Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army											Date: March 2023	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 6: *RDT&E Management Support*					R-1 Program Element (Number/Name) PE 0604759A / *Major T&E Investment*							
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	-	91.130	142.031	76.167	-	76.167	78.455	92.518	95.866	97.043	Continuing	Continuing
983: *Reagan Test Site (RTS) T&E Investments*	-	6.141	6.769	8.401	-	8.401	4.222	8.414	8.503	8.596	Continuing	Continuing
984: *Major Developmental Testing Instrumentation*	-	36.639	43.861	33.532	-	33.532	26.803	28.783	33.231	33.726	Continuing	Continuing
986: *Major Operational Test Instrumentation*	-	29.301	39.023	6.730	-	6.730	7.883	6.128	4.413	4.460	Continuing	Continuing
EY9: *Range Radar Replacement Program (RRRP)*	-	18.005	50.065	26.355	-	26.355	38.398	48.042	48.555	49.084	Continuing	Continuing
FF1: *Cyber Blue Team*	-	1.044	2.313	1.149	-	1.149	1.149	1.151	1.164	1.177	0.000	9.147

A. Mission Description and Budget Item Justification

This Program Element (PE) funds the development and acquisition of major developmental test instrumentation for the United States (U.S.) Army Test and Evaluation Command's (ATEC) test activities: White Sands Test Center (WSTC), New Mexico; Yuma Test Center (YTC), Arizona; Aberdeen Test Center (ATC), Maryland; Electronic Proving Ground (EPG), Arizona; Redstone Test Center (RTC), Alabama; and for the Reagan Test Site (RTS) at the United States Army Kwajalein Atoll (USAKA), which is managed by the Space and Missile Defense Command. This PE also funds development and acquisition of Operational Test Command's (OTC) major field instrumentation, management of the Cyber Acquisition Blue Teams (CABT) certification standards. Requirements for instrumentation and cyber certifications are identified through a long range survey of project managers, Research Development and Engineering Centers (RDECs), and Battle Laboratories developing future weapon systems and the test programs that support these systems. Army testing facilities are also surveyed to determine major testing capability shortfalls.

This funding line supports testing of Army Modernization Priority Programs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	93.617	107.706	69.131	-	69.131
Current President's Budget	91.130	142.031	76.167	-	76.167
Total Adjustments	-2.487	34.325	7.036	-	7.036
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	34.400			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.487	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	7.036	-	7.036
• FFRDC Transfer	-	-0.075	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 986: *Major Operational Test Instrumentation*		
Congressional Add: *Major operational test instrumentation*	25.600	-
Congressional Add: *Congressional Add: Exportable Live Virtual Constructive Command Center (XLCC)*	-	30.500
Congressional Add: *Congressional Add: Expanding the Operational Test Command*	-	3.900
Congressional Add Subtotals for Project: 986	25.600	34.400
Congressional Add Totals for all Projects	25.600	34.400

Change Summary Explanation

FY24 funding increased to support high voltage power supply upgrade for radar test equipment,.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / *Major T&E Investment*	Project (Number/Name) 983 / *Reagan Test Site (RTS) T&E Investments*	

