Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Defense Logistics Agency											Date: March 2023	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603680S *I Manufacturing Technology Program (ManTech)*							
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	238.038	80.924	92.766	46.404	0.000	46.404	50.397	51.347	51.246	50.343	Continuing	Continuing
IBMP: *Improving Industrial Base Manufacturing Processes (formerly Material Availability)*	125.769	25.654	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
AAA: *Maintaining Viable Supply Sources (formerly High Quality Sources)*	80.717	15.199	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
OOO: *Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)*	31.552	40.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
IBA: *Industrial Base & Aging Weapon System Support*	0.000	0.000	53.222	36.728	0.000	36.728	40.542	41.305	41.091	39.982	Continuing	Continuing
TDM: *3D Tech Data Modernization / Model Based Enterprise*	0.000	0.000	39.544	9.676	0.000	9.676	9.855	10.042	10.155	10.361	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defense Logistics Agency (DLA) Manufacturing Technology (ManTech) Program funds the advanced technology development needed to achieve a responsive, efficient domestic industrial base that meets the warfighters' needs in an affordable and timely manner. The ManTech program works with DLA's diverse supply chains to improve manufacturing capability throughout a product's life cycle. It provides the crucial link between invention and application by maturing, scaling up, and validating advanced manufacturing technology in "real world" environments. ManTech developments provide a path to low-risk technology implementation for many small businesses and defense unique suppliers as well as depots and shipyards that are critical to DLA. By anticipating and addressing production and sustainment problems before they occur, readiness levels increase and sustainment costs are decreased.

Beginning in FY 2023, DLA ManTech shifts from three Strategic Focus Areas (SFAs) to two Lines of Effort (LOEs): 1) Industrial Base and Aging Weapon System Support (R&D LOE 1) and 2) 3D Technical Data Modernization / Model-Based Enterprise (R&D LOE 2). These LOEs are closely aligned to documented and tracked priorities specified in the most current DLA Strategic Plan, that calls for Digital Business Transformation as one of three critical capabilities to achieve DLA's business goals of enhancing performance, reducing costs, and becoming more predictive and data-driven. This critical capability also seeks to transform systems and processes to improve data transparency, reliability, and security for our employees, customers, and suppliers. DLA's initiatives within this critical capability align with the interim National Security Strategy (NSS) by emphasizing the importance of harnessing rapid emerging technologies that will transform how we do business.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Defense Logistics Agency	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603680S *I Manufacturing Technology Program (ManTech)*

-In addition to alignment to DLA's top strategic priorities, under Section 2521 of Title 10, US Code, DLA ManTech efforts are collaborated across DOD Military Services and Agencies. As a Principal member of the Joint Defense Manufacturing Technology Panel, DLA's efforts are integrated within the Joint Defense Priorities.

-The Industrial Base and Aging Weapon System Support LOE (R&D LOE 1) seeks to implement innovative and proactive technology solutions to ensure a robust, reliable industrial base that provides affordable and previously hard-to-procure critical parts for DOD weapon systems. This LOE aligns to DLA Strategic Plan LOE 1: Warfighter Always, DLA LOE 2: Trusted Mission Partner, DLA LOE 4: Modernized Acquisition and Supply Chain Management, as well as the cross-cutting Critical Capability C: Digital Business Transformation through the following portfolios: DOD Subsistence Supply Chain (Subsistence Network), Castings (Procurement Readiness Optimization—Advanced Casting Technology), Forgings (Procurement Readiness Optimization—Forging Advanced System Technology), Batteries (Battery Network), Additive Manufacturing (AM), and Advanced Microcircuit Emulation (AME).

-The 3D Technical Data Modernization / Model Based Enterprise LOE (R&D LOE 2) integrates three-dimensional technical data and knowledge-based tools to transform and streamline supply system responsiveness for DLA-managed commodities. Efforts seek to improve and facilitate the exchange of engineering and logistics information among DLA, the Military Services, DLA industry partners and DLA customers. The benefits include shorter product introduction cycles, lower set up-costs for parts production and more economical small batch production. Primarily focused on the DLA Strategic Plan Critical Capability C: Digital Business Transformation, this R&D LOE cuts across DLA Strategic Plan LOE 1: Warfighter Always, DLA LOE2: Trusted Mission Partner, and DLA LOE 4: Modernized Acquisition and Supply Chain Management through portfolios for DOD soldier and individual equipment (Military Unique Sustainment Technology ((MUST)) and Defense Logistics Information Research (DLIR), as well as out of budget cycle or Emerging Manufacturing Technology (EMT) requirements.

-Until the shift from SFAs to LOEs in FY 2023, DLA ManTech remains aligned into three Strategic Focus Areas (SFAs) for FY 2021 and FY 2022: 1) Improving Industrial Base Manufacturing Processes (IIBM); 2) Maintaining Viable Sources of Supply (MVSS); and 3) Improving Technical and Logistics Information (ITLI).

-The IIBM SFA includes efforts to reduce industrial base material costs and production lead-times, while improving the quality of DLA managed products. This SFA has supply chain focused execution portfolios for food (Subsistence Network), Castings (Procurement Readiness Optimization—Advanced Casting Technology), Forgings (Procurement Readiness Optimization—Forging Advance System Technology), Batteries (Battery Network) and Additive Manufacturing.

-The MVSS SFA includes efforts to assure the commercial industrial base can satisfy DLA materiel requirements without relying on foreign sources for microcircuits. This strategic focus area mitigates supply issues caused by the lack of a reliable domestic manufacturing capability to produce products or raw materials needed to build and maintain weapon systems. The major focus of the program is maintaining a reliable, trusted, domestic source for "non-procurable" linear and digital microcircuits. Microcircuit emulation allows the Services to save significant costs by using form, fit and functionally equivalent spare parts rather than redesigning the next-higher-assembly.

-The ITLI SFA includes efforts to improve and facilitate the exchange of engineering and logistics information among DLA, the Military Services, DLA industry partners and DLA customers. It includes the Military Unique Sustainment Technology (MUST) and the Defense Logistics Information Research (DLIR) programs. A primary focus of this SFA is to capitalize on the emerging "Model Based Enterprise" paradigm and the semantic web as an enabler to a logistics system that is smart and connected up and down the supply chain and across all DLA Customers and suppliers. A major focus is to transform DOD engineering data from two-dimensional paper-based

products to three-dimensional computer based models, and to develop processes to move from “electronic paper” (i.e. PDF files) to technical data files that can interface directly with industries’ engineering systems. The benefits include shorter product introduction cycles, lower set up-costs for parts production and more economical small batch production.

