Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*

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	-	101.466	132.270	75.317	-	75.317	67.048	67.129	67.845	68.584	0.000	579.659
E25: *Mfg Science & Tech*	-	59.466	91.270	75.317	-	75.317	67.048	67.129	67.845	68.584	0.000	496.659
EA2: *MANTECH INITIATIVES (CA)*	-	42.000	41.000	-	-	-	-	-	-	-	0.000	83.000

A. Mission Description and Budget Item Justification

This Program Element (PE) develops, demonstrates, and transitions manufacturing technologies and processes that enable improvements in producibility and affordability of emerging and enabling components and subsystems of Army ground and air platforms, Soldier systems, weapons systems, air & missile defense systems, as well as sensors and electronics. Initiatives within the PE result in cost savings and reduced risk of transitioning military-unique manufacturing processes into production. Project E25 fosters the transfer of new/improved manufacturing technologies to the industrial base, including manufacturing efforts that have potential for high payoff across the spectrum of Army systems.

Work in this PE is performed by the United States (U.S.) Army laboratories and research centers, U.S. Army Program Executive Offices and Program Management Offices, and U.S. Army depots and arsenals.

The cited work is consistent with the Under Secretary of Defense, Research and Engineering science and technology focus areas and the Army Modernization Strategy.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	103.720	91.270	74.986	-	74.986
Current President's Budget	101.466	132.270	75.317	-	75.317
Total Adjustments	-2.254	41.000	0.331	-	0.331
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	41.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.254	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	0.331	-	0.331

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: EA2: *MANTECH INITIATIVES (CA)*		

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 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0708045A *I End Item Industrial Preparedness Activities*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Scalability of Functional Fabric Manufacturing - Continued*	5.000	-
Congressional Add: *Nanoscale Materials Manufacturing- Continued*	5.000	-
Congressional Add: *Advanced Manufacturing Cell for Missile Fins*	8.000	-
Congressional Add: *Liquid Hydrogen Refueling Systems*	10.000	10.000
Congressional Add: *N2O5*	10.000	10.000
Congressional Add: *Lightweight Transparent Film Armor*	4.000	5.000
Congressional Add: *Improved Additive Manufacturing Qualifications Methods for Army Aviation*	-	10.000
Congressional Add: *Isostatic Pressure Armor*	-	6.000
Congressional Add Subtotals for Project: EA2	42.000	41.000
Congressional Add Totals for all Projects	42.000	41.000

Change Summary Explanation

Increased funding due to revised economic assumptions.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / *End Item Industrial Preparedness Activities*	Project (Number/Name) E25 / *Mfg Science & Tech*	