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
983: *Reagan Test Site (RTS) T&E Investments*	-	6.141	6.769	8.401	-	8.401	4.222	8.414	8.503	8.596	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds improvement and modernization (I&M) for the Ronald Reagan Ballistic Missile Defense Test Site (RTS) instrumentation systems. The Reagan Test Site with its remote location and one of kind instrumentation systems provides a strategic test environment that cannot be replicated. In order to continue its critical mission of testing missile systems that are of paramount importance to the defense of the nation, the RTS instrumentation systems must be continuously updated and upgraded to support the emerging technologies being developed by the Department of Defense (DOD) such as hypersonics and other advanced weapons systems. Without modernization, these instrumentation systems face obsolescence or degraded capability and the inability to provide the critical data needed for continued materiel development. Without instrumentation on par with the technologies being utilized in emerging systems, the materiel developer will be unable to complete their test programs or pass programmatic milestones toward deployment. These funds provide modernization of the radar, telemetry, optics, range safety, communications, command/control and other equipment essential to meet test and evaluation requirements of the Services and DoD agencies. The RTS instrumentation is required to support data collection for test & evaluation assessments and operational decisions that have strategic implications for the Army, Navy, Air Force, United States Strategic Command (STRATCOM), Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), National Aeronautics and Space Administration (NASA), and other customers. RTS, located in the Republic of the Marshall Islands, is a remote, secure activity of the Major Range and Test Facility Base (MRTFB). Funding will enable RTS to meet customer objectives and sustain the required instrumentation suite.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Radar Reliability Improvement Program (RRI).	0.500	0.500	0.500
Description: The Radar Improvement and Sustainment (RIS) activity is an Improvements and Modernizations (I&M) Umbrella Program to push technology into radar systems. RIS is a group of complimentary I&M Projects that mitigate annual Operations and Maintenance (O&M) risks. Projects initiated address the following needs: Enhancing the Reliability of the Sensor; Technology Refresh; Obsolescence; Commonality of Design across Sensors; Enhanced Monitoring; Fault Detection - Fault Isolation (FD/FI); Enable Remote Operation and Monitoring; and Enhanced Capabilities.			
FY 2023 Plans: RRI Program will continue as an I&M Umbrella Program to push technology into the radar systems. RRI projects will address: Enhancing the Reliability of the Sensor; Technology Refresh; Obsolescence; Commonality of Design across Sensors; Enhanced Monitoring FD/FI; Enable Remote Operation and Monitoring; and Enhanced Capabilities.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 983 / *Reagan Test Site (RTS) T&E Investments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
RRI Program will continue as an I&M Umbrella Program to push technology into the radar systems. RRI projects will address: Enhancing the Reliability of the Sensor; Technology Refresh; Obsolescence; Commonality of Design across Sensors; Enhanced Monitoring FD/FI; Enable Remote Operation and Monitoring; and Enhanced Capabilities			
Title: Telemetry (TM) Modernization Study. ***Description:*** This activity will develop the technology required to modernize the telemetry systems using an innovative software defined radio approach designed to vastly improve the ability to adapt to future telemetry changes and requirements quickly with lower cost. In addition, this approach will enable centralized command and control of the telemetry equipment increasing efficiency in mission preparation and execution. The telemetry back-end processing chain is currently comprised of discrete frequency-specific hardware components that are replicated for each telemetry channel required for a test event. This activity will develop a scalable frequency-agnostic, software-based solution that runs on commodity computer servers. More complex missions (e.g., Over-the-air (OTA) operational testing of the Ballistic Missile Defense Systems (BMDS)) will continue to require more telemetry channels, but this activity will avoid much of that future cost. This effort will provide enough hardware to increase capacity of the telemetry system. ***FY 2023 Plans:*** TM Modernization should complete in FY23; the component will utilize the requested funds for wrap up efforts. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease due to TM Modernization completion in FY 2023.	2.500	1.000	-
Title: Legacy Servo Upgrade Program. ***Description:*** This activity will design, upgrade, and replace the radar and optics servo systems. The custom-hardware based legacy systems will be replaced with commercially supportable commercial off the shelf (COTS) hardware. Where possible, common components will be used across all range sensors to minimize ongoing maintenance costs. ***FY 2023 Plans:*** Assessment of antenna servo systems and continue engineering design activities. Prototyping and testing of new servo methodologies will be implemented, and begin installation of new servos at one radar (MMW). ***FY 2024 Plans:*** Installation of new servos at a second radar (ALCOR). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease due to Non-Recurring Engineering (NRE) being done in FY23.	-	2.500	2.124
Title: RTS Range Enhancements for Hypersonic Vehicle Testing	0.100	0.150	0.400