DLA’s focus for this budget cycle highlights advanced capabilities in digital and technical data modernization, data management and analytics to fulfill the DLA role in the DOD Digital Engineering Strategy and improve sharing of data with the industrial base and supported organizations. Investment explores technologies to lower the Agency’s material acquisition and operation costs and improve weapons systems support. This effort spans across both DLA R&D Program Elements and R&D LOEs, impacting across the DOD Joint Defense Manufacturing Technology Panel and DLA Enterprise logistics processes.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	38.268	46.166	45.157	-	45.157
Current President's Budget	80.924	92.766	46.404	-	46.404
Total Adjustments	42.656	46.600	1.247	-	1.247
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	46.000	46.600			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.338	-			
• SBIR/STTR Transfer	-3.006	-			
• Internal Reallocation	-	-	1.000	-	1.000
• Labor Inflation	-	-	0.025	-	0.025
• Non-labor Inflation	-	-	0.222	-	0.222

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: IBMP: *Improving Industrial Base Manufacturing Processes (formerly Material Availability)*		
Congressional Add: *Steel Performance Initiative in Castings*	10.000	-
Congressional Add: *PFAS Compounds In Food Packaging Materials Research*	3.000	-
Congressional Add Subtotals for Project: IBMP	13.000	-
Project: OOO: *Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)*		
Congressional Add: *Supply Chain for Readiness and Sustainment*	8.000	-
Congressional Add: *Rare Earth Recovery Technology*	2.000	-
Congressional Add: *Conversion Of Titanium Scrap*	5.000	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Defense Logistics Agency	Date: March 2023
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603680S *I Manufacturing Technology Program (ManTech)*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Graphite Materials*	9.000	-
Congressional Add: *Nanostructured Iron Nitride Permanent Magnets*	7.000	-
Congressional Add: *Modeling & Simulation Competition*	2.000	-
Congressional Add Subtotals for Project: OOO	33.000	-
Project: IBA: *Industrial Base & Aging Weapon System Support*		
Congressional Add: *Flake graphite-based solutions for PFAS contamination*	-	5.000
Congressional Add: *Steel Performance Initiative*	-	13.000
Congressional Add Subtotals for Project: IBA	-	18.000
Project: TDM: *3D Tech Data Modernization / Model Based Enterprise*		
Congressional Add: *AI based market research system*	-	3.000
Congressional Add: *Supply Chain Readiness Improvement Program*	-	5.000
Congressional Add: *Battery Grade Graphite*	-	3.600
Congressional Add: *High performance magnets*	-	5.000
Congressional Add: *Hypersonic radomes and apertures*	-	5.000
Congressional Add: *Nanostructured iron nitride permanent magnets*	-	7.000
Congressional Add Subtotals for Project: TDM	-	28.600
Congressional Add Totals for all Projects	46.000	46.600

Change Summary Explanation

Internal Reallocation FY 2024: Three-dimensional (3D) Technical Data Modernization / Model-Based Enterprise (TDM) baseline was increased by $0.357 million for Critical Chemical, Strategic Material Related Efforts. Industrial Base and Aging Weapon System Support (IBA) baseline was increased by $1.000 million based on an internal funding reallocation decision to address sustainment gaps and bridge technical solutions into higher a Manufacturing Readiness Level (MRL) for solider and system batteries.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency			Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBMP / *Improving Industrial Base Manufacturing Processes (formerly Material Availability)*	

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
IBMP: *Improving Industrial Base Manufacturing Processes (formerly Material Availability)*	125.769	25.654	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Improving Industrial Base Manufacturing Processes Strategic Focus Area (SFA) is an R&D effort undertaken with DLA's suppliers to reduce material costs, reduce the length and variability of production lead-times, assure DLA managed products meet performance requirements, and continuously improve quality and reliability. Benefits of this SFA include lower material costs, lower inventory levels and more predictable customer wait times, fewer quality deficiencies, and lower customer support costs. This SFA includes within its scope the Subsistence Network, the Battery Network, the Castings/Forging programs and Additive Manufacturing programs.

*In FY 2023, this SFA, Improving Industrial Base Manufacturing Processes (IBMP), closes out. All programs described below shift to the Industrial Base & Aging Weapon System Support (IBA) Line of Effort (see R-2A).

The Subsistence Network (SUBNET) program focuses on solutions to develop and promote manufacturing improvements in the subsistence supply chain. The program's expanded areas of interest include combat rations, food equipment, field feeding solutions, food footprint, food innovations, food safety and defense developments, garrison feeding, nutrition and health, storage and packing solutions, surge and sustainment support, and water security. SUBNET forms a community of practice with Military Services, U.S. Department of Agriculture, Natick Soldier Research Development, and Engineering Center; Academia, and Industry to research and promote manufacturing improvements in the Subsistence Supply Chain. The SUBNET goals are to utilize innovation and the leverage the latest technologies to maximize the logistics capability and capacity within the subsistence supply chain industrial base. The desired outcomes include reduced cost, increased efficiencies, improved processes, enhanced quality, and improved surge demand capabilities.

The Casting program works to ensure a stable, reliable, and competitive domestic casting industrial base supporting the weapon system needs of the Department of Defense (DOD) and the Defense Logistics Agency (DLA). The casting program works with industry, universities, and the Casting Industry Associations to identify projects that improve the materials, processes and business practices of the nation's foundry industry. The program aligns projects with strategic issues and identified focus areas within the DLA and DOD. Guidance for these projects comes from the DLA Strategic Plan and input from the casting industry. Weapon system spare parts managed by DLA that contain castings are responsible for a disproportionate share of DLA's backorders or unfilled orders (UFOs). Cast parts are about two percent of National Stock Numbered Class IX parts but represent about five percent of all backorders, and when only the oldest backorders are considered, up to 10 percent are castings. This program includes tasks that focus on developing new capabilities in the areas of inspection, materials, processes, modeling, and design. Once developed, these capabilities will support the foundry industry, where the technologies will be tested and implemented, most often in conjunction with the casting industry associations. These advancements improve the metal casting supply chains for the DOD and the DLA to better support the warfighter. We will invest in projects aimed at reducing lead-time, reducing cost, and improving quality of castings critical to DOD weapon systems.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBMP / *Improving Industrial Base Manufacturing Processes (formerly Material Availability)*

The Forging program works to ensure a stable, reliable, and competitive domestic forging industrial base for the weapon system needs of the Department of Defense (DOD) and the Defense Logistics Agency (DLA). Working with industry, universities, and the Forging Industry Association to identify projects that improve the materials, processes and business practices of the nation's forging industry. The program aligns its projects with strategic issues and focus areas identified within the DLA and DOD. Guidance for these projects comes from the DLA Strategic Plan and input from the forging industry. Weapon system spare parts managed by DLA that contain Forgings are responsible for a disproportionate share of DLA's backorders or unfilled orders (UFOs). Forged parts are about two percent of National Stock Number (NSN) Class IX parts but represent about five percent of all backorders, and when only the oldest backorders are considered, up to 10 percent are forgings. This program includes tasks to develop new capabilities in the areas of inspection, materials, processes, modeling, and design. Once developed these capabilities will support the forging industry, where these technologies will be tested and implemented in conjunction with the forging industry associations. These advancements improve the forging supply chains for the DOD and the DLA to better support the warfighter. We will invest in projects aimed at reducing lead-time, reducing cost, and improving quality of forgings critical to DOD weapon systems.

The Battery Network (BATTNET) program objective is to develop the next generation of battery manufacturing technologies for cost and price efficiency, longer shelf life, and lighter batteries with higher energy. BATTNET conducts R&D initiatives to address sustainment gaps and bridge technical solutions into higher a Manufacturing Readiness Level (MRL) for specific groups of batteries. BATTNET also focuses on projects to develop the production capability for advanced lithium-based non-rechargeable and rechargeable batteries to ensure the prompt and sustained availability, quality, and affordability of Service approved batteries. Desired outcomes include: streamlined inventory and associated cost reductions through standardization and improved distribution practices; resolved obsolescence issues; addressed surge and sustainment issues; enhanced security of supply chain; increased competition and manufacturing base; reduced per unit battery cost; and leveraged Service-level (Army, Navy, Air Force) and other governmental (DOE, DOT, NASA) R&D efforts to insert new technology and practices into the existing DLA battery inventory.