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
E25: *Mfg Science & Tech*	-	59.466	91.270	75.317	-	75.317	67.048	67.129	67.845	68.584	0.000	496.659
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project develops and demonstrates manufacturing technologies and processes that enable improvements in producibility and affordability of emerging and enabling components and subsystems of Army ground and air platforms, Soldier systems, weapons systems, air & missile defense systems, and sensors and electronics. Work is performed to advance the state of the art in manufacturing processing and fabrication techniques for coatings, multifunctional materials, and structural elements for Army specific applications.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Networks and Command, Control, Communications and Intelligence	10.542	9.369	21.575
Description: ManTech efforts focused on an integrated system of hardware, software and infrastructure that is sufficiently mobile, reliable, user-friendly, discreet in signature, expeditionary and appropriate for any environment where the electromagnetic spectrum is denied or degraded. It also focuses on dependable communication or assured position, navigation, and timing; tactical space; navigation warfare; and Cyber operations. Additionally, it covers virtual and immersive Common Operation Environments in support of faster decision making. These efforts support the Army modernization priority for future systems and enabling areas for assured positioning, navigation, timing, and synthetic training environments. Efforts are aligned to programs within the executive offices of Intelligence Electronic Warfare & Sensors and Command Control Communications-Tactical.			
FY 2023 Plans: Continue to develop and advance manufacturing processes and capabilities supporting command and control systems/ subsystems and position, navigation, and timing systems.			
FY 2024 Plans: Continue to develop and advance manufacturing processes and capabilities supporting command and control systems/ subsystems and position, navigation, and timing systems. Specific plans include continued super optical improvement supporting 3rd Gen Dewar; continued support to the Low Chip Scale Atomic Clock; and planned efforts to support the modernization of Silicone Foundry Processes for the production of read out integrated circuits.			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding Increase is part of the realignment to the Networks/Command, Control, Communications, and Intelligence portfolio to support the production or the low cost chip scale atomic clock and the modernization of Silicon Foundry Processes for the			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** E25 / *Mfg Science & Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
production of read out integrated circuits. This effort will scale up production making the more reliable technology assessable and affordable for multiple applications.			
Title: Long Range Precision Fires ***Description:*** The effort funds manufacturing improvements to support areas that enable hypersonics, cannons, and missiles. Efforts focus on reduction in cost and time for manufacturing.	7.369	-	-
Title: Air & Missile Defense ***Description:*** This effort funds advance manufacturing processes and capabilities supporting air and missile defense efforts. Efforts include manufacturing improvements to missile systems, directed energy systems, propulsion, and radar technologies.	12.409	-	-
Title: Weapon Systems ***Description:*** Manufacturing technology efforts focused on current and future comprehensive weapons system platforms which include munitions and formations that improve range, lethality, mobility, precision, target acquisition and force protection capabilities within multi-domain operations. Additionally, these efforts support the Army modernization priorities for long-range precision fires (LRPF) as well as air and missile defense (AMD). LRPF is focused on strategic fires, precision strike missile capabilities, and extended range cannon artillery. AMD includes directed energy systems and interceptors focused on providing maneuverability for short range air defense, and indirect fire protection capabilities. Efforts are aligned to programs within the executive office of Missile and Space, and the joint executive office Armaments & Ammunition. Formerly titled Long Range Precision Fires and Air & Missile Defense. This effort is not new, it has been retitled to better align to both current and future acquisition systems. ***FY 2023 Plans:*** Continue to develop and advance manufacturing processes for weapon systems to include long range precision fires resulting in the affordability and producibility of advanced energetics, warheads, propulsion, guidance and navigation technology. Additionally supports air and missile defense capabilities focused on the affordability and producibility of directed energy systems, advanced missiles and seekers, guidance and control, advanced aero structures / propulsion, air defense radar technologies, directed energy weapon systems, high energy laser weapons systems, short range air defense, and indirect fire protection capability. ***FY 2024 Plans:*** Continue to develop and advance manufacturing processes for weapon systems to include long range precision fires resulting in the affordability and producibility of advanced energetics, warheads, propulsion, guidance and navigation technology. Additionally supports air and missile defense capabilities focused on the affordability and producibility of directed energy systems, advanced	-	43.626	28.622