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 983 / *Reagan Test Site (RTS) T&E Investments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: The Range Enhancements for Hypersonic Vehicle Testing program will develop and deploy advanced technologies and a number of infrastructure upgrades specific to hypersonic vehicle testing. These technologies and infrastructure improvements include advanced non-ballistic tracking enhancements, improved data collection, additional waveform support, sensor surrogate capabilities and integration of adjunct sensors to support situational awareness and future tracking enhancements. ***FY 2023 Plans:*** Continue maturing and deploying enhanced tracking algorithms to the RTS sensor suite and planning & support for experimentation & testing in space. ***FY 2024 Plans:*** Continue maturing and deploying enhanced tracking algorithms to the RTS sensor suite and planning & support for experimentation & testing in space. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increased efforts at improving software algorithms.			
Title: Digital Focal Plane Array (DFPA) Technology Insertion ***Description:*** DFPA Technology Insertion program designs, builds, and integrates DFPA-based camera systems and other leading-edge imaging technologies into existing Super Recording Automatic Digital Optical Tracker (RADOT) mounts at RTS. The cameras and telescopes will provide coverage in multiple imaging bands including Middle Wave Infra-Red (MWIR) and Long Wave Infra-Red (LWIR). ***FY 2023 Plans:*** Installation and test of IR cameras; work RMF accreditation package for cyber security; IV&V; test system. ***FY 2024 Plans:*** Continue installation and test of IR cameras; work RMF accreditation package for cyber security; IV&V; test system. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase due to RTS plans to invest significant funds in FY24 in hardware purchases and installation	-	0.330	1.000
Title: Transmitter/Receiver & Optics Improvements ***Description:*** ROSA requirement funded with Centralized Test Evaluation Improvement Program (CTEIP) funds under the KREMS Technology Refresh Program. Army dollars realigned to support other RTS' requirements. Various small scale efforts to update & upgrade optical systems, as well as radar transmitter and receiver subsystems at the KREMS radars.	2.041	1.042	1.337

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 983 / *Reagan Test Site (RTS) T&E Investments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: Continue to maintain and increase the operability of RTS capabilities across all KREMS radars. ***FY 2024 Plans:*** Continue to maintain and increase the operability of RTS capabilities across all KREMS radars. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: TRADEX L-Band High Voltage Power Supply Upgrade ***Description:*** TRADEX L-Band High Voltage Power Supply Upgrade will improve resilience of L-band by providing a backup power supply and a test stand where tubes can be tested without impacting the operational system. ***FY 2023 Plans:*** Wrap up documentation, installation, and test of new L-band High Voltage power supply for the TRADEX radar. Project completion has been delayed due to COVID-19 and supplier production issues. System should be fully operational and RMF compliant in FY23. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Planned completion of upgrade with no funding needed in 2024.	1.000	1.000	-
Title: MPS-36 Infrastructure Refresh ***Description:*** MPS-36 radars are quite old and decaying due to corrosion because of proximity to Pacific Ocean as well as normal wear and tear. This project is to replace outdoor infrastructure related to the MPS-36 radars: dish, pedestal, wiring, connectors, LNA, and other components as required. Upgrade to newer materials and technologies to improve performance and longevity. ***FY 2024 Plans:*** Replace corroded and decayed components to restore functionality and maintainability. Begin work to upgrade/replace RF components and computer hardware that controls the RF sub-systems. Multi-year infrastructure repair & refresh with inspections & study of existing issues, and begin to replace most critical items. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase due to start of project.	-	-	1.000
Title: SBIR/STTR Transfer ***FY 2023 Plans:***	-	0.247	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 983 / *Reagan Test Site (RTS) T&E Investments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638			
Title: ALTAIR High Voltage Power Supply Upgrade ***Description:*** Leverage work done on TRADEX High Voltage Power Supply (HVPS) to begin looking at a replacement HVPS for the ALTAIR radar. ***FY 2024 Plans:*** Begin studies and specifications for new HVPS; perform market research and begin engineering preparations at the radar site for a new power supply. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase due to completion of TRADEX upgrade and beginning of ALTAIR upgrade.	-	-	2.040
Accomplishments/Planned Programs Subtotals	6.141	6.769	8.401

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / *Major T&E Investment*	Project (Number/Name) 984 / *Major Developmental Testing Instrumentation*	

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
984: *Major Developmental Testing Instrumentation*	-	36.639	43.861	33.532	-	33.532	26.803	28.783	33.231	33.726	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project develops and acquires major test instrumentation to perform developmental testing of weapon systems at United States Army Test and Evaluation Command's (ATEC) activities which include: Yuma Test Center (YTC), AZ; Aberdeen Test Center (ATC), MD; Electronic Proving Ground (EPG), AZ; White Sands Test Center (WSTC), NM; Redstone Test Center (RTC), AL; Cold Regions Test Center (CRTC), AK.