The Additive Manufacturing (AM) program objective is to streamline customer purchase requests for AM items and provide the Warfighter an alternate source of supply for designated requirements. This effort responds to DLA's role called out in DOD Instruction 5000.93, Use of AM in DOD to integrate AM into the supply chain, by leading the development of effective AM procurement processes. The AM effort explores innovative technologies as it pursues this alternate means of supply for products that are otherwise non-procurable or susceptible to procurement issues. The AM effort includes collaborative efforts with the Military Services to develop analytical tools to identify viable AM candidates while considering logistics planning factors. The AM effort requires effective management of the digital thread composed of authoritative 3D digital technical, manufacturing and testing data exchanged among designers, engineers, maintainers, logisticians, procurement managers and the vendor base to enable quality assurance acceptability. Potential AM benefits include products that can address an unfulfilled Warfighter readiness need by reducing production lead times, production costs, storage costs, transportation costs and in some cases fuel consumption due to lighter design and material options. DLA R&D will leverage these efforts with Industry, Academia and ongoing Military Service-level agreements (Army, Navy, Marine Corps, Air Force), Oak Ridge National Laboratory (ORNL) and the Department of Energy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Improving Industrial Base Manufacturing Processes (formerly Material Availability)	12.654	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBMP / *Improving Industrial Base Manufacturing Processes (formerly Material Availability)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The Subsistence Network (SUBNET) program continued to research and execute short-term innovative projects to improve the subsistence supply chain in FY 2022. The SUBNET program incorporated emerging technologies to address stakeholder's requirements as well as leveraged supply chain innovations, best practices, and industry trends. The SUBNET program continues its pilot test in the areas of modernization and readiness analysis of joint food management system and improving subsistence visibility through enhancing receipting and barcoding at an OCONUS location. The SUBNET also successfully conducted research in FY 2022 regarding radio frequency sterilization processing of unitized group rations for two products, determining failure mechanisms of polymeric packaging materials to identify replacement laminate structures, and assessed the current unified combatant command and overseas subsistence functions by examining current operational and technological capabilities. The program also pursued small business innovation phase II research topics in subsistence to include robotic automation in military dining facilities, developing and promoting solutions for a kitting and assembly platform system that could be deployed in a short period of time, and develop innovative solutions to address moldy pallets in storage areas. SUBNET works with community partners (government, military services, academia, and industry) to conduct research and test and evaluate initiatives in the subsistence supply chain. The Casting program monitored awarded projects that were aimed to research, develop and deploy innovative and technical solutions to ensure a viable and competitive domestic industrial base. The Casting program continued its work with Academia, industry, and industry associations to continually identify future development and technical needs in alignment with the DoD and DLA to include appropriate strategic plans and roadmaps. These projects continue beyond FY2022 in areas of modeling and simulation, die coatings and lubrication, virtual reality, automation and sensor technologies. All projects working to ensure a viable supply chain in support of the warfighter. The Forging program continued to monitor awarded projects focused on exploring alternative forging manufacturing methods, materials to reduce production lead-time and costs, modeling and simulation software improvements and enhancements and improvements to post processing methods. We continued to see positive results from these projects, Ceramic Coatings for Forging Furnaces reported over a 40% reduction in Natural Gas usage and more than 60% reduction in recovery time for a forging furnace which was coated as part of this project. A few projects successfully finished and continue working on implementing the new technologies, such as the Direct from the Forge Intensive Quench project as it continues its transition to the forging industry. The Battery Network (BATTNET) program The Battery Network (BATTNET) program continued projects for improving the production readiness and technology transition for soldier and system batteries within the DLA supply chain. The program improved the capacity and capabilities of lithium anode production for current non-rechargeable and future rechargeable batteries at a major supplier. The program enabled UV curable polymer processes for rapid cathode production. The program prototyped			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBMP / *Improving Industrial Base Manufacturing Processes (formerly Material Availability)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
and tested several versions of Bipolar lead-acid technology in major system formats to reduce battery cost and weight, improve battery energy and power, and extend battery shelf life and operational life. The program completed preliminary designs and safety tests with lithium titanate cells for potential replacements to nickel-cadmium batteries. The program continued managing Congressional Add projects for transitioning high value solid-state electrolyte products into key soldier lithium-ion batteries. The program continued to initiate and manage several SBIR projects in advanced lithium-ion battery manufacturing, recycling, and rapid materials synthesis. The Additive Manufacturing (AM) program, using market research, requests for information/proposals, Broad Agency Announcements (BAA), DLA R&D funded analysis of alternatives for the best cognitive computing solutions to integrate information from several logistics, engineering, legal, and supplier data sources into an efficient AM decisional framework. This analytics effort transitioned to the Military Services and will help uncover critical data in the decision processes for selecting AM as a viable option. The DLA AM R&D program also financed collaborative technical efforts from the military departments to enhance the AM product data management workflows that will enable AM acceptability and improve the overall responsiveness of an AM distributive manufacturing ecosystem. Another avenue to explore ways to accelerate AM acceptability included a pilot test on remote inspection capabilities, which rendered great insights into technologies that can greatly reduce administrative lead time in the testing environment. The reduction of R&D AM funding of approximately $0.943 million, resulting from an overall MANTECH $3.020 million directed reductions, impacted the DLA's continued efforts to identify the best technological applications to achieve precise robustness-repeatability-reproducibility of part fabrication using an AM technical data package in a distributed manufacturing setting.			
Accomplishments/Planned Programs Subtotals	12.654	-	-

	FY 2022	FY 2023
Congressional Add: Steel Performance Initiative in Castings ***FY 2022 Accomplishments:*** Awarded for new efforts under existing Steel Performance Initiative contract. Continued monitoring projects that began under the FY2021 Steel Performance Initiative that includes numerous projects within the following areas of focus: Steel Alloy Development and Manufacturing Technology; Integrated Process and Performance Modeling; Advanced Testing & Qualification; Improved Steel Casting Tooling; and Optimized Processing of Steel Materials.	10.000	-
Congressional Add: PFAS Compounds In Food Packaging Materials Research ***FY 2022 Accomplishments:*** Awarded new contract under the the Subsistence Network Broad Agency Announcement (BAA-0004-21) for pre and polyfluoroalkyl substances (PFAS) projects in partnership with U.S.	3.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBMP / *Improving Industrial Base Manufacturing Processes (formerly Material Availability)*

	FY 2022	FY 2023
Army Corps of Engineers Research and Development Center (ERDC) and Oregon State University (OSU) who lead the (PFAS research to determine where PFAS is originating in the MRE assembly process through the analysis of the raw material (e.g., film) used for MRE pouches and throughout the assembly line.		
Congressional Adds Subtotals	13.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The DLA R&D program is executed through Delivery Orders placed on Indefinite Delivery/Indefinite Quantity Contracts that resulted from competitive Broad Agency Announcements and through interagency agreements with the Military Services when it is cost effective and/or provides some technical advantage, e.g. improves the probability of successful transition. DLA also has a continuously open Broad Agency Announcement for Emerging Technologies.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603680S / *Manufacturing Technology Program (ManTech)*	Project (Number/Name) AAA / *Maintaining Viable Supply Sources (formerly High Quality Sources)*	

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
AAA: *Maintaining Viable Supply Sources (formerly High Quality Sources)*	80.717	15.199	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Maintaining Viable Supply Sources (MVSS) Strategic Focus Area (SFA) consists of projects undertaken to assure that the industrial base can respond to DLA requirements and DLA can fill military customers' material requirements reliably and consistently. Benefits include eliminating cancelled requisitions returned to customers as "non-procurable." This strategic focus area includes within its scope the Advanced Microcircuit Emulation (AME) program with the objective to maintain a reliable and trusted domestic source for "non-procurable" linear and digital microcircuits. Microcircuit emulation allows the Services to save significant costs by using form, fit and functionally equivalent spare parts rather than redesigning the next-higher-assembly. Without the technologies planned on the AME Roadmap, DLA will not be able to support DoD's requirements for high quality spare parts for critical electronic systems and subsystems, resulting in decreased warfighter readiness and significant cost for weapons system or component redesign.

