Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army											Date: March 2023	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 6: *RDT&E Management Support*					R-1 Program Element (Number/Name) PE 0605805A *I Munitions Standardization, Effectiveness and Safety*							
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	-	54.922	60.645	50.409	-	50.409	50.227	48.331	44.573	45.061	0.000	354.168
297: *Mun Survivability & Log*	-	16.227	20.572	18.456	-	18.456	18.521	18.410	18.521	18.723	0.000	129.430
858: *Army Explosives Safety Management Program*	-	1.367	1.009	1.489	-	1.489	1.516	1.545	1.546	1.563	0.000	10.035
859: *Life Cycle Pilot Process*	-	20.300	23.797	5.838	-	5.838	5.861	5.863	5.926	5.991	0.000	73.576
F21: *NATO Ammo Evaluation*	-	0.496	0.766	0.772	-	0.772	0.772	0.773	0.781	0.790	0.000	5.150
F24: *Conventional Munitions Demil*	-	16.532	14.501	23.854	-	23.854	23.557	21.740	17.799	17.994	0.000	135.977

A. Mission Description and Budget Item Justification

This Program Element (PE) supports continuing technology investigations by providing a coordinated Tri-Service mechanism for the collection and free exchange of technical data on the performance and effectiveness of all non-nuclear conventional munitions and weapons systems in a realistic operational environment.

Project 297 - Munitions Survivability & Logistics: This Project supports the future force by making Army units more survivable through the investigation, testing and demonstration of munitions logistics system improvements that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Key thrusts are munitions storage area survivability, Insensitive Munitions (IM) technology integration and compliance, ammunition management and asset visibility, weapon system rearm, munitions configured load enablers and advanced packaging and distribution system enhancements. Within each thrust, a broad array of solutions will be identified, tested, and evaluated against developed system measures of effectiveness. Optimum, cost effective and efficient solutions that enable the rapid projection of lethal and survivable forces will be demonstrated. The early stages of force deployment are especially critical. Theater ammunition storage areas are vulnerable and present the enemy with lucrative targets. These areas and distribution nodes contain the only available munitions stocks in theater. Loss of these munition stocks could cripple the force, jeopardize the mission, and result in high loss of life. This Project mitigates vulnerabilities and ensures a survivable fighting force.

Project 858 - Army Explosives Safety Management Program: This Project establishes, validates or modifies explosives technical safety requirements per Department of Defense Manual 6055.09 and Department of the Army Pamphlet 385-64, Ammunition and Explosives Safety Standards. Project activities promote Research, Development, Test, and Evaluation (RDTE) of new and innovative explosives safety technologies that improve the survivability of Army personnel, facilities, and equipment as well as improve the health, safety and welfare of the general public (with highest priority directed to combat theater of operations).

Project 859 - Life Cycle Pilot Process: This Project supports the implementation of the Single Manager for Conventional Ammunition (SMCA) Industrial Base Strategic Plan through technology investigations, model based process controls, pilot prototyping, and industrial assessments. It will assess life cycle production capabilities required for all ammunition families, address design for manufacturability to facilitate economical production, identify industrial and technology requirements, and address the ability of the production base to rapidly and cost effectively produce quality products. Cost reduction is an important part of the Life Cycle Pilot Process (LCPP). LCPP provides the resources to prototype critical technologies and develop the knowledge base to establish cost effective, environmentally safe and modern

production processes in support of the munitions Industrial Base transformation. In addition, the LCPP program addresses Single Point Failures (SPFs) / No Source of supply within the National Technology Industrial Base (NTIB). LCPP provides support to reduce supply chain risk by investigating, developing and evaluating additional sources of supply for a known SPF.

Project F21:North Atlantic Treaty Organization (NATO) Ammunition Evaluation program funding ensures interchangeability of ammunition and weapons among all the NATO countries with all of the associated logistic, strategic and tactical advantages of the alliance. This Project involves development and testing compliance of NATO standardization agreements (STANAGS) and staffing of the North American Regional Test Center (NARTC). In addition, this Project supports small caliber ammunition, 50mm ammunition, 40mm grenade munitions, medium caliber cannon ammunition, and large caliber ammunition enhancements to lethality, effectiveness, survivability, accuracy, and general product improvements. This Project also supports the standardization and interchangeability of legacy and new production United States (US) weapons and ammunition with Allied Nations to maximize battlefield interchangeability/ compatibility under the auspices of international agreements to include NATO working groups, the Joint Ballistics Memorandum of Understanding (JBMOU), and information/ data exchange agreements. Maximizing standardization, interchangeability, and exportability will also potentially increase Foreign Military Sales (FMS) of US indirect fire weapon and munition products to support United States industrial base production and affordable Department of Defense pricing through increased economies of scale. Fiscal Year 2024 funding will support NATO and JBMOU artillery and small arms ammunition interchangeability group meetings, documentation, and test operations.

Project F24: Conventional Munitions Demilitarization (Demil): The Conventional Munitions Demilitarization technology Project supports the SMCA responsibility per Department of Defense Instruction (DoDI) 5160.68 to plan, program, budget and fund a Joint Service Research and Development (R&D) program that develops capability and capacity as well as technology and facilities to support the SMCA mission to demil and dispose of conventional ammunition stored in the SMCA Resource, Recovery and Disposition Account (B5A). The program goals include SMCA efforts to increase efficiencies and effectiveness to reduce the demil stockpile; reduce processing costs including packaging, handling and crating; and increase capacity through improved demilitarization capabilities and processes. Project F24 includes activities: (1) to establish requirements and develop processes to focus investments, assess capabilities, analyze alternatives, and recommend and implement R&D projects; (2) to improve products and processes that support existing capabilities; (3) to develop or improve demil methods and processes related to advance the primary demilitarization core thrust areas of destruction, disassembly, removal, resource recovery and recycling, and waste stream treatment; (4) to ensure safe and environmentally acceptable demil operations; (5) to transition R&D products to United States Army depots or plants as well as commercial facilities performing demil; and (6) to mitigate risk and close-out project activities.