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** E25 / *Mfg Science & Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
missiles and seekers, guidance and control, advanced aero structures / propulsion, air defense radar technologies, high energy laser weapons systems, short range air defense, long range munitions, and indirect fire protection capability. Integrated plans are in place for multi-platform cannon tube production optimization meeting program executive office ground combat system's cost, compacity, and fielding goals. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease in FY24 is result of emphasis in FY23 on directed energy to support the utilization of directed energy on multiple platforms through a comprehensive directed energy production plan for Army applications. The surge effort ramps down in FY24.			
Title: Next Generation Combat Vehicle ***Description:*** This effort funds manufacturing technology advances needed for more affordable and reliable components and subsystems for tactical and combat vehicles and weapons systems. This effort focuses on addressing challenges in areas such as advanced armor, protection systems, lighter weight components, insensitive propellants, armament systems, precision munitions, engines, sensor systems, and vehicle power devices for current and future systems.	5.629	-	-
Title: Ground Systems ***Description:*** ManTech efforts focused primarily focused on Army land maneuverability and ground system platforms. These efforts support the Army's ability to gain positions of relative advantage, overmatch the enemy, protect Soldiers from harm, and impose a tempo of event and multiple simultaneous dilemmas on the enemy to overwhelm enemy effectiveness through ground mobility. Additionally, these efforts support the Army's modernization priority for Next Generation Combat Vehicles which integrate other close combat capabilities in manned and unmanned teaming, leveraging semi-autonomous and autonomous platforms in conjunction with improved firepower, protection, mobility and power generation capabilities. The ground portfolio also supports force projection and force protection technologies to enable the Army to realize close combat. Efforts are aligned to programs within the executive offices of Ground Combat Systems; Combat Support & Combat Service Support; and the joint program executive office, Armaments and Ammunition. Formerly titled Next Generation Combat Vehicle. This effort is not new, it has been retitled to better align to both current and future acquisition systems. ***FY 2023 Plans:*** Continue to develop and advance manufacturing processes and capabilities supporting ground vehicles that result in dependable technology with an emphasis on providing affordable and timely solutions. Efforts will include the continued maturation of the composite rubber track and transition of a 45 ton kit to the program shop for testing; testing and validation of a sub-system model	-	4.971	7.475

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** E25 / *Mfg Science & Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
to be used in the development of an end-to-end digital framework for ammo compartment design; and the advancement of high performance materials for improved performance. ***FY 2024 Plans:*** Continue to develop and advance manufacturing processes and capabilities supporting ground vehicles that result in dependable technology with an emphasis on providing affordable and timely solutions. Efforts will include advances in digital thread capabilities as well as the advanced processing of high performance materials at lower weights. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased Funding in FY24 ensures continued development and advancement of manufacturing processes and capabilities supporting ground vehicles. This supports the advancement in digital thread capabilities.			
Title: Future Vertical Lift ***Description:*** This effort funds manufacturing technology advances supporting future vertical lift platforms to increase operational reach and capabilities with a concentration on affordability and producibility through manufacturing solutions.	11.301	-	-
Title: Aviation Systems ***Description:*** ManTech efforts focused on Army manned and unmanned aviation platforms to improve maneuverability, range, speed, payload capacity, mission systems, survivability, reliability, and reduced logistical footprint. Additionally, these efforts support the Army Future Vertical Lift modernization priority through manufacturing technologies that provide next generation of vertical lift aircraft for the Army. Efforts are aligned to programs within the program executive office for Aviation. Formerly titled Future Vertical Lift. This effort is not new, it has been retitled to better align to both current and future acquisition systems. ***FY 2023 Plans:*** Continue to develop and advance manufacturing processes and capabilities supporting aviation platforms for attack, reconnaissance / long range assault capabilities, and air launched effects. Efforts include advancing the multi-laser stitching manufacturing process; the manufacturing of lithium ion batteries for aviation platforms; and the development and testing of digital thread advancements supporting aviation platforms. ***FY 2024 Plans:*** Continue to develop and advance manufacturing processes and capabilities supporting supporting aviation platforms for future attack, reconnaissance and long range assault capabilities, and air launched effects. Efforts will include additive manufacturing	-	16.238	14.275