*In FY 2023, this SFA, Maintaining Viable Supply Sources (AAA), closes out. The Advanced Microcircuit Emulation (AME) program shifts to the Industrial Base & Aging Weapon System Support (IBA) Line of Effort (see R-2A).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Maintaining Viable Supply Sources (formerly High Quality Sources)	15.199	-	-
Description: AME completed and transitioned the 20 Volt Operational Amplifier (Linear) Project in the first quarter. Dual-Port Memory (DPRAM) microcircuits Phase II is scheduled for qualification in the fourth quarter. AME continued development of 40 Volt Operational Amplifier project with anticipated completion for transition in third quarter of FY 2023. AME began Phase III project for development of Additive Manufacturing techniques to address Microcircuit Cases. AME began additional Linear/Analog emulation projects to include Small Case 20 Volt Operational Amplifier, Radiation-Hardened Linear microcircuits, and Dual-Voltage Process Development projects; anticipated durations to last through FY 2024. Also, AME initiated a project in the second quarter to acquire and implement advanced Ion Implantation equipment that expands increases microcircuit emulation capability.			
Accomplishments/Planned Programs Subtotals	15.199	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** AAA / *Maintaining Viable Supply Sources (formerly High Quality Sources)*

D. Acquisition Strategy

The DLA R&D program is executed through Delivery Orders placed on Indefinite Delivery/Indefinite Quantity Contracts that resulted from competitive Broad Agency Announcements and through interagency agreements with the Military Services when it is cost effective and/or provides some technical advantage, e.g. improves the probability of successful transition. DLA also has a continuously open Broad Agency Announcement for Emerging Technologies.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency			Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** OOO / *Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)*	

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
OOO: *Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)*	31.552	40.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Improving Technical and Logistics Information (ITLI) SFA projects improve and facilitate the communication of technical and logistics information among industry, DLA's military customers and DLA. This SFA includes the Military Unique Sustainment Technology (MUST), the Defense Logistics Information Research (DLIR), and the Emergent Manufacturing Technology (EMT) portfolios within its scope.

*In FY 2023, this SFA, Improving Technical and Logistics Information(OOO), closes out. All programs shift to the 3D Tech Data Modernization / Model Based Enterprise (TDM) Line of Effort (see R-2A).

The Military Unique Sustainment Technology (MUST) program addresses GAO Report 12-707 recommendations for DoD to establish a "knowledge-based approach" to define, communicate, and collaborate on military unique Combat Uniforms and Individual Equipment (CUIE) requirements. DLA has the responsibility to manage and maintain the technical requirements among the Services and the Defense Industrial Base. Currently there is no common environment for collaborating on new requirements among the stakeholders. The strategic objective of the DLA MUST program is to identify, develop, and adopt technologies that can significantly improve the joint process from transitioning new item development to DLA sustainment and operations. The Program focuses on technologies that will transform the military CUIE supply chain from an "electronic paper" (i.e. PDF/MS Word) based manual environment, into a knowledge-based model driven environment. This approach will result in seamlessly communicating military unique technical requirements throughout the end-to-end supply chain, leading toward a Model Based Enterprise.

The Defense Logistics Information Research (DLIR) program researches core technologies to improve the quality, security, and interoperability of logistics data acquisition and management to enable and streamline DLA operations. DLA enables transformation of business practices and methodologies as the data for weapons systems evolve from traditional formats and delivery methods (such as two-dimensional images and PDF formats) to newer, more innovative methods (such as three-dimensional solid models, object-oriented databases, service-oriented architecture (SOA) and Web 3C standards). This transformational shift for DLA is driven by the Model-Based Enterprise (MBE) approach, the way industry is delivering design and development data for weapon systems to the Military Services and the way the Military Services in turn manage and provide the data to DLA. DLA Logistics Operations, DLA Acquisition, DLA Tech/Quality, and DLA's Major Subordinate Commands (MSCs) are key stakeholders in the DLIR initiatives to modernize the representation and delivery of weapons systems data.

The EMT program addresses emerging and out of cycle requirements that always occur as DLA strives to maintain the readiness of the aging weapon systems.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** OOO / *Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Improving Technical and Logistics Information (formerly Industry and Customer Collaboration	7.071	-	-
Description: Military Unique Sustainment Technology (MUST) delivered two working prototypes and accompanying functional requirement document to transition from R&D: Supply Request Package Tool and Source Sampling Test Reporting Tool. The SRP Tool has been successfully transitioned and adopted by all the Military Services and other DLA customers for new item introduction to DLA sustainment. The Source Sampling Tool (SST) captures the test results from the independent commercial laboratories used by Troop Support Clothing and Textile prime contractors. The SST is ready for vendor roll out. In addition, an initial prototype of the Digital Model library (DML) was developed. The DML will be the repository for CUIE digital technical data models and related industry standard models. The Defense Logistics Information Research (DLIR) program completed the Connecting the Model-Based Enterprise (MBE) project to modernize the process to obtain current Technical Data Packages (TDPs) directly from the Product Lifecycle Management (PLM) systems of the Military Services' ESAs and PMOs. DLIR also developed standard guidance for Military Service organizations, including the ESAs and PMOs, to guide and influence generation of 3D, model based TDPs that will support DLA and its supplier needs. DLIR explored the ability of commercial Digital Rights Management (DRM) tools and techniques to improve the security of TDPs and support the eventual development of functional requirements for the "Catalog of the Future" (COTF) by identifying and prototyping new cleansing tools and methods while simultaneously cleansing data. DLIR continued to support DLA's Technical Data Management Transformation (TDMT) efforts to determine the future state IT architecture design and began efforts in building the digital thread partnering with the Air Force KC135 and the Army's Paladin Artillery Systems. The Emerging Manufacturing Technology (EMT) program invested in Advanced Manufacturing solutions for DLA's support to DOD and Federal Government contingency operations, such as PPE and decontamination products and materials for COVID-19 response. In addition, EMT provided funding Critical to the transition and commercialization of successful Small Business Innovation Research (SBIR) projects such as emerging magnetic braking technologies, addressing strategic materials shortage/ risk, and advancements in Digital Manufacturing.			
Accomplishments/Planned Programs Subtotals	7.071	-	-

	FY 2022	FY 2023
Congressional Add: Supply Chain for Readiness and Sustainment	8.000	-
FY 2022 Accomplishments: Began work on a project that will significantly increase the number of small- to midsize employers (SMEs) that are ready to efficiently and effectively increase the defense manufacturing		

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** OOO / *Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)*