Projects are designated as a major test program based on their visibility, assessed relative technical risk (medium high), schedule risk, cost (greater than $1.500 Million per year or $7.500 Million for the total Project) and applicability to other mission areas or services. These Projects are technically demanding, state of the art, unique instrumentation assets or suites to meet technology shortfalls, and generally result from development programs managed by a professional project management team. All projects are designed to support both test and training requirements, as applicable.

Test Network Modernization (TNM) will upgrade existing test data networks to ensure infrastructures are capable of providing reliable and secure transport of data and communications for ATEC test activities. Applied Environments Modernization (AEM) program will upgrade antiquated Environmental labs for climatic and dynamic testing with new cascade refrigeration units, climatic chambers, vibration test systems, x-ray cameras, a real-time radiography system and full spectrum solar lights. Robotics/Unmanned Aerial Systems (R/UAS) Instrumentation Suite will develop and procure instrumentation for testing controlled and autonomous ground and aerial robotic systems. ATEC Fiber Modernization will provide all ATEC Test Centers with a revitalized fiber network to complement the TNM program. Due to limited commercial infrastructure, the cold regions provide a difficult climate for network connectivity. Therefore, both TNM and AFM's ability in resourcing an edge capability along with providing a permanent fiber backbone on Army test ranges is critical to ensuring advanced weapon systems operate flawlessly in extreme cold environments. Telemetry Systems Modernization (TSM) will modernize outdated telemetry systems with new equipment designed to enhance the technical and spectral capabilities currently available. This new telemetry equipment will also provide for a remote controlled operational environment. In support of the National Defense Strategy, each of these programs supports the following Army Cross Functional Teams: Long Range Precision Fires, Next Generation Combat Vehicle and Future Vertical Lift.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: EMD phase contract activity of the Test Network Modernization.	12.725	16.024	16.641
Description: Engineering, Manufacturing, and Development (EMD) phase contract activity for the Test Network Modernization. This effort will provide a modern test infrastructure capable of reliable, secure transport of test data and test communications for Aberdeen Test Center (ATC), Electronic Proving Ground (EPG), Redstone Test Center (RTC), White Sands Test Center (WSTC), Yuma Proving Ground (YPG), and Cold Regions Test Center (CRTC). This effort applies an enterprise solution to replace end-of-life equipment with the purpose of improving and providing the capability to support future network/data throughput demands			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 984 / *Major Developmental Testing Instrumentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
consistent with operations and cybersecurity requirements. This effort supports Long Range Precision Fires, Next Generation Combat Vehicle and Future Vertical Lift Cross-Functional Teams. ***FY 2023 Plans:*** The Test Network Modernization effort will continue in the engineering and manufacturing phase. FY 2023 funds in the amount of $16.024 Million will continue the standardization of the network that allows modern monitoring, tracking, and troubleshooting of network issues and failure points. Test Centers with high customer demands, such as White Sands Test Center and Yuma Test Center will also be receiving fiber optic network Dense Wavelength Division Multiplexing (DWDM) upgrades to address end of life equipment issues. ***FY 2024 Plans:*** The Test Network Modernization effort will continue in the engineering and manufacturing phase. FY 2024 funds in the amount of $16.641 Million will continue the standardization of the network that allows modern monitoring, tracking, and troubleshooting of network issues and failure points. Test Centers with high customer demands, such as White Sands Test Center and Yuma Test Center will also be receiving fiber optic network Dense Wavelength Division Multiplexing (DWDM) upgrades to address end of life equipment issues. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: EMD for the Applied Environments Modernization. ***Description:*** EMD phase contract activity for the Applied Environments Modernization program. This effort supports Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, Air and Missile Defense Cross-Functional Teams. ***FY 2023 Plans:*** Will continue EMD phase for Applied Environments Modernization program. In FY 2023 funds in the amount of $7.472 Million will be used to continue with the purchase of equipment utilized for testing environmental effects at Yuma Test Center (YTC) and Redstone Test Center (RTC). Specific equipment to be upgraded in FY2023 includes: Temperature & Altitude Conditioning Chamber, Large Temperature Conditioning Shroud, High Energy X-Ray Tube System and Large Portable Temperature Conditioning System. ***FY 2024 Plans:*** Will continue EMD phase for Applied Environments Modernization program. In FY 2024 funds in the amount of $4.828 Million will be used to continue with the purchase of equipment utilized for testing environmental effects at Yuma Test Center (YTC) and	5.698	7.472	4.828