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** E25 / *Mfg Science & Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
efforts supporting leading edges; multi-laser stitching additive manufacturing; and enhance digital thread for aviation systems manufacturing. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding is being realigned to support the production of the low cost chip scale atomic clock, within Networks/Command, Control, Communications, and Intelligence portfolio.			
Title: Soldier Lethality ***Description:*** This effort funds manufacturing technology and processes in support of individual Soldier weapons, provide Soldiers with enhanced capabilities, and increase their ability to respond to emerging situations through advanced manufacturing processes with a concentration affordability and producibility. Work focuses on addressing challenges in areas such as multifunctional fabrics for shelters, uniforms and portage equipment; lightweight materials for body armor; and medical technologies such as biotechnology.	12.216	-	-
Title: Soldier Systems ***Description:*** ManTech efforts focused primarily on integrated Soldier and Squad weapon platforms. These efforts provide manufacturing solutions that enhance integrated Soldier capabilities through their equipment, personal sustainment, performance, protection, and communication. Additionally, this effort supports the Soldier Lethality modernization priority. Efforts are aligned to programs within the executive offices of Soldier; Combat Support and Combat Service Support; Chemical Biological Radiological and Nuclear Defense; and the joint program office for armaments and ammunition. Formerly titled Soldier Lethality. This effort is not new, it has been retitled to better align to both current and future acquisition systems. ***FY 2023 Plans:*** Increase the capability of individual Soldier weapons, provide Soldiers with enhanced capabilities, and increase their protection and ability to respond to emerging situations through advanced manufacturing technology and processes. Efforts will result in greater affordability and producibility with a concentration on next generation squad weapons and ammunition, Soldier borne power, enhanced protective materials and systems, and sensor development. Efforts will continue to advance manufacturing processes for advanced fuse piston; transition the upgrades to Warfighter tactical power; advance the transceiver optical module and silicone anode battery capabilities. Efforts will also ramp up the production processes for superior vision protection and advance the vacuum microwave drying technology. ***FY 2024 Plans:***	-	13.929	3.370

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** E25 / *Mfg Science & Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Increase the capability of individual Soldier weapons, provide Soldiers with enhanced capabilities, and increase their protection and ability to respond to emerging situations through advanced manufacturing technology and processes. Efforts will result in greater affordability and producibility with a concentration on next generation squad weapons and ammunition, Soldier borne power, enhanced protective materials and systems, and sensor development. Effort includes continued production processes improvements for superior vision protection; advanced processes for food production; advanced fuze piston actuator production; and advanced transceiver optical module production. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding is being realigned to support the production of the low cost chip scale atomic clock, directed energy production, and cannon tube modernization efforts within Networks/Command, Control, Communications, and Intelligence portfolio and the Weapons portfolio. The Warfighter Tactical Power Converter, XM1184/85 Projectile Cost and Risk Reduction, Silicon Anode Battery, and Low-Light Level Imagers efforts are being transitioned to the program management offices for further integration and scale up efforts.			
Title: SIBR & STTR Adjustment ***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	-	3.137	-
Accomplishments/Planned Programs Subtotals	59.466	91.270	75.317

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Not applicable for this item.

D. Acquisition Strategy

Not applicable for this item.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / *End Item Industrial Preparedness Activities*	Project (Number/Name) E25 / *Mfg Science & Tech*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR Transfer	TBD	Various : Various	-	-		3.137		-		-		-	0.000	3.137	-
		Subtotal	-	-		3.137		-		-		-	0.000	3.137	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mfg Science & Tech	Various	TBD : TBD	565.172	59.466		88.133		75.317		-		75.317	0.000	788.088	-
		Subtotal	565.172	59.466		88.133		75.317		-		75.317	0.000	788.088	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	565.172	59.466		91.270		75.317		-		75.317	0.000	791.225	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** E25 / *Mfg Science & Tech*

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
N/A					[redacted]																							

	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
N/A																												

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** E25 / *Mfg Science & Tech*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
N/A	1	2016	4	2019

Note

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / *End Item Industrial Preparedness Activities*	Project (Number/Name) EA2 / *MANTECH INITIATIVES (CA)*	

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
EA2: *MANTECH INITIATIVES (CA)*	-	42.000	41.000	-	-	-	-	-	-	-	0.000	83.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Congressional Interest Item funding provided for ManTech Initiatives.