	FY 2022	FY 2023
supply chain through the adoption of additive manufacturing, automation, and robotics metal-casting (Industry 4.0) technologies.		
Congressional Add: Rare Earth Recovery Technology ***FY 2022 Accomplishments:*** Began coordination for a 24-month project to demonstrate a process of recovering Rare Earth Elements (REEs) from electronic waste (ewaste) materials from various commercially available sources, including DOD e-waste. Successful completion of this project would assist DOD in achieving its long-term goal of reducing foreign reliance on REEs.	2.000	-
Congressional Add: Conversion Of Titanium Scrap ***FY 2022 Accomplishments:*** Began coordination for a 36-month SBIR Phase III project to demonstrate the concept of converting titanium scrap to premium powder products for 3D printing and powder metallurgy. Titanium is a strategic material and critical for DOD applications.	5.000	-
Congressional Add: Graphite Materials ***FY 2022 Accomplishments:*** Began coordination for 36-month project to support domestic production of synthetic graphite precursor material for batteries and other military applications. This would help in supporting US graphite industry and securing DOD supply chain for various weapon systems.	9.000	-
Congressional Add: Nanostructured Iron Nitride Permanent Magnets ***FY 2022 Accomplishments:*** Began coordination for 36-month project to advance the technology and manufacturing readiness of non-rare-earth containing iron nitride permanent magnets for use in military electric components and systems.	7.000	-
Congressional Add: Modeling & Simulation Competition ***FY 2022 Accomplishments:*** Solicited work through R&D emergent BAA to include Digital Twin of Organizations (DTO); received and reviewed white paper proposals to award contract in the fourth quarter to build Digital Twin of Organization (DTO) that simulates DLA's business processes.	2.000	-
Congressional Adds Subtotals	33.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** OOO / *Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)*

D. Acquisition Strategy

The DLA R&D program is executed through Delivery Orders placed on Indefinite Delivery/Indefinite Quantity Contracts that resulted from competitive Broad Agency Announcements and through interagency agreements with the Military Services when it is cost effective and/or provides some technical advantage, e.g. improves the probability of successful transition. DLA also has a continuously open Broad Agency Announcement for Emerging Technologies.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603680S / *Manufacturing Technology Program (ManTech)*	Project (Number/Name) IBA / *Industrial Base & Aging Weapon System Support*	

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
IBA: *Industrial Base & Aging Weapon System Support*	0.000	0.000	53.222	36.728	0.000	36.728	40.542	41.305	41.091	39.982	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Industrial Base (IB) and Aging Weapon System Support Line of Effort (LOE 1) seeks to implement innovative and proactive technology solutions to ensure a robust, reliable industrial base that provides affordable and previously hard-to-procure critical parts for DOD weapon systems through the following objectives:

1. Viable and Responsive Industrial Base: maximize Defense Industrial Base capability and capacity and improve availability, quality, and affordability to support the Warfighter.
2. Obsolescence Solutions: establish a trusted manufacturing capability for qualified microcircuits to support DOD weapon system lifecycles.
3. Advanced Manufacturing: leverage advanced manufacturing capabilities to introduce and integrate additive and advanced manufacturing concepts into the DOD supply chain.

The portfolios within the IB and Aging Weapons System Support LOE include food-service supply chain solutions (Subsistence Network), Castings (Procurement Readiness Optimization—Advanced Casting Technology), Forgings (Procurement Readiness Optimization—Forging Advanced System Technology), Batteries (Battery Network), Additive Manufacturing (AM), and Advanced Microcircuit Emulation (AME).

The Subsistence Network (SUBNET) program focuses on solutions to develop and promote manufacturing improvements in the subsistence supply chain. The program's expanded areas of interest include combat rations, food equipment, field feeding solutions, food footprint, food innovations, food safety and defense developments, garrison feeding, nutrition and health, storage and packing solutions, surge and sustainment support, and water security. SUBNET forms a community of practice with Military Services, U.S. Department of Agriculture, Natick Soldier Research Development, and Engineering Center; Academia, and Industry to research and promote manufacturing improvements in the Subsistence Supply Chain. The SUBNET goals are to utilize innovation and the leverage the latest technologies to maximize the logistics capability and capacity within the subsistence supply chain industrial base. The desired outcomes include reduced cost, increased efficiencies, improved processes, enhanced quality, and improved surge demand capabilities.

The Casting program works to ensure a stable, reliable, and competitive domestic casting industrial base supporting the weapon system needs of the Department of Defense (DOD) and the Defense Logistics Agency (DLA). The casting program works with industry, universities, and the Casting Industry Associations to identify projects that improve the materials, processes and business practices of the nation’s foundry industry. The program aligns projects with strategic issues and identified focus areas within the DLA and DOD. Guidance for these projects comes from the DLA Strategic Plan and input from the casting industry. Weapon system spare parts managed by DLA that contain castings are responsible for a disproportionate share of DLA’s backorders or unfilled orders (UFOs). Cast parts are about two percent of National Stock Numbered Class IX parts but represent about five percent of all backorders, and when only the oldest backorders are considered, up to 10 percent are castings. This program includes tasks that focus on developing new capabilities in the areas of inspection, materials, processes, modeling, and design. Once

developed, these capabilities will support the foundry industry, where the technologies will be tested and implemented, most often in conjunction with the casting industry associations. These advancements improve the metal casting supply chains for the DOD and the DLA to better support the warfighter. We will invest in projects aimed at reducing lead-time, reducing cost, and improving quality of castings critical to DOD weapon systems.

The Forging program works to ensure a stable, reliable, and competitive domestic forging industrial base for the weapon system needs of the Department of Defense (DOD) and the Defense Logistics Agency (DLA). Working with industry, universities, and the Forging Industry Association to identify projects that improve the materials, processes and business practices of the nation's forging industry. The program aligns its projects with strategic issues and focus areas identified within the DLA and DOD. Guidance for these projects comes from the DLA Strategic Plan and input from the forging industry. Weapon system spare parts managed by DLA that contain Forgings are responsible for a disproportionate share of DLA's backorders or unfilled orders (UFOs). Forged parts are about two percent of National Stock Number (NSN) Class IX parts but represent about five percent of all backorders, and when only the oldest backorders are considered, up to 10 percent are forgings. This program includes tasks to develop new capabilities in the areas of inspection, materials, processes, modeling, and design. Once developed these capabilities will support the forging industry, where these technologies will be tested and implemented in conjunction with the forging industry associations. These advancements improve the forging supply chains for the DOD and the DLA to better support the warfighter. We will invest in projects aimed at reducing lead-time, reducing cost, and improving quality of forgings critical to DOD weapon systems.

The Battery Network (BATTNET) program objective is to develop the next generation of battery manufacturing technologies for cost and price efficiency, longer shelf life, and lighter batteries with higher energy. BATTNET conducts R&D initiatives to address sustainment gaps and bridge technical solutions into higher a Manufacturing Readiness Level (MRL) for specific groups of batteries. BATTNET also focuses on projects to develop the production capability for advanced lithium-based non-rechargeable and rechargeable batteries to ensure the prompt and sustained availability, quality, and affordability of Service approved batteries. Desired outcomes include: streamlined inventory and associated cost reductions through standardization and improved distribution practices; resolved obsolescence issues; addressed surge and sustainment issues; enhanced security of supply chain; increased competition and manufacturing base; reduced per unit battery cost; and leveraged Service-level (Army, Navy, Air Force) and other governmental (DOE, DOT, NASA) R&D efforts to insert new technology and practices into the existing DLA battery inventory.