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Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605805A *I Munitions Standardization, Effectiveness and Safety*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	63.042	48.316	44.660	-	44.660
Current President's Budget	54.922	60.645	50.409	-	50.409
Total Adjustments	-8.120	12.329	5.749	-	5.749
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.671			
• Congressional Rescissions	-	-			
• Congressional Adds	-	18.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-8.120	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	5.749	-	5.749

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 859: *Life Cycle Pilot Process*		
Congressional Add: *Program increase - Foamable Celluloid Materials*	5.000	5.000
Congressional Add: *Program increase - Industrial Base Resiliency initiative*	5.000	-
Congressional Add: *Program increase- Agile Manufacturing for Advanced Ammunition Materials and Manufacturing Technologies*	5.000	-
Congressional Add: *Program increase - Neutron Radiography*	-	5.000
Congressional Add: *Program increase- Additive Manufactiong for High Temperature Alloys*	-	8.000
Congressional Add Subtotals for Project: 859	15.000	18.000
Congressional Add Totals for all Projects	15.000	18.000

Change Summary Explanation

Increased funding is for anti personnel landmine demilitarization effort.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	Project (Number/Name) 297 / *Mun Survivability & Log*	

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
297: *Mun Survivability & Log*	-	16.227	20.572	18.456	-	18.456	18.521	18.410	18.521	18.723	0.000	129.430
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports the future force by making Army units more survivable through the investigation, testing and demonstration of munitions logistics system improvements that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Key thrusts are munitions storage area survivability, Insensitive Munitions (IM) technology integration and compliance, ammunition management and asset visibility, weapon system rearm, munitions configured load enablers and advanced packaging and distribution system enhancements. Within each thrust, a broad array of solutions will be identified, tested, and evaluated against developed system measures of effectiveness. Optimum, cost effective and efficient solutions that enable the rapid projection of lethal and survivable forces will be demonstrated. The early stages of force deployment are especially critical. Theater ammunition storage areas are vulnerable and present the enemy with lucrative targets. These areas and distribution nodes contain the only available munitions stocks in theater. Loss of these munition stocks could cripple the force, jeopardize the mission, and result in high loss of life. This Project mitigates vulnerabilities and ensures a survivable fighting force while providing leap ahead technology to meet the Multi-Domain Operations and the priorities identified by the Long Range Precision Fires & Solider Lethality Cross Function Teams.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Munitions Predictive Life	2.271	2.630	3.480

Description: This activity will demonstrate technologies and algorithms that can help assess munitions serviceability based upon aggregate environmental exposures, system cycling and munition degradation models. The activity will provide life cycle management tools for risk mitigation strategies, while reducing testing, inspection & surveillance required as well as improving weapon system reliability and warfighter effectiveness. This Project will specifically assess munitions serviceability based upon aggregate environmental exposures, system cycling and munition degradation models during the tactical distribution of munitions after munitions are re-configured to distribution focused multi-DODIC consolidation packs.

FY 2023 Plans:

Investigate capabilities for monitoring ammunition exposures to temperature/humidity/shock/vibration that will ensure exposure thresholds are not breached and that the ammunition is viable for use, thereby improving operational resiliency. The effort will investigate capabilities that will integrate with developmental tactical 155mm ammunition storage and transportation systems to mitigate the detrimental effects of these exposures to the operational availability of the weapon platform. This capability may be integrated into existing vehicles and conveyances or integrated into emerging systems, and will feed data about existing and future Long Range Precision Fires (LRPF) ammunition components (ammunition, propellant, fuzes, and packaging) into emerging tactical ammunition management systems to ensure only viable ammunition is tasked for use. Conduct studies on the degradation of 155mm propellant due to exposure to regional/seasonal humidity levels (future Extended Range Canon Artillery

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** 297 / *Mun Survivability & Log*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
(ERCA) systems will likely store propellant out-of-container) to provide understanding of the impact of measured exposures. Develop an active ruggedized environmental exposure sensor for ammunition that integrates with emerging hybrid ammunition packaging containers/consolidators of dismounted infantry items to monitor operational exposure thresholds during transport through last tactical mile. ***FY 2024 Plans:*** Develop techniques to improve operational lethality and readiness by utilizing commercial off the shelf environmental monitoring technologies/sensors to record temperature, humidity, shock, vibration exposure to ensure ammunition is viable for use. This development effort will investigate potential methods to overcome the high risk/cost of dedicated ammunition health monitoring sensors and predicted remaining useful life algorithms of past investments. As these commercial solutions are evaluated, the most suitable candidates will be integrated with emerging tactical 155mm ammunition storage and transportation systems to mitigate the detrimental effects of environmental exposure on the operational availability of the weapon platform. This tailored capability will be integrated into existing or emerging weapon systems to meet requirements established by the Long Range Precision Fires (LRPF) Cross Functional Team (CFT), and will feed ammunition exposure data into tactical ammunition management systems to ensure only viable ammunition is sourced for use. Conduct an in-depth analysis to establish the potential degradation conditions for 155mm propellant due to regional / seasonal environmental exposure when deployed with Extended Range Cannon Artillery (ERCA) and other Field Artillery (FA) systems, to ensure deployment of selected commercial solution to meet ammunition surveillance requirements. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: Insensitive Munitions (IM) Integration Program ***Description:*** Demonstrate multiple IM technologies and integrate into end item(s) to improve munitions survivability and warfighter safety. IM Technologies, using State-of-the-Art materials, will be developed in the areas of warhead, propulsion and propellants, explosives, packaging, and barriers. In addition, modeling and simulation will be used to reduce development and testing costs. Efforts will increase the number of IM compliant ammunition items fielded to mitigate munitions reaction to unplanned stimuli such as fire, fragments, enclosed heat build-up (cook-off), bullets, adjacent munitions reaction (sympathetic detonation), and shape charge jet attacks. ***FY 2023 Plans:*** Demonstrate Slow Cook Off (SCO) mitigation using container heat management technology with live munitions. Demonstrate Sealed Seam packaging venting technology to improve artillery and tank containers' response to thermal events in support of Long Range Precision Fire (LRPF) modernization priority. Continue Insensitive Munition (IM) testing of the M433E1 40MM Cartridge to integrate explosive technology along with warhead, packaging venting and impact mitigation technologies in	6.666	5.310	6.700