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for ManTech Initiatives.
This effort accelerates manufacturing technology for more affordable electronic warfare, communications and sensors systems components and subsystems to include radio frequency amplifiers, antennas, and focal plane arrays. This effort accelerates and supplements manufacturing technology for more affordable components and subsystems for tactical and combat vehicles and weapon systems. Work focuses benefit from working to develop and scale up the manufacturing process for nano-tungsten carbide powders and high-volume single-crystal tungsten rod manufacturing processes. This effort accelerates and supplements manufacturing technology for more advanced manufacturing and enterprise solutions. Work focuses on accelerating model based manufacturing to specific organic Army facilities and novel ways of applying additive manufacturing and monitoring material powder beds and process controls during additive manufacturing part build for weapon system components.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
Congressional Add: Scalability of Functional Fabric Manufacturing - Continued ***FY 2022 Accomplishments:*** Continue to do assessments for product integration and scaling as appropriate for with commercial manufacturing partners. Specific efforts in FY22 will include system development for commercial prototype build to a maturity readiness level of 6; system validation and testing; in-house operational experiments and prototype testing.	5.000	-
Congressional Add: Nanoscale Materials Manufacturing- Continued ***FY 2022 Accomplishments:*** Continue to scale up Nanoscale materials for manufacturing improvements and industrial based preparedness for critical component materials and armaments systems. Specific efforts will include the application of Tungsten Carbide for small to medium caliber penetrators to improve performance; optimization of Boron Carbide for application on ballistic protection and lightweight body borne plates; and advancement of critical materials (e.g. tantalum, niobium, etc.) for future applications (e.g. additive, hypervelocity, etc). Beneficiaries of this technology will be PEO Soldier and JPEO Armaments and Ammunition, and applied to maneuver ammunition systems, soldier lethality.	5.000	-
Congressional Add: Advanced Manufacturing Cell for Missile Fins	8.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** EA2 / *MANTECH INITIATIVES (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2022 Accomplishments: Develop manufacturing process for missile fin casting. FY22 efforts will specifically work on improving shell mold throughput; enhance melting and mold preheat; enhance core removal; and automate defect location and removal. Beneficiaries of this technology will be PEO Missile and Space, PM Strategic and Operational Rockets and Missiles. This technology will integrate into the Army Tactical Missile System and Precision Strike Missile.		
Congressional Add: Liquid Hydrogen Refueling Systems ***FY 2022 Accomplishments:*** Developed Manufacturing processes for multiple Portable Liquid Hydrogen Refueling Ground Support Equipment (GSE) Systems for the Army's PM Counter Unmanned Aerial Systems (UAS). As the technology advances, hydrogen fuel cells will provide energy for a range of stationery and mobile applications. These efforts will specifically develop and demonstrate autonomous liquid hydrogen refueling by; proving that manufacturing, producing, storing and using hydrogen fueling systems will play an important role in driving further development of renewable energy, by balancing their intermittent supply modalities with the challenging end-user demands. ***FY 2023 Plans:*** Furthers efforts executed under FY22 $10,000K for liquid hydrogen refueling systems. Use advanced manufacturing and lighter weight materials to fabricate cost-effective high-quality diamond materials for use in cryogenic quantum system payload development, improve integrated liquid hydrogen aircraft and cryogenic quantum system payload performance, and portable liquid hydrogen refueling Ground Support Equipment (GSE) System for Unmanned Aerial Vehicles carrying advanced cryogenic quantum systems payloads at an Army base for flight demonstration. Will characterize the quantum diamond materials using the most advanced Positron Annihilation Spectroscopy. Will assemble and test advanced diamond-based cryogenic quantum system payload. Effort will also conduct aircraft and quantum system ground testing and flight test demonstrations of the integrated liquid hydrogen aircraft and cryogenic quantum systems payload to validate advanced manufacturing methods and techniques.	10.000	10.000