The Additive Manufacturing (AM) program objective is to streamline customer purchase requests for AM items and provide the Warfighter an alternate source of supply for designated requirements. This effort responds to DLA's role called out in DOD Instruction 5000.93, Use of AM in DOD to integrate AM into the supply chain, by leading the development of effective AM procurement processes. The AM effort explores innovative technologies as it pursues this alternate means of supply for products that are otherwise non-procurable or susceptible to procurement issues. The AM effort includes collaborative efforts with the Military Services to develop analytical tools to identify viable AM candidates while considering logistics planning factors. The AM effort requires effective management of the digital thread composed of authoritative 3D digital technical, manufacturing and testing data exchanged among designers, engineers, maintainers, logisticians, procurement managers and the vendor base to enable quality assurance acceptability. Potential AM benefits include products that can address an unfulfilled Warfighter readiness need by reducing production lead times, production costs, storage costs, transportation costs and in some cases fuel consumption due to lighter design and material options. DLA R&D will leverage these efforts with Industry, Academia and ongoing Military Service-level agreements (Army, Navy, Marine Corps, Air Force), Oak Ridge National Laboratory (ORNL) and the Department of Energy.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBA / *Industrial Base & Aging Weapon System Support*

Advanced Microcircuit Emulation (AME) program objective is to maintain a reliable and trusted domestic source for “non-procurable” linear and digital microcircuits. Microcircuit emulation allows the Services to save significant costs by using form, fit and functionally equivalent spare parts rather than redesigning the next-higher-assembly. Without the technologies planned on the AME Roadmap, DLA will not be able to support DoD’s requirements for high quality spare parts for critical electronic systems and subsystems, resulting in decreased warfighter readiness and significant cost for weapons system or component redesign.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Industrial Base (IB) and Aging Weapon System Support Line of Effort (R&D LOE 1)	-	35.222	36.728

Description: Funding and efforts for the Industrial Base & Aging Weapon System Support (IBA) Line of Effort (R&D LOE 1) begins in FY 2023. FY 2022 efforts related to this LOE are outlined in the R-2A for Improving Industrial Base Manufacturing Processes (IBMP) SFA and the R-2A for Maintaining Viable Supply Sources (AAA) SFA.

FY 2023 Plans:
The Subsistence Network (SUBNET) program will continue to develop and promote manufacturing improvements with R&D projects that leverage emerging technologies and innovations. The SUBNET program will work to improve as well as incorporate best practices and industry trends discovered through research that are crucial to the subsistence supply chain. SUBNET plans to research and execute projects in FY 2023 in the areas of modernization and readiness analysis for joint food management phase V business case analysis, the Congressional funded pre and polyfluoroalkyl substances in packing material used to assemble MREs research, investigation of performance metrics for meals, ready-to-eat (MRE) packaging with sustainable packaging options and conducting a Quality Study through microbiological testing with a MRE Assembler. The program will also continue to pursue Small Business Innovation Research (SBIR) topics in Subsistence.

The Casting program will work to maintain its alignment with the DLA Strategic plan and U.S. Casting Industry Roadmap. These provide guidance as to where the focus of development should be. The casting program will continue to focus on key areas of need which include workforce development to help sustain a stable supply chain for DLA, modeling and simulation tools, die lubricants and coatings to increase quality and decrease environmental impacts and automation and robotics to reduce lead time and increase safety. The Casting program continues to monitor projects that were awarded in FY 2022 that research, develop and deploy innovative and technical solutions to ensure a viable and competitive domestic industrial base. The Casting program works with Academia, industry, and industry associations to continually identify future development and technical needs in alignment with the DoD and DLA.

The Forging program continues to monitor projects that research, develop and deploy innovative and technical solutions to ensure a viable and competitive domestic industrial base. These projects focus on improving manufacturing processes and alternative forging manufacturing methods, materials to reduce production lead-time and enhancements and improvements to pre and post processing methods. These projects align with the needs of the DoD and DLA aimed and supporting and fulfilling the needs of the warfighter.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBA / *Industrial Base & Aging Weapon System Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The Battery Network (BATTNET) program objective is to develop the next generation of battery manufacturing technologies for cost and price efficiency, longer shelf life and operational life, and safer, lighter batteries with higher energy. These battery performance improvements also create Operational Energy benefits and reduce logistics and maintenance requirements. BATTNET conducts R&D initiatives to address sustainment and source obsolescence gaps and to bridge technical solutions into higher a Manufacturing Readiness Level (MRL) for specific groups of batteries. BATTNET also focuses on projects to develop the production capability for advanced lithium-based batteries to ensure the prompt and sustained availability, quality, and affordability of Service approved batteries. Desired outcomes include: streamlined inventory and associated cost reductions through standardization and improved distribution practices; resolving obsolescence, surge and sustainment issues; enhanced security of supply chain; increased competition and manufacturing base; reduced per unit battery cost; and assisting overall Department of Defense R&D efforts to insert new technology and capabilities into the US Military battery inventory. The Additive Manufacturing (AM) program will continue to collaborate with the Military Services, DLA's Process Owners and Major Subordinate Commands (MSC) to identify technologies that assist with AM enterprise-wide processes that align DLA's identification of hard-to-source parts requirements with MILSVC cognizant engineer authorities and AM manufacturing capabilities to obtain qualified AM parts that support a DLA customer. The DLA R&D AM projects will explore innovative remote inspection capabilities that enable interoperable quality control inspections among DLA, the Military Service cognizant engineers and the manufacturing base. Further analysis of alternatives for remote inspection technologies can render repeatable and accelerated qualifications processes. The convergence of automated requirements' tools developed with DOD consensus of AM risk categorization criteria frameworks, under the DLA-led Joint AM acceptability (JAMA) project in collaboration with OSD R&E and the MILSVCs, will serve as the basis to improve DLA's position in a distributive manufacturing ecosystem to exercise an AM procurement and perform quality assurance of AM parts flowing into the DOD supply chains. Reduction of the AM baseline will commensurately impact the AM Program's ability to produce solutions for enterprise processes and procedures needed to integrate AM into the supply chain and transition benefits and findings of AM R&D projects into the DLA supply chain processes. With limited budget, the AM R&D program can only perform sub-optimized part to part projects under the authority of established support agreements with our Warfighting customers and partners. The Advanced Microcircuit Emulation (AME) program will continue planning and identifying projects for the specific emulation technology implementations to support specific device family groups in consonance with Customer and Agency requirements. It will continue projects both started or in-work during FY 2022. The 40 Volt Operational Amplifier project is anticipated to be completed in the third quarter. Also, the Ion Implanter capability is scheduled for completion during the fourth quarter. AME will continue development of Additive Manufacturing techniques to address obsolescence in Microcircuit Cases. ***FY 2024 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBA / *Industrial Base & Aging Weapon System Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The Subsistence Network (SUBNET) program will continue to develop and promote manufacturing improvements with R&D projects that leverage emerging technologies and innovations. The SUBNET program will continue to work Congressional Interest research in pre and polyfluoroalkyl substances in packing material used to assemble MREs, research sustainable packaging options for the MREs, research other food sterilization methods to include food irradiation, research sensors from production to storage to food service, and artificial intelligence in food. The program will also continue to pursue Small Business Innovation Research (SBIR) topics in Subsistence. The Casting program will work to review proposals and award new contracts under the Broad Agency Announcement while maintaining its alignment with the DLA Strategic plan and U.S. Casting Industry Roadmap. These projects will work to alleviate problems in the procurement and manufacture of parts that contain metal castings. These problems include dangerous and labor-intensive processes, accuracy of existing modeling and simulation software and tools to predict end item or finished part performance, complex manufacturing processes, resources for sourcing and/or tooling identification, the use of required but obsolete or antiquated specifications/standards and the continued consolidation of manufacturing facilities and resources within the domestic market coupled with fierce competition from foreign sources. The casting program will continue to monitor projects that are awarded in FY23 focused on helping to secure and maintain a viable and vibrant foundry industry as a critical part of the U.S. manufacturing base. The resulting benefits from these projects are an improved manufacturing base and reliable sources of supply with increased spare part availability and a resulting mission readiness for the DLA and the DoD. The Forging program will continue to monitor awarded projects focused on improving manufacturing processes and alternative forging manufacturing methods. Innovative coatings for materials and forging dies, workforce development with tools and resources to help the industry recruit and retain employees, and sensors and smart manufacturing methods. These projects align with the needs of the DoD and DLA aimed and supporting and fulfilling the needs of the warfighter. The Battery Network (BATTNET) program will continue to execute projects for improving the production readiness, transition, and standardization of soldier and system batteries within the DLA supply chain. Projects will leverage new battery manufacturing technologies for the supply chain that have been developed by industry – advanced electrodes production, low-cost materials production or recycling, and advanced performance cells. The program intends to leverage deep-discharge, long cycle life, safe lithium-ion capabilities with the US Military Services to replace obsolete nickel-cadmium batteries in naval and aviation systems. The Additive Manufacturing (AM) program will use the lessons learned during the Joint Additive Manufacturing Acceptability (JAMA) efforts in the areas of AM parts prioritization, data formats, acceptability criteria and leverage emerging digital business practices, stemming from the information technology modernization efforts in DLA to engage in the testing and prototyping of customer engagement technology peripheral digital services offerings to address the requirements generated at the convergences of the MILSVC digital experiences and DLA digital operations in order to adjust DLA's business models. DLA R&D			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** IBA / *Industrial Base & Aging Weapon System Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
AM will also launch the needed test beds to propel the expansion of the DLA' technical data management capability to include vendor 3D models (industry developed) to establish a repeatable process for AM vendor bids. The Advanced Microcircuit Emulation (AME) program will AME will continue to develop its long-term technology roadmap. It will also continue planning for the specific emulation technology implementations to support specific device family groups in consonance with Customer and Agency requirements. Additive Manufacturing for Microcircuit Cases - Phase III project, Small Case 20 Volt Operational Amplifier, Radiation-Hardened Linear microcircuits, and Dual-Voltage Process Development projects are anticipated to be completed. AME will continue to develop capabilities in digital and analog/linear technologies. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024: Industrial Base and Aging Weapon System Support (IBA) baseline was increased by approximately $1.000 million based on an internal funding reallocation decision to address sustainment gaps and bridge technical solutions into higher a Manufacturing Readiness Level (MRL) for solider and system batteries.			
Accomplishments/Planned Programs Subtotals	-	35.222	36.728