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 984 / *Major Developmental Testing Instrumentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Redstone Test Center (RTC). Specific equipment to be upgraded in FY2024 includes: Full Spectrum Solar Light System (WSMR), Replacement Temperature Humidity Chambers (RTC), Temperature/Humidity Chamber Upgrades (ATC). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease due to less modernization requirements for environmental effects at the test centers from FY 2023 to FY 2024.			
Title: EMD phase contract activity for Robotics/UAS Instrumentation Suite ***Description:*** EMD phase of Robotics/Unmanned Autonomous System (UAS) Instrumentation Suite for testing controlled and autonomous ground and aerial robotic systems. This effort supports Next Generation Combat Vehicle and Future Vertical Lift Cross-Functional Teams. ***FY 2023 Plans:*** Funds in the amount of $6.902 Million will continue with the acquisition of instrumentation hardware and sensor suite equipment needed for testing controlled and autonomous ground and aerial robotic systems at Aberdeen Test Center. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease due to completion of effort in FY 2023.	6.569	6.902	-
Title: EMD phase contract activity for ATEC Fiber Modernization ***Description:*** ATEC Fiber Modernization will provide all ATEC Test Centers with a revitalized fiber network to complement the Test Network Modernization (TNM) program. This effort provides test centers with an improved fiber infrastructure to support greater data payloads and increased network reliability. This enterprise effort will replace fiber optic cable at the test centers to extend the lifecycle of the test networks. This effort supports Long Range Precision Fires, Next Generation Combat Vehicle, Network, Air and Missile Defense and Future Vertical Lift Cross-Functional Teams. ***FY 2023 Plans:*** Funds in the amount of $5.381 Million will used to continue the acquisition of hardware needed to revitalize and replace the fiber network backbone at Yuma Test Center (YTC), Electronic Proving Grounds (EPG), and Aberdeen Test Center (ATC), as well as conduct environmental impact assessments for ATC, EPG, YTC and White Sands Test Center (WSTC) and Red Stone Test Center (RTC). ***FY 2024 Plans:*** Funds in the amount of $5.105 Million will used to continue the acquisition and installation of hardware needed to revitalize and replace the fiber network at ATC, EPG, and YTC. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	5.225	5.381	5.105

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Decrease due to more refined estimates.			
Title: EMD phase contract activity for Telemetry Systems Modernization ***Description:*** Telemetry Systems Modernization will modernize current outdated telemetry systems located at: White Sands Test Center (WSTC), Yuma Test Center (YTC) , Aberdeen Test Center (ATC) and Redstone Test Center (RTC). Telemetry systems are a core capability for supporting testing under ATEC for airborne and both manned & unmanned ground vehicles. The modernization of these systems will provide enhanced technical and spectral capability while also providing for a remote controlled operational environment. This effort supports Long Range Precision Fires, Next Generation Combat Vehicle, Air and Missile Defense, and Future Vertical Lift Cross-Functional Teams. ***FY 2023 Plans:*** Funds in the amount of $6.481 Million will continue with replacement of obsolete Telemetry system components at Redstone Test Center, Yuma Test Center and White Sands Test Center. This replacement will include Commercial Off The Shelf (COTS) fixed site and mobile telemetry equipment. ***FY 2024 Plans:*** Funds in the amount of $6.958 Million will continue with replacement of obsolete Telemetry system components at Redstone Test Center, Yuma Test Center and White Sands Test Center. This replacement will include Commercial Off The Shelf (COTS) fixed site and mobile telemetry equipment. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Slight increase due to more refined estimates.	6.422	6.481	6.958
Title: SBIR/STTR Transfer ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	1.601	-
Accomplishments/Planned Programs Subtotals	36.639	43.861	33.532