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
support of Next Generation Combat Vehicle (NGCV) priorities. Utilize completed characterization testing to down-select DNP formulation for initial engineering IM testing in end item to support Soldier Lethality (SL) modernization priority. Initiate engineering IM and performance tests of Titan II formulation to support Long Range Precision Fires (LRPF) and Air and Missile Defense (AMD) priorities. Continue demonstration of PAX-64 as a replacement for PBXN-12 in mortar IM auxiliary charges for improved Fragment Impact (FI) response. Initiate gun firings of new igniter formulations to replace Benite in 120mm tank munitions. Develop propellant coating technology for improved cook-off and impact threats. ***FY 2024 Plans:*** Complete full-scale full-scale IM and performance testing of medium caliber composite cartridge cases for improved response to shock and thermal threats in support of NGCV, FVL and Soldier Lethality SL modernization priorities. Finalize Phase Change Material design of container heat management technology for mortar packaging and initiate live demonstration testing. Complete hot and cold Highly Accelerated Life testing of Sealed Seam packaging venting technology to improve artillery and tank containers' response to thermal events in support of Long Range Precision Fire (LRPF) modernization priority. Initiate IM testing of container lid venting in selected packaging container. Continue demonstration of the M433E1 40MM Cartridge to integrate explosive technology along with warhead, packaging venting and impact mitigation technologies in support of Next Generation Combat Vehicle (NGCV) priorities. Initiate engineering IM testing of down-selected DNP formulation in end item to support Soldier Lethality (SL) modernization priority. Continue engineering IM and performance tests of Titan II formulation in end item to support Long Range Precision Fires (LRPF) and Air and Missile Defense (AMD) priorities. Continue demonstration of PAX-64 as a replacement for PBXN-12 in mortar auxiliary charges for improved Fragment Impact (FI) response. Complete static fire, fragment impact and ballistic performance testing of new igniter formulations to replace Benite in 120mm tank munitions. Develop combustible cartridge case to replace metal cartridge in 105mm Tank ammunition. Evaluate propellant coating technology for improved cook-off and impact threats. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: Improved Munitions Packaging ***Description:*** This activity will demonstrate upgrades to existing packaging components and materials to improve legacy ammunition survivability. These upgrades will enhance ammunition survivability and reliability, improve field ammunition operations, and improve packaging. This activity will also demonstrate intermediate packaging concepts and components to improve survivability once removed from bulk packs for finer grain distribution through the BCT. ***FY 2023 Plans:*** Complete engineering and environmental testing on low cost cylindrical container prototypes that incorporate novel venting technology with application for 120mm tank and 155mm extended range ammunition components. Conduct performance testing	2.600	2.505	2.900

