OA																																								

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
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>

Note
Long range precision fuze survivability knowledge points achieved from FY 2021 Congressional Add on Program Element 0604802A Project EU6, 155mm HE Rocket Assist Project Extended Range, are being utilized to support the production of long range precision fuzes for the Extended Range Cannon Artillery (ERCA) Operational Assessment (OA).

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
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
Long Range Precision Guidance Kit (LR-PGK)	1	2022	1	2022
Technology Maturation and Risk Reduction (TMRR) and EMD	1	2019	2	2028
Prototype Development & Testing	2	2020	4	2024
Airframe, Guidance and Control Testing	3	2021	4	2024
Preliminary Design Review (PDR)	4	2024	4	2024
Critical Design Review (CDR)	4	2025	4	2025
Development Testing	4	2024	4	2025
Milestone B	1	2026	1	2026
Full Materiel Release (FMR) Qualification Testing	2	2027	3	2028
Milestone C	3	2028	3	2028
Initial Operation Test and Evaluation (IOT&E)	4	2028	4	2028
Precision Guidance Kit Extended Range (PGK-ER)	1	2023	1	2023
Anti-Jam (AJ) Development and Testing	1	2023	4	2023
Anti-Jam (AJ) Guided Flight Test (GFT)	4	2023	4	2023
Extended Range Cannon Artillery (ERCA) Operational Assessment (OA) Production	4	2023	1	2024
ERCA OA Deliveries	1	2024	2	2024
ERCA System of Systems (SoS) Developmental Testing (DT)/OA	1	2024	1	2026

Note

Long range precision fuze survivability knowledge points achieved from FY 2021 Congressional Add on Program Element 0604802A Project EU6, 155mm HE Rocket Assist Project Extended Range, are being utilized to support the production of long range precision fuzes for the Extended Range Cannon Artillery (ERCA) Operational Assessment (OA).