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / *Major T&E Investment*	Project (Number/Name) 986 / *Major Operational Test Instrumentation*	

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
986: *Major Operational Test Instrumentation*	-	29.301	39.023	6.730	-	6.730	7.883	6.128	4.413	4.460	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds the development, acquisition, and integration of major operational test instrumentation for the U.S. Army Test and Evaluation Command's Operational Test Command and supporting test activities at test and training ranges. Requirements for instrumentation are identified through a long range survey of project managers, Research Development and Engineering Centers (RDECs), and Battle Laboratories developing future weapon systems and the test programs that support these systems. Project focus is to address Director Operational Test and Evaluation (DOT&E)-identified Army test realism shortfalls.

Projects are designated as a major test program based on their visibility, assessed relative technical risk (medium-high), schedule risk, cost (greater than $1.500 million per year or $7.500 million for the total project) and applicability to other mission areas or services. These projects are technically demanding, state-of-the-art, unique instrumentation assets or suites to meet technology shortfalls, and generally result from development programs managed by a professional project management team.

The DOT&E annual report to Congress identified shortfalls in the Army's abilities to create realistic operational environments. The Exportable Live Virtual Constructive Command Center (XLCC)(formerly called the Integrated Live-Virtual-Constructive (LVC) Test Environment (ILTE)) project will address multiple shortfalls identified by DOT&E. XLCC is a portfolio of related development efforts that will deliver a system of systems to provide a Real-Time Casualty Assessment (RTCA) and instrumentation suite that delivers a high fidelity, realistic, real-time capability to measure hardware and personnel performance in modern combat environments. XLCC will enable testing under tactical conditions for small and large-scale operations while integrating network operations and effects in support of the Army Equipment Modernization Plan. XLCC also allows the U.S. Army to test all Current-to-Future weapon systems in a realistic operational environment. XLCC will transition Research, Development, Test and Evaluation (RDTE) developed performance enhancements and technology upgrades to the operational test command, control, and communications, communications network, weapons system interfaces, vehicle and dismounted-troop kits and peripherals, Global Positioning System (GPS), encryption components, and integrate operational realistic digital battlefield data collection and analysis tools. These tools will collect, store and analyze data from the digital battlefield. Improvements will enable the XLCC system of systems to measure and record accrued damage, levels of exposure, effects of countermeasures, evasive action, and instrument threat vehicles. This capability is required by the operational test community to integrate digital battlefield data collection and analysis tools to support Project Convergence, Army Modernization priorities and other operational tests.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Exportable Live Virtual Constructive Command Center (XLCC)	3.701	4.454	6.730
Description: Funds the development, acquisition, and integration of major operational test instrumentation for the U.S. Army Test and Evaluation Command's Operational Test Command and supporting test activities at test and training ranges.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 986 / *Major Operational Test Instrumentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: Funds in the amount of $4.454 Million will create operational realistic test environment and integrate with other systems and tools; update Real Time Casualty Assessment and fair-fight methodologies and provide data analytics to the test community; integrate and provide initial interoperability with current and future Multi-Domain Operations (MDO) range threats (e.g. Threat Battle Command Force and Intelligence Electronic Warfare Tactical Proficiency Trainer) through development of Test and Evaluation Network Architecture (TENA) Gateways; provide continuous SW/HW updates to allow flexibility and modularity in system capabilities in order to deploy XLCC to a multitude of ranges and test sites. ***FY 2024 Plans:*** Funds in the amount of $6.730 Million will create an operational realistic test environment and integrate with other systems and tools; update Real Time Casualty Assessment and fair-fight methodologies and provide data analytics to the test community; integrate and provide initial interoperability with current and future Multi-Domain Operations (MDO) range threats (e.g. Threat Battle Command Force and Intelligence Electronic Warfare Tactical Proficiency Trainer) through development of Test and Evaluation Network Architecture (TENA) Gateways; provide continuous Software/hardware updates to allow flexibility and modularity in system capabilities in order to deploy ILTE to a multitude of ranges and test sites. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase supports the integration of OPFOR Mortars and Anti-Tank as well as realistic Red-Blue operations. This will require modification of the current Integrated Live-Virtual-Constructive (LVC) Test Environment (ILTE)/ Exportable Live Virtual Constructive Command Center (XLCC) software needed for Operational Test Command to support near term testing or indirect fires.			
Title: SBIR/STTR ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.169	-
Accomplishments/Planned Programs Subtotals	3.701	4.623	6.730