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
of ammunition pallets constructed from undervalued hardwoods. Complete cost benefit analysis and implement via a revision to the pallet specification. Develop functional prototype packaging components and 'automation friendly' technologies (e.g. lids, latches, security seal, tie downs, palletization methods and environmental sealing techniques) to enable ammunition handling forward of the Ammunition Storage Point to compliment emerging Long Range Precision Fire CFT modernization initiatives. Continue to investigate hybrid light weight small arms packaging concepts to meet Soldier Lethality modernization resupply requirements. Conduct comparative testing to evaluate ammo packaging technologies intended to reduce the packaging unit cost in support of the JPEO Armaments & Ammunition portfolio of small caliber items. Support qualification testing on packaging prototypes and configurations designed to protect legacy large caliber propellant, fuze and projectile components against environmental effects and other stimuli, as required to reflect use cases defined by the emerging CONOPS for ERCA. Assess the viability of adding 2-dimensional bar codes to individual PM Cannon Artillery System items and unitized packaging to include projectiles, fuzes, and propellant charges to prepare for future ammunition handling automation. Evaluate redesigned ammunition stowage mechanisms developed for the M992A3 Carrier Ammunition Tracked (CAT) for soldier efficiencies, improved resupply/ rearm processes, and ammunition survivability and readiness.			
FY 2024 Plans: Develop a suite of robust ammunition consolidators to protect extended range field artillery components after their removal from depot packaging to ensure expected performance will not degrade during distribution. Develop new ammunition stowage designs for associated ammo support vehicles that maximizes inventory / complete round quantities, optimizes storage and retrieval of ammunition, maintain legacy vehicle safety and functionality, while minimizing physical demands of crew when conducting rearm and resupply operations. Continue development of light weight steel rectangular ammunition containers to meet 6.8mm ammunition qualification tests. Begin engineering design of packaging components to promote automation during storage and handling. Develop new designs or concepts for lids, latches, security seals, tie downs, palletization methods and environmental mitigation. Investigate coating materials and processes to enable stenciling/labeling/QR code marking of ammunition for accountability proposes forward of the Ammunition Storage Areas, to meet Multi Domain Operations (MDO) modernization initiatives. Conduct comprehensive industry search of emerging materials/technologies for applicability to ammunition packaging to reduce unit cost and weight in support of the JPEO Armaments & Ammunition portfolio. Conduct engineering testing on packaging prototypes and configurations designed to protect new and legacy items against environmental effects and other stimuli, as required to reflect use cases defined by the CONOPS for Extended Range Cannon Artillery (ERCA). Conduct business case analysis of 2-dimensional bar codes to individual PM Cannon Artillery System items and unitized packaging to include projectiles, fuzes, and propellant charges at the load plant. Assess M992A3 Carrier Ammunition Tracked extended range ammunition stowage designs/mechanisms for automation applicability to meet the PM SPHS/LRPF Cross Functional Team (CFT) autonomy initiatives for ERCA and other field artillery formations.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding change reflects planned lifecycle of this effort.			
Title: Ammo Provider	4.690	4.727	5.376
Description: This activity demonstrates technologies that will assure a survivable munitions logistics system by increasing distribution velocity and protecting ammo storage areas. Technology areas to be investigated include ammunition asset visibility, including environmental sensors, marking technologies, and supply chain modeling; ammunition management, including improvements in stockpile surveillance and condition based management; sustainment, including pre-configured loads (soldier to unit size); field ammo reconfiguration capability, robotic handling, and improved load building capability; and force protection, including site planning software and field storage protection. All research and development initiatives will be supporting the Long Range Precision Fires & Solider Lethality Cross Functional Teams (CFTs) and the multi domain operations modernization objectives that consume, store or transport/distribute munitions and munition components in the maneuver formations. ***FY 2023 Plans:*** Investigate emerging technologies that may contribute to a suite of ammunition logistics enablers to meet the CFT modernization objectives for Long Range Precision Fires (LRPF) Extended Range Cannon Artillery and Soldier Lethality (SL) Small Unit Resupply priorities. These enablers include objectives to provide for the optimization of requisitions, geo-location of inventory, real-time consumption, and planning/forecasting for all ammo items, adapting multi-class configured loads to available transportation conveyances for anticipatory planning for allocation of ammunition distribution assets. Investigate explosive siting techniques to complete explosive safety separation distances for selected military combat and combat service support vehicles uploaded with a basic load or ammo cargo. Refine existing high fidelity models to reflect LRPF Fire Faster concepts and the resupply and retrograde benefits that may accrue through deployment. Assess new concepts for ammo handling interim/ post depot pack configuration enablers to meet LRPF CFT supply chain through-put requirements to improve ammunition distribution velocity through the Tactical Ammunition Micro-services Management (TAMMS). Revise scoring metrics and validate the operational benefits of the Fire Faster integrated automation through advanced System Engineering techniques. Develop a strategy for a responsive ammunition supply chain concept, integrated through Leaderboard, to meet dismounted infantry requirements as defined by the SL CFT Small Unit Resupply initiative. Conduct an extended user evaluation of the Army Futures Command (AFC) Software Factory first iteration and cloud hosting of Munitions Survivability System with the US Marines to validate all operational and interface requirements have been met. ***FY 2024 Plans:*** Conduct extensive system engineering analysis to determine expected life cycle cost and performance of a suite of ammunition logistics enabler prototypes under development to meet the Multi Domain Operations (MDO) modernization objectives for Long Range Precision Fires (LRPF), Next Generation Combat Vehicle, and Network Cross Functional Teams. These logistics enablers will be assessed through lethality, mobility, and readiness benefits as measured across multiple maneuver formations covering field artillery and large/medium caliber direct fire. Results will be used to refine user requirements and inform associated			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Programs of Record (POR) to provide for the automation and optimization of requisitions, spatial and temporal based inventory data, real-time consumption tracking, and forecasting demand for all ammo items. Extend analysis to optimize tactical multi-class storage areas to efficiently deliver configured loads that are synchronized with available transportation conveyances, and support preparation and planning for future missions to meet the objectives of the Sustainment Mission Command Predictive Logistics concept, for more efficient distribution of Ammunition and other commodities. Mature explosive safety siting techniques to inform a JPEO Material Decision. In collaboration with PM CAS and PM SPHS, develop enhanced high-fidelity models to reflect LRPF increased rate of fire concepts and the lethality and mobility resupply requirements to meet unit readiness. Develop prototypes for large caliber ammo handling and transportation enablers to meet supply chain through-put requirements/distribution velocity, and to enable automation. Integrate enablers as they mature into the Tactical Ammunition Management Micro-Services to continuously improve ammunition distribution velocity. Conduct limited user evaluations of emerging ammunition logistics enablers as they mature to gain direct soldier feedback on potential benefits while also informing RDT&E decision points through the development cycle. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: P2 Supply Chain Assured Munitions ***Description:*** Army added funds to update legacy chemical specifications and expand the Industrial Base Analysis Tool (IBAT) software to illuminate kinetic weapons supply chains involving critical chemicals and raw materials used in missiles and munitions. ***FY 2023 Plans:*** Funds will be used to develop a deeper understanding of the risks to the weapons and munitions supply than is presently afforded by the IBAT. Commercial software application tools will be employed were appropriate to identify and document previously unknown supply chain risks to be mitigated. Funds will also be used to modernize the specifications of designated critical materials in order to expand the potential supplier base by eliminating obsolete test methods and modify requirements that are impediments to a viable domestic supplier base. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Effort was completed in FY 2023.	-	4.649	-
Title: SBIR/STTR Transfer ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	0.751	-