	FY 2022	FY 2023
Congressional Add: Flake graphite-based solutions for PFAS contamination ***FY 2023 Plans:*** DLA is seeking additional clarification on the intent & recipient of the Flake graphite-based solutions for PFAS contamination Congressional Add. As clarification is received, a statement detailing execution plans will be provided.	-	5.000
Congressional Add: Steel Performance Initiative ***FY 2023 Plans:*** Develop hybrid and Industry 4.0 manufacturing technologies along with modeling and quantitative nondestructive testing (QNDT) to advance predictive performance design.	-	13.000
Congressional Adds Subtotals	-	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 Defense Logistics Agency			Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603680S / *Manufacturing Technology Program (ManTech)*	Project (Number/Name) TDM / *3D Tech Data Modernization / Model Based Enterprise*	

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
TDM: *3D Tech Data Modernization / Model Based Enterprise*	0.000	0.000	39.544	9.676	0.000	9.676	9.855	10.042	10.155	10.361	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The three-dimensional (3D) Technical Data Modernization (TDM) / Model-Based Enterprise (MBE) includes efforts to improve and facilitate the exchange of engineering and logistics information among DLA, the Military Services, DLA industry partners and DLA customers. This LOE includes the Military Unique Sustainment Technology (MUST), the Defense Logistics Information Research (DLIR), and the Emergent Manufacturing Technology (EMT) portfolios. A primary focus of this SFA is to capitalize on the emerging "Model Based Enterprise" paradigm and the semantic web as an enabler to a logistics system that is smart and connected up and down the supply chain and across all DLA Customers and suppliers. A major focus is to transform DoD engineering data from two-dimensional paper-based products to three-dimensional computer-based models, and to develop processes to move from "electronic paper" (i.e. PDF files) to technical data files that can interface directly with industries' engineering systems. The benefits include shorter product introduction cycles, lower set up-costs for parts production and more economical small batch production. Objectives for this LOE include:

1. Transform technical data into modern, machine-usable, neutral formats: support DoD's digital modernization efforts and provide significant readiness improvements.
2. Create a model-enabled knowledge base shared among DLA, the Military Services and industry: streamline the delivery of accurate requirements and high-quality material and end-items throughout the supply chain.

The Military Unique Sustainment Technology (MUST) program addresses GAO Report 12-707 recommendations for DoD to establish a "knowledge-based approach" to define, communicate, and collaborate on military unique Combat Uniforms and Individual Equipment (CUIE) requirements. DLA has the responsibility to manage and maintain the technical requirements among the Services and the Defense Industrial Base. Currently there is no common environment for collaborating on new requirements among the stakeholders. The strategic objective of the DLA MUST program is to identify, develop, and adopt technologies that can significantly improve the joint process from transitioning new item development to DLA sustainment and operations. The Program focuses on technologies that will transform the military CUIE supply chain from an "electronic paper" (i.e. PDF/MS Word) based manual environment, into a knowledge-based model driven environment. This approach will result in seamlessly communicating military unique technical requirements throughout the end-to-end supply chain, leading toward a Model Based Enterprise.

The Defense Logistics Information Research (DLIR) program researches core technologies to improve the quality, security, and interoperability of logistics data acquisition and management to enable and streamline DLA operations. DLA enables transformation of business practices and methodologies as the data for weapons systems evolve from traditional formats and delivery methods (such as two-dimensional images and PDF formats) to newer, more innovative methods (such as three-dimensional solid models, object-oriented databases, service-oriented architecture (SOA) and Web 3C standards). This transformational shift for DLA is driven by the Model-Based Enterprise (MBE) approach, the way industry is delivering design and development data for weapon systems to the Military Services and the way the

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** TDM / *3D Tech Data Modernization / Model Based Enterprise*

Military Services in turn manage and provide the data to DLA. DLA Logistics Operations, DLA Acquisition, DLA Tech/Quality, and DLA's Major Subordinate Commands (MSCs) are key stakeholders in the DLIR initiatives to modernize the representation and delivery of weapons systems data.

The EMT program addresses emerging and out of cycle requirements that always occur as DLA strives to maintain the readiness of the aging weapon systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Three-dimensional (3D) Technical Data Modernization (TDM) / Model-Based Enterprise (MBE) (R&D LOE 2)	0.000	10.944	9.676

Description: Funding and efforts for the 3D Tech Data Modernization / Model Based Enterprise (TDM) Line of Effort (R&D LOE 2) begins in FY 2023. FY 2022 efforts related to this LOE are outlined in the R-2A for Improving Technical and Logistics Information (OOO) SFA.

FY 2023 Plans:
The Military Unique Sustainment Technology II (MUST II) program focus is to integrate the MUST developed tools into the DML using an Application Program Interface (API). The Interim Change Management System (ICMS) tool will be a new development for capturing and managing Interim Changes (IC) to the technical requirements. MUST plans to develop more powerful AI based tools to incorporate ICs into the base models, and to extract technical requirements from the digital models. The MUST program will work with the Services to promote the use of data formats compatible with the digital document model paradigm. The DML document models will become the authoritative source for CUIE technical requirements and provide common accessibility and visibility to all stakeholders. These models can be efficiently managed (queried, analyzed, updated) and will be capable of supplying data directly to Combat Uniform and Individual Equipment (CUIE) test plans and manufacturing processes. Joint processes will be reengineered to take advantage of the digital model data. For example, use in the Product Quality Deficiency Report. Prototype tools and interfaces will also be developed to improve digital model utility for the industrial base.