	FY 2022	FY 2023
Congressional Add: Major operational test instrumentation	25.600	-
FY 2022 Accomplishments: T&E Investment advanced hardware and software to properly conduct operational testing on 31 Army modernization efforts in development by Army Futures Command. Added near-peer		

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Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 986 / *Major Operational Test Instrumentation*

	FY 2022	FY 2023
threat live, virtual, and constructive components (ideally reconfigurable/programmable threat simulators and simulations) that operated within the Exportable Live Virtual Constructive Command Center (XLCC) (formerly Integrated Live-Virtual-Constructive Test Environment (ILTE)) real-time simulation, test control, and data architectures for network communications and processing. Enhanced Real Time Casualty Assistance (RTCA) simulation that included kinetic weapons as well as directed energy weapons, electronic warfare, cyber operations, and a converged Electronic Warfare/Cyber capability. Integrated constructive simulation to augment single, one-on-one RTCA effects calculation as well as replicating supporting systems-of-systems via high-fidelity modeling. Upgraded electronic range infrastructure for simulation, data exchange and instrumentation required. Prototype threat assets capable of emulating synchronized joint effects Integrate high fidelity simulations; and kinetic and non-kinetic RTCA effects. Supported test events for: Artificial Intelligence (AI), Ground Combat, Future Vertical Lift (FVL), Command and Control (C2) and Integrated Cyber, Electronic Warfare and Kinetic Operations.		
Congressional Add: Congressional Add: Exportable Live Virtual Constructive Command Center (XLCC) ***FY 2023 Plans:*** Develop of prototype threat assets across multiple bands capable of emulating synchronized joint effects in a highly contested, congested RF environment. Incorporate Time, Space, Position Information collection equipment onto threat assets to aid in keep threat assets on System Under Test (SUT). Integrate high fidelity simulations; and kinetic and non-kinetic RTCA effects.	-	30.500
Congressional Add: Congressional Add: Expanding the Operational Test Command ***FY 2023 Plans:*** Congressional Add funds of $3.900 million to expand the Operational Test Command. Funding would expand testing and evaluation lab capability at Texas A&M University-Central Texas to enable enhanced support for Operational Test Command (OTC) at Fort Hood. Additionally, federal dollars used for this CPF enables OTC to compete at the cutting edge of technology by establishing a low-cost doctoral program in predictive analytics. Investments in programs like the doctoral program provided by Texas A&M University-Central Texas incentivize our military and civilian workforce, allowing DoD to retain talent.	-	3.900
Congressional Adds Subtotals	25.600	34.400

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0604759A / *Major T&E Investment*	**Project (Number/Name)** 986 / *Major Operational Test Instrumentation*

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / *Major T&E Investment*	Project (Number/Name) EY9 / *Range Radar Replacement Program (RRRP)*	

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
EY9: *Range Radar Replacement Program (RRRP)*	-	18.005	50.065	26.355	-	26.355	38.398	48.042	48.555	49.084	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In order to effect strategic overmatch on current and future battlefields, it is essential that the United States (U.S.) Army provide advanced radar system instrumentation for developmental testing. Since existing range radar instrumentation is aged beyond useful life and cannot adequately support emerging test requirements, the Range Radar Replacement Program (RRRP) recapitalizes and develops modern instrumentation radars to replace obsolete tracking and surveillance radars at U.S. Army Test and Evaluation Command's (ATEC) activities, which include: Aberdeen Test Center (ATC), MD; White Sands Test Center (WSTC), NM; and Yuma Test Center (YTC), AZ. RRRP will deliver capability in three (3) block increments: Block I will recapitalize or replace existing radar systems, Block II will develop a Long Range Radar (LRR) which is compliant with ATEC's Test Capability Requirements Document (TCRD), and Block III will develop LRRs and Medium Range Radars (MRRs) to meet ATEC Block III TCRD Addendum. The acquisition of modern instrumentation radar systems will provide the Army with critical testing data essential for the development of next generation technology and advanced system capabilities. The RRRP provides the test centers with improved radar resolution, sensitivity, accuracy, clutter suppression, and reliability. The planned solution to meet program requirements consists of four primary items: Long Range Single Object Tracking Radars (SOTR), Long Range Multiple Object Tracking Radars (MOTR), Medium Range Radars (MRR), and Short Range Radars (SRR). The resulting systems will not only reduce operation and sustainment costs for the ranges, but will improve data collection, thus enhancing development of Army systems being tested at these ranges. The current fleet of instrumentation radars located at ATC, WSTC, and YTC has become antiquated to the extent that they are not able to support the test needs of the test centers.