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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	16.227	20.572	18.456

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	Project (Number/Name) 858 / *Army Explosives Safety Management Program*	

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
858: *Army Explosives Safety Management Program*	-	1.367	1.009	1.489	-	1.489	1.516	1.545	1.546	1.563	0.000	10.035
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project establishes, validates or modifies explosives technical safety requirements per Department of Defense Pamphlet 385-64, Ammunition and Explosives Safety Standards. Project activities promote Research, Development, Test, and Evaluation (RDTE) of new and innovative explosives safety technologies that improve the survivability of Army personnel, facilities, and equipment as well as improve the health, safety and welfare of the general public.
FY 2024 funding will support continued testing, validation, and regulatory integration for permanent, temporary and mobile ammunition and explosives facilities focusing on construction and instrumentation of destructive test structures; data collection and analyses; policy change identification and implementation. The Defense Ammunition Center/US Army Technical Center for Explosives Safety (DAC/USATCES), Engineer Research and Development Center will team with and sponsor agencies (Joint Service, Academia, and Contractor) to improve the effectiveness of identifying, analyzing, and apply risk acceptance to ammunition and explosive environments. Naval Facilities Engineering and Expeditionary Warfare Center Branch to provide technical support in the areas of risk assessment Program, DDESB Science Panel, and the DoD protective construction.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Risk based explosives safety criteria	0.272	0.160	0.367
Description: Development of risk based explosives safety criteria that will aid commanders and safety personnel in the transition from regulation to risk management.			
FY 2023 Plans: Continue to leverage explosive safety personnel in support of reduced quantity distance field storage testing. Testing objectives are to establish Explosives Safety Quantity Distance, hazardous fragment distance and debris characteristics from an internal detonation using new storage container and barrier configurations. Funding allows Subject Matter Experts to determine whether Inhabited Building Distances can be reduced, determine effectiveness of barricades in reduction of debris and development of physics-based models of hazards associated with accidental explosion.			
FY 2024 Plans: Provide critical resources to support explosives testing in support of hazard research and exposure consequences. Assess hazards and risks for combat units. Development, promulgate and application of explosives safety technologies and practices.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Increase is due to additional resources needed to support explosive testing in hazard and exposure consequences.			
Title: Development of enhanced protective structure designs ***Description:*** Develop enhanced protective structure designs that improve the survivability of Army personnel, facilities and equipment. ***FY 2023 Plans:*** Continue to conduct field experiments, high fidelity numerical simulations and advanced data analysis for Earth Covered Magazines (ECM). Validate the updates made to the current Earth Covered Magazine code requirements to reduce soil cover. Tailor and connect data driven ECM and Above Ground Magazine (ECM/AGM) requirements to increase explosive storage capacity. ***FY 2024 Plans:*** Destructive testing of protective infrastructure in support of safety regulation update to protect personnel/assets and improving protective structure design. Tailor and connect data driven Earth Covered Magazines and Above Ground Magazine (ECM/AGM) requirements to increase explosive storage capacity and reduce sustainment costs. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase tied to additional testing in Earth Covered Magazine and Above Ground Magazines (ECM and AGM).	0.900	0.650	0.887
Title: Development of explosive safety tools ***Description:*** Develop explosive safety tools for use by Army personnel. Explosive safety tools allow commanders and safety personnel to make explosive safety decisions using risk management methodologies. ***FY 2023 Plans:*** Efforts continue development of new methods and tools for risk assessment to improve explosive safety risk management decisions in support of research and development efforts on Army installations. ***FY 2024 Plans:*** Continue to develop new methods and tools for risk assessment to improve explosive safety risk management decisions. This program will develop and implement quantity distance requirements for labs and research facilities. Participate in Non- Army explosive safety testing and determine the orientation and configuration of explosives storage configurations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase tied to data analytics, tool development and deployment events.	0.195	0.162	0.235
Title: SBIR/STTR Transfer	-	0.037	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** 858 / *Army Explosives Safety Management Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: SBIR/STTR Transfer ***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	1.367	1.009	1.489

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	Project (Number/Name) 859 / *Life Cycle Pilot Process*	

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
859: *Life Cycle Pilot Process*	-	20.300	23.797	5.838	-	5.838	5.861	5.863	5.926	5.991	0.000	73.576
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Life Cycle Pilot Process Project supports the implementation of the Single Manager for Conventional Ammunition (SMCA) Industrial Base Strategic Plan through technology investigations, pilot prototyping, and industrial assessments. Purpose is to develop a knowledge base for modern, cost effective, environmentally safe, and secure Industrial Base processes and practices. This project addresses technology, producibility, cost refinement, and supply chain risks for JPEO Armaments & Ammunition portfolio. Project 859 divides into three thrust areas: Single Point Failures (SPFs); Life Cycle Cost Refinement; and Manufacturing Technology for Industrial Base Transformation. Respectively this project will mitigate supply chain and source of supply concerns; refine overall product and manufacturing costs; and assess and implement modern/ industry-standard manufacturing processes to the Industrial Base.