The Defense Logistics Information Research (DLIR) program will continue to support DLA's Technical Data Management Transformation (TDMT) efforts to determine IT architecture needs and to ensure DLA's MBE architecture meets/exceeds DOD compliance objectives and integrates with Military Services irrespective of platforms. DLIR will complete the Digital Rights Management (DRM) project to improve the security of TDPs and support the eventual development of functional requirements for the "Catalog of the Future" (COTF). Finally, DLIR will collaborate with MxD focusing on cybersecurity and building the digital thread leveraging the Air Force KC135 and the Army's Paladin Artillery Systems to include providing access to a low-cost, cloud-based, Product Lifecycle Management (PLM)/Product Data Management (PDM) system(s).

The Emerging Manufacturing Technology (EMT) program will continue to enable DLA's investigation of new disruptive technology advances that may be implemented in the nearer term, without degrading well established program efforts.

FY 2024 Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** TDM / *3D Tech Data Modernization / Model Based Enterprise*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
The Military Unique Sustainment Technology II (MUST II) program will develop a strategy to integrate Services PLM data as a "front end" to the MUST Knowledge Base. In this vision, MUST Knowledge Base tools and capabilities interface with PLM via Application Programming Interfaces as Items prepare for, and transition to DLA Sustainment. The ICMS tool working prototype and the DML working prototype will be delivered and available for transition into an operational capability. Technical data content in the DML will continue to be expanded and the AI needed to make the DML information available throughout the supply chain will be enhanced. The major effort of integration into Military Services development organizations and the industrial base will be undertaken. The Defense Logistics Information Research (DLIR) program will DLIR will continue to support DLA's Technical Data Management Transformation (TDMT) efforts to determine IT architecture needs and to ensure DLA's MBE architecture meets/exceeds DOD compliance objectives and integrates with Military Services irrespective of platforms. DLIR will continue collaboration with MxD focusing on cybersecurity and building the digital thread completing the conversions of selected NSNs to 3D, model-based formats, producing first articles, and demonstrating to the cognizant Engineering Support Activity (ESA) that the model-based TDP can be the authoritative TDP. The Emerging Manufacturing Technology (EMT) program will continue to enable DLA's investigation of new disruptive technology advances that may be implemented in the nearer term, without degrading well established program efforts. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** No significant changes from FY 2023 to FY 2024.			
Accomplishments/Planned Programs Subtotals	0.000	10.944	9.676

	FY 2022	FY 2023
Congressional Add: AI based market research system	-	3.000
FY 2023 Plans: Conduct an R&D pilot that applies AI to improve the nation's military industrial base, accelerate the contracting processes, and diversify and strengthen the supply chain. Once completed the pilot's data will provide a framework and blueprint to dramatically improve both readiness and resiliency of the Defense Industrial Base (DIB) at scale within the DOD.		
Congressional Add: Supply Chain Readiness Improvement Program	-	5.000
FY 2023 Plans: Using readily available data mining techniques, DoD could manage the unawarded solicitations list in several ways: speed of delivery, quality of part, etc. Proving this capability through short-term		

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	FY 2022	FY 2023
demonstration will bring additional industry providers to the table and show increase in capability and reduction in costs across the DoD.		
Congressional Add: Battery Grade Graphite ***FY 2023 Plans:*** The purpose of this additional effort is to reestablish domestic production capability of legacy ATJTM isostatically molded graphite using a US supply chain and US manufacturing facility. The project seeks to qualify a new domestic source of raw materials and produce a qualification batch of 8 tons of ATJ graphite. After qualification testing and acceptance by customers, there will be a source of ATJ at a capacity level of up to 3,000 tons per year of isostatically molded graphite as a drop-in replacement for the legacy ATJ material. At the end of this program, the US will again have a domestic source of strategically important large isostatically molded graphite billets used for rocket nozzles and ablative materials produced by a US-owned company.	-	3.600
Congressional Add: High performance magnets ***FY 2023 Plans:*** Focus would be on using CA funding for qualifying domestic NdFeB Rare Earth Magnet Production Qualification Plans for Defense Industrial Base: Excalibur, Peregrine, JDAM + SDB Programs. Urban Mining Company proposed a Magnet-to-Magnet recycling system that takes waste magnets from end-of-life appliances, reduces them to powder, and finally reforms them into new magnets with magnetic properties like, or, better than starting materials. This process could alleviate supply risk in the US by largely operating outside of the conventional magnet supply chain.	-	5.000
Congressional Add: Hypersonic radomes and apertures ***FY 2023 Plans:*** In order to leverage ongoing Hypersonic technology developmental efforts by AFRL, AFWERX, MDA, and DARPA to accelerate manufacturing readiness of Hypersonic radomes/apertures that are essential to achieving the rigorous performance and survivability requirements of Hypersonic weapons, Mentis Sciences, of Manchester, NH, brings significant expertise to bear on several potential solutions. Specifically, Mentis will 1) focus and accelerate the development of Mentis Advanced Pre-Ceramic Composite Radomes and Apertures, 2) leverage Mentis competencies in the: design, development, and production of Ox/Ox preforms and structures; RF Aperture design, characterization, and testing; and aerothermal platform design, testing and analysis to mature material solutions to TRL / MRL 6 requirements and 3) demonstrate capabilities and limits leveraging component testing tech demonstration platform tests at LHMEL, AEDC; White Sands Missile Range to advance Hypersonic Ox/Ox Requirements.	-	5.000
Congressional Add: Nanostructured iron nitride permanent magnets ***FY 2023 Plans:*** Niron Magnetics proposed the use of Iron Nitride as means of reducing the use of rare earths for the manufacture of high-performance permanent magnets. Iron Nitride is a high performance, completely	-	7.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603680S / *Manufacturing Technology Program (ManTech)*	**Project (Number/Name)** TDM / *3D Tech Data Modernization / Model Based Enterprise*

	FY 2022	FY 2023
rare earth free permanent magnet technology. A key differentiator to Niron's magnet technology is powder particle coating by Atomic Layer Deposition (ALD) in a fluidized bed reactor. ALD is a ground-breaking powder conditioning technology that provides two benefits to Niron's iron nitride magnets: 1) passivation of the nanoparticle surface, preventing oxidation, and 2) magnetic isolation of the nanoparticles, improving their ability stay fully magnetized. The unique characteristics of iron nitride include a magnetic strength higher than most grades of NdFeB permanent magnets. A new project that continues this work is in the process of being initiated. The intent is to advance the technology and manufacturing readiness of non-rare earth containing iron nitride permanent magnets, for use in military electric components and systems. A four-task program is currently envisaged. The first aims to identify alloying elements that would maximize iron nitride magnet performance and develop an electric machine design that incorporates iron nitride permanent magnets; The second task is to synthesize iron oxide nano particles (IONPs) for reduction and nitriding at pilot scale (10 kg). The third task is to develop scalable processes to reduce, nitride, and passivate IONPs. The final task is to develop iron nitride permanent magnets with an energy product of 15 MGOe.		
Congressional Adds Subtotals	-	28.600

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A