Congressional Add: N2O5 ***FY 2022 Accomplishments:*** Develop manufacturing process to use dinitrogen pentoxide (N2O5) in the manufacture of explosives reducing manufacturing costs and reducing chromium-contaminated ammonium nitrate solution (ANSOL) waste byproducts that must be treated as hazardous waste and has a high remediation cost in their disposal. Effort culminated in a pilot scale skid system for electrochemical synthesis of N2O5. ***FY 2023 Plans:*** Furthers efforts executed under FY22 $10,000K Program Increase "N2O5" to develop continuous and on demand supply of dinitrogen pentoxide (N2O5) nitration technology for manufacture of RDX & HMX. Design and demonstrate separate pilot scale continuous manufacturing of Hydroxyl-terminated	10.000	10.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** EA2 / *MANTECH INITIATIVES (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
Polybutadiene (HTPB) leveraging previous investment and lessons learned from N2O5 work. Hydroxyl-Terminated Polybutadiene (HTPB) will be utilized to coat energetics produced via N2O5 technology for various DoD Propellant (Rocket and Gun) and HE applications. Successful development of this effort will impact the following Army programs of record: 155mm Artillery HE XM1113 Projectile; 155mm Artillery HE XM1210 Projectile; (ERCA)155mm Artillery HE XM1128 Projectile; 155mm HE M982A1 Excalibur Projectile; (ERCA);BLU-111 / Mk 84; BLU-117 B/B; BLU-121 A/B; BLU-122/B; M1061 60mm Mortar; ERCA (Super Charge Propellant).		
Congressional Add: Lightweight Transparent Film Armor ***FY 2022 Accomplishments:*** Conducted optimization trials for integrated manufacturing process and begin flat UOPP film and laminate evaluations. This effort is developing a domestic source supporting manufacturing technology critical to the US Army. FY22 efforts culminated in sheet and resin processing equipment being installed. ***FY 2023 Plans:*** Further efforts executed under FY22 $4,000K. Setup and continue development of a new transparent film material focusing on resin processing and sheet extrusion to optimize optical, ballistic, and environmental properties. Continue development of new transparent film material for integration into lighter, thinner transparent armor for face shields, visors, and vehicle armor. The transition path for this effort will be for PM Soldier Protective Equipment for the Cupola? protective ensemble.	4.000	5.000
Congressional Add: Improved Additive Manufacturing Qualifications Methods for Army Aviation ***FY 2023 Plans:*** This effort will develop a statistically-backed, model-based, and data-driven framework will reduce the need for additional fabrications/tests for qualification of separate machines through the validated equivalency structure. Evaluate how data generated by a single additive manufacturing (AM) platform can be transmitted to a separate AM machine to increase qualification efficiency. Develop a statistically-backed, model-based, and data-driven framework will reduce the need for additional fabrications/tests for qualification of separate machines through the validated equivalency structure. New standards will be generated and improve on current standards, which allow a more efficient data sharing and qualification practice with DoD and defense contractors. With the improvement of AM Qualification Methods, standing up AM machines or switching between legacy aircraft components (i.e. UH-60, etc.) or FVL will be more efficient and increase fleet readiness.	-	10.000
Congressional Add: Isostatic Pressure Armor ***FY 2023 Plans:*** This effort will accelerate the development of advance armor composites with applications to Soldier and Vehicle protection.	-	6.000
Congressional Adds Subtotals	42.000	41.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** EA2 / *MANTECH INITIATIVES (CA)*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0708045A / *End Item Industrial Preparedness Activities*	Project (Number/Name) EA2 / *MANTECH INITIATIVES (CA)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mfg Science & Tech	TBD	TBD : TBD	198.561	42.000		41.000		-		-		-	0.000	281.561	-
		Subtotal	198.561	42.000		41.000		-		-		-	0.000	281.561	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	198.561	42.000		41.000		-		-		-	0.000	281.561	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** EA2 / *MANTECH INITIATIVES (CA)*

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
N/A																												

	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
N/A																												

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0708045A / *End Item Industrial Preparedness Activities*	**Project (Number/Name)** EA2 / *MANTECH INITIATIVES (CA)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
N/A	1	2016	4	2016