FY2024 funding supports efforts to improve end item manufacturing costs; bridge technology transition between research and production; and assess improved security processes; evaluate alternative materials and processes to address supply chain risks and resiliency concerns. Specifically, resources will be directed to prove-out improved artillery explosive load operations, prove-out automated artillery propulsion operations, investigate improved waste treatment operations at government-owned contractor-operated facilities. Evaluate alternative Single Point Failure materials for close combat and large caliber munitions.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Life Cycle Cost Refinement	0.989	1.928	1.414
Description: This thrust area seeks out new opportunities to reduce overall cost of armaments and ammunition components. Efforts will review and analyze legacy manufacturing processing for opportunities to integrate improved technology that can lead to increased operator safety and materials to lean manufacturing processes to reduce overall unit cost and utilization of greener materials.			
FY 2023 Plans: Continue to evaluate and investigate mature manufacturing process, automation of processes and technologies to improve the efficiencies and reduce cost of operations at the GOCO facilities. Assess alternative materials/components and alternative production processes to reduce end item and production costs for transition to the Army's Industrial Base. Efforts are aligned with the Army's Long Range Precision Fires Cross Functional Team (CFT) include but not limited to: automating load, assemble and pack operations for artillery and propulsion charge systems.			
FY 2024 Plans: Assess alternative materials/components and alternative production processes to reduce end item and production costs for transition to the Army's Industrial Base; Efforts aligned with the Army Long Range Precision Fires CFT include but are not limited			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** 859 / *Life Cycle Pilot Process*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
to improve load, assemble, and pack operations for artillery munition systems; reduction in Industrial Base waste disposal cost by assessing waste stream repurpose processes. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease in program priorities due to increased efforts mitigating single source and no source of supply of critical chemicals/ materials.			
Title: Single Point Failures (SPFs) ***Description:*** This thrust area seeks to mitigate single source and no source of supply to armaments and ammunition manufacturing operations. Thrust area tests or evaluates alternative materials and processes to mitigate SPFs. These efforts are part of the overall strategy to reduce the number of SPFs in the National Technology and Industrial Base (NTIB). Additionally, thrust area efforts will address ammunition manufacturing capability shortfalls. This area leverages RDTE accomplishments and product knowledge to satisfy manufacturing requirements. ***FY 2023 Plans:*** Continue to assess and test the technologies and material alternatives to mitigate single source and no source of supply for in production end items and end item components. Investigative findings will follow similar technology transition / transfer paths to the industrial base or product PM. ***FY 2024 Plans:*** Continue to assess technologies and material alternatives to mitigate single source and no source of supply for in production end items and end item components. Efforts include but not limited to; assessment of alternative production processes for military grade materials; alternative materials assessment for large caliber and grenade SPF mitigation. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase in program priorities to explore technologies and material alternatives to mitigate single source and no source of supply of critical chemicals/materials.	0.315	0.265	1.980
Title: Manufacturing Technology for Industrial Base Transformation ***Description:*** This thrust area matures ammunition manufacturing technologies, processes to enhance manufacturing, security capabilities of legacy armaments and ammunition manufacturing operations. This thrust area will integrate the framework for digital manufacturing and engineering concepts to pilot and transition processes to affected industrial base for armaments and ammunition production operations. ***FY 2023 Plans:***	3.996	3.392	2.444

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** 859 / *Life Cycle Pilot Process*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Efforts include supporting the Army's vision for transformational change across the ammunition industrial base to ensure modernized manufacturing methodologies, processes and equipment. Efforts are aligned with Long Range Precision Fires and Solider Lethality CFTs through assessment of modernized explosive load, assemble and pack operations for transition to government-owned, contactor-operated facility; digital technology integration strategies, investigations of robotic and automated manufacturing technologies to reduce energetic waste, improve safety of manufacturing operations and provide assessment of manufacturing efficiencies by investigating flexible manufacturing lines in support of but not limited to production of munition energetic components. ***FY 2024 Plans:*** Continue supporting the Army's vision for transformational change across the ammunition industrial base to ensure modernized manufacturing methodologies, processes, and equipment. Design and prove-out improved artillery load, assemble and pack operations and influence design considerations to production facilities. Investigations of robotic and automated manufacturing technologies, investigate manufacturing methodologies to reduce/transform energetic waste, provide safer manufacturing operations and improve manufacturing efficiencies for armaments and ammunition production operations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease in program priorities due to increased efforts mitigating single source and no source of supply of critical chemicals/ materials.			
Title: SBIR/STTR Transfer ***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.	-	0.212	-
Accomplishments/Planned Programs Subtotals	5.300	5.797	5.838

	FY 2022	FY 2023
Congressional Add: Program increase - Foamable Celluloid Materials	5.000	5.000
FY 2022 Accomplishments: Foamable celluloid products provides a lighter weight, robust product at a lower cost than the currently fielded items. This effort continues development of Foamable Celluloid manufacturing technologies and evaluation of munition components made out of foamable celluloid at various funding and		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** 859 / *Life Cycle Pilot Process*

	FY 2022	FY 2023
maturity levels. ***FY 2023 Plans:*** Optimize foamable celluloid formulations and processing conditions for specific end-item characteristics, including burn rate and mechanical strength. Optimized material shall support test and evaluation activities		
Congressional Add: Program increase - Industrial Base Resiliency initiative ***FY 2022 Accomplishments:*** Effort will develop technology to strengthen energy security and resiliency for the Army's munition industrial base.	5.000	-
Congressional Add: Program increase- Agile Manufacturing for Advanced Ammunition Materials and Manufacturing Technologies ***FY 2022 Accomplishments:*** Investigate critical materials and techniques assessing Manufacturing solutions of high temp metal alloys and ceramics to meet Modernization and Readiness Priorities.	5.000	-
Congressional Add: Program increase - Neutron Radiography ***FY 2023 Plans:*** Continuing non-destructive imaging techniques using high-energy neutron radiography. Enable neutron radiography imaging technology to improve quality, warfighter safety and lethality for artillery.	-	5.000
Congressional Add: Program increase- Additive Manufactiong for High Temperature Alloys ***FY 2023 Plans:*** Modernization of advanced munition systems while enhancing lethality, range, and readiness. Sustain flexible agile manufacturing processes and technologies for Next Generation Armaments. Expand the ability to produce munitions on agile production line(s) that can switch between families of munitions and can be assessed for implementation in ammunition plants.	-	8.000
Congressional Adds Subtotals	15.000	18.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	Project (Number/Name) F21 / *NATO Ammo Evaluation*	