This Project will procure Modified Commercial Off-the-Shelf (MCOTS) radars for both the MRR and SRR solutions, and a combination of recapitalization and MCOTS replacement for the Long Range SOTRs and MOTRs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: EMD Phase	18.005	48.238	26.355
Description: : Provides acceptance testing of Short, Medium, Long Range, and MPS-39 MOTR instrumentation radars and continues development of the first Block II Long Range radar prototype and Block III radars.			
FY 2023 Plans: Continue development of the first Block II Long Range radar prototype, development of Block III radars, and acceptance testing of Medium, Long Range, and MPS-39 MOTR instrumentation radars.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY24 in the amount of $26.355M provides funding for acceptance testing of Medium and Long Range instrumentation radars and continues development Block II Long Range radar prototype and development of Block III radars. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease from FY23 to FY24 due to completion of acceptance testing for the MPS-39 MOTR instrumentation radars and short range radars.			
Title: FY23 SBIR/STTR Transfer ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638.	-	1.827	-
Accomplishments/Planned Programs Subtotals	18.005	50.065	26.355

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0604759A / *Major T&E Investment*	Project (Number/Name) FF1 / *Cyber Blue Team*	

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
FF1: *Cyber Blue Team*	-	1.044	2.313	1.149	-	1.149	1.149	1.151	1.164	1.177	0.000	9.147
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In 2016 the Army Acquisition Executive (AAE) designated the Program Manager for Cyber, and Training (PM CT2) (formerly PM ITTS) as the Office of Primary Responsibility for Cyber Acquisition Blue Teams (CABT) certifications and standards program. This Project executes the establishment and management of certification standards for CABT and coordination of requirements on behalf of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA (ALT)).

PM CT2 will establish certification standards, certify Blue Teams and maintain a vulnerabilities/lessons learned repository. PM CT2 will work with Blue and Red Teams to establish processes which facilitate open network tests under the red team authority, coordinate with Program Managers on CABT efforts on behalf of ASA (ALT) and report to ASA (ALT) on new cyber vulnerabilities. Blue teams will work cooperatively with acquisition programs to make sure all security measures are taken throughout the program's lifecycle, ensuring cyber resiliency. Blue teams are essential to help military operators assess, protect and defeat the presence of cyber security threats across Army Acquisition Programs.

Will focus on the continuation of certifying candidate teams. The goal is to certify enough teams to allow acquisition programs the flexibility to find a certified Blue Team that meet their program's schedule and cost and can be incorporated early on in the program. CABT vulnerability assessments will provide data analytics to report trends and lessons learned. A web portal will serve as a one stop shop for both candidate and certified Blue teams to obtain and maintain their certification.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Cyber Blue Teams	1.044	2.229	1.149
Description: Management and oversight of Cyber Blue Team vulnerability assessments.			
FY 2023 Plans: The funding provides the ability to continue certification of Army Acquisition and Modernization Cyber Assessment Teams (AAMCATs) as well as support the operation and maintenance of an AAMCAT web portal and central repository to include trend analysis and lessons learned from engineering risk reduction assessments.			
FY 2024 Plans: The funding provides the ability to continue certification of Army Acquisition and Modernization Cyber Assessment Teams (AAMCATs) as well as support the operation and maintenance of an AAMCAT web portal and central repository to include trend analysis and lessons learned from engineering risk reduction assessments.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 to FY 2024 funding decrease due to higher Army priorities.			
Title: SBIR/STTR ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.084	-
Accomplishments/Planned Programs Subtotals	1.044	2.313	1.149

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A