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
F21: *NATO Ammo Evaluation*	-	0.496	0.766	0.772	-	0.772	0.772	0.773	0.781	0.790	0.000	5.150
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

North Atlantic Treaty Organization (NATO) Ammunition Evaluation program funding ensures interchangeability of ammunition and weapons among all the NATO countries with all of the associated logistic, strategic and tactical advantages of the alliance. This Project involves development and testing compliance of NATO standardization agreements (STANAGS) and staffing of the North American Regional Test Center (NARTC). In addition, this Project supports small caliber ammunition, 50mm ammunition, 40mm grenade munitions, medium caliber cannon ammunition, and large caliber ammunition enhancements to lethality, effectiveness, survivability, accuracy, and general product improvements. This Project also supports the standardization and interchangeability of legacy and new production United States (US) weapons and ammunition with Allied Nations to maximize battlefield interchangeability/ compatibility under the auspices of international agreements to include NATO working groups, the Joint Ballistics Memorandum of Understanding (JBMOU), and information/ data exchange agreements. Maximizing standardization, interchangeability, and exportability will also potentially increase Foreign Military Sales (FMS) of US indirect fire weapon and munition products to support United States industrial base production and affordable Department of Defense pricing through increased economies of scale. Fiscal Year 2024 funding will support NATO and JBMOU artillery and small arms ammunition interchangeability group meetings, documentation, and test operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: New Ammo Design Qualification & NATO Mission Support	0.279	0.310	0.326
Description: This activity ensures complete interchangeability of small caliber, automated cannon-caliber, 40mm grenade ammunition, air burst capable 30mm/40mm ammunition, 50mm ammunition, large caliber ammunition and weapons among NATO countries to achieve the associated logistic, strategic and tactical advantages. ***FY 2023 Plans:*** Will continue work to support NATO small arms ammunition, direct fire grenade, and large caliber interchangeability group meetings, documentation and test operations to enable interoperability among our allies. ***FY 2024 Plans:*** Will continue work to support NATO small arms ammunition, direct fire grenade, and large caliber interchangeability group meetings, documentation and test operations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased activity planned to improve NATO interoperability.			
Title: Joint Ballistics Program Support	0.217	0.428	0.446

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** F21 / *NATO Ammo Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The activity supports the maturation, validation, and risk reduction of battlefield interchangeability/ compatibility and associated enabling technologies between domestic US and NATO/ Allied Nations indirect fires weapons and munitions. ***FY 2023 Plans:*** FY 2023 will continue interoperability testing and interchangeability group meetings. ***FY 2024 Plans:*** FY 2024 funding will continue to support NATO and JBMOU artillery documentation, interoperability testing and interchangeability group meetings. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase in FY2024 for additional interoperability testing and documentation.			
Title: SBIR/STTR Transfer ***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.	-	0.028	-
Accomplishments/Planned Programs Subtotals	0.496	0.766	0.772

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	Project (Number/Name) F24 / *Conventional Munitions Demil*	

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
F24: *Conventional Munitions Demil*	-	16.532	14.501	23.854	-	23.854	23.557	21.740	17.799	17.994	0.000	135.977
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Conventional Munitions Demilitarization Technology Project supports the Single Manager for Conventional Ammunition (SMCA) responsibility per Department of Defense Instruction (DoDI) 5160.68 to plan, program, budget and fund a Joint Service research and development program that develops capability and capacity as well as technology and facilities to support the SMCA mission to demilitarize and dispose of conventional ammunition stored in the SMCA Resource, Recovery and Disposition Account (B5A). Project goals include SMCA efforts to increase efficiencies and effectiveness to reduce the demil stockpile; reduce processing costs including packaging, handling and crating; and increase capacity through improved demil capabilities and processes. Project F24 includes several activities: (1) to establish requirements and develop processes to focus investments, assess capabilities, analyze alternatives, and recommend and implement RDT&E projects; (2) to improve products and processes that support existing capabilities; (3) to develop or improve demil methods and processes related to advance the primary demilitarization core thrust areas of destruction, disassembly, removal, resource recovery and recycling, and waste stream treatment; (4) to ensure safe and environmentally acceptable demil operations; (5) to transition RDT&E products to United States Army depots or plants as well as commercial facilities performing demil; and (6) to mitigate risk and close-out Project activities.

During Fiscal Year (FY) 2024, the F24 projects will focus efforts on fielding alternative capabilities and developing enhancements to existing closed disposal capabilities. This effort will reduce hazardous air pollutants generated in the demil capability for the 155mm projectile Family of Scatterable Mines (FASCAM) at McAlester Army Ammunition Plant (MCAAP) deactivation furnace. The F24 Project will initiate design and fabrication of Anti-Personnel Landmine download lines for GATOR Cluster Bomb Units (CBU) and 155mm Area Denial Artillery Munitions (ADAM) projectiles.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Destruction	3.672	3.456	4.266
Description: This effort focuses on developing capabilities and capacities for the destruction of obsolete and or unsafe munitions.			
FY 2023 Plans: Planned initiatives include: conduct of an operational test of the download equipment for the Honest John Warhead. The Honest John Warhead contains M40 and M38 cluster munitions bomblets/grenades, which will be disposed of in a safe manner. Complete Transition of the Ammonium Perchlorate Rocket Motor Destruction project from an Initial Operational Capability (IOC) to a Full operational capability (FOC) at Letterkenny Munitions Center (LEMC). Complete installation of the Filter Bags for reduction of Dioxan and Furan generation at the McAlester Cryofracture Destruction Facility.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** F24 / *Conventional Munitions Demil*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Transition the Honest John Warhead demil capability to a CONUS Depot. Complete hardware improvements to reduce hazardous air pollutants generated in the demil capability for the 155mm projectile Family of Scatterable Mines (FASCAM) at the Munitions Cryofracture Disposal Facility (MCDF) and initiate final compliance testing. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase attributed to Honest John transition initiative.			
Title: Resource Recovery and Recycling (R3) ***Description:*** This effort focuses on enhancing existing methods of munitions R3, which will maximize sale of residual materials. Proceeds of R3 sales are reinvested in the Army Demilitarization mission to reduce the B5A stockpile. ***FY 2023 Plans:*** Planned initiatives include: systemization of the Automated Scrap Inspection System at Tooele Army Depot (TEAD). The Automated Scrap Inspection (ASI) will implement a automated inspection of thermally treated munitions via back scatter X-ray machine vision, and artificial intelligence to verify that the material is safe to release to the public for resale of residuals. The goal is to enhance both the safety and efficacy of the process. A preliminary design will be completed for the size reduction of rocket motor grains capability. The size reduction of rocket motor grains project will focus on developing an alternative to open burning or static fire of obsolete rocket motors. This initiative will focus on development and implementation of methods for propellant size reduction and reuse of rocket motor casings. Completed a critical design for the Plastic Shotgun Cartridge Demil Capability. ***FY 2024 Plans:*** Complete Operational Demonstration of the Automated Scrap Inspection (ASI) capability at Tooele Army Depot (TEAD). Conduct operation demonstration of the size reduction of rocket motor grains capability. Initiate Hardware Design of a Plastic Shotgun Cartridge Demil Capability. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase attributed to operational demonstration of the size reduction of double based rocket motor grains capability.	2.019	3.234	3.993
Title: Advanced Removal ***Description:*** This effort focuses on technology to remove propellant and energetics from munitions to allow closed disposal thermal treatment. ***FY 2023 Plans:*** Transition Phase I of the MK 46 Torpedo Warhead to an Execution Capability. Funding will support transition of the demil capability for the 155mm Illumination Projectiles to an organic facility. The configuration of the D505 has a unique expulsion charge, configuration and additional baseline pinning making direct pushout challenging and a safety concern. Conduct an	5.919	1.343	1.658

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** F24 / *Conventional Munitions Demil*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
operational demonstration of the D505 capability at McAlester Army Ammunition Plant. Funding will also support a final operational test of a capability to demil 2.75" Rocket Motors. ***FY 2024 Plans:*** Transition the D505 capability at McAlester Army Ammunition Plant. Transition a capability to demil 2.75" Rocket Motors. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase attributed to Rocket Motor Static Fire initiative.			
Title: Advanced Waste Stream Treatment ***Description:*** This effort focuses on handling waste streams from munitions items to continue environmentally compliant closed disposal treatment. ***FY 2023 Plans:*** Planned initiatives include sub-scale testing of munitions containing Per- and poly-Fluoro Akyl Substances (PFAS/PFOS). These substances are emerging contaminants with toxic properties. PFAS polymers are commonly used in plastic bonded explosives (PBX), flares, O-rings, lubricants and other components that need to withstand high heat. This project addresses potential pollutants from emittance during demil operations. Complete final report on Air Emissions Sampling of Open Detonations and Provide Updated Emissions factors. ***FY 2024 Plans:*** Planned initiatives include sub-scale testing of munitions containing Per- and poly-Fluoro Akyl Substances (PFAS/PFOS). These substances are persistent contaminants with toxic properties. PFAS polymers are commonly used in plastic bonded explosives (PBX), flares, O-rings, lubricants, and other components that need to withstand high heat. This project addresses potential pollutants from emittance during demil operations. Complete Final report on Air Emissions Sampling of Open Detonations and Provide Updated Emissions factors. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase attributed to PFAS/PFOS study.	1.787	1.523	1.880
Title: Advanced Munitions Disassembly ***Description:*** This effort focuses on developing innovative and efficient processes to disassemble munitions. ***FY 2023 Plans:*** Planned initiatives include sub-scale testing of munitions containing Per- and poly-Fluoro Akyl Substances (PFAS/PFOS). These substances are persistent contaminants with toxic properties. PFAS polymers are commonly used in plastic bonded explosives (PBX), flares, O-rings, lubricants, and other components that need to withstand high heat. This project addresses potential	3.135	4.416	12.057

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605805A / *Munitions Standardization, Effectiveness and Safety*	**Project (Number/Name)** F24 / *Conventional Munitions Demil*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
pollutants from emittance during demil operations. Complete Final report on Air Emissions Sampling of Open Detonations and Provide Updated Emissions factors. ***FY 2024 Plans:*** Complete operational demonstration of the Flechette demil and disposal capability. Complete hardware installation of the L525 Smoke and Illumination Signal Demil capability. The F24 Project will initiate design and fabrication of Anti Personnel Landmine download lines for GATOR Cluster Bomb Units (CBU) and 155mm Area Denial Artillery Munitions (ADAM) projectiles. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase attributed to L525 Marine Marker Demil hardware costs. In addition, the F24 Project will initiate design and fabrication of Anti Personnel Landmine download lines for GATOR CBU and 155mm ADAMS projectiles.			
Title: SBIR/STTR Transfer ***FY 2023 Plans:*** Adjustment for SBIR/STTR transfer. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638.	-	0.529	-
Accomplishments/Planned Programs Subtotals	16.532	14.501	23.854

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A