Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604746A *I Automatic Test Equipment Development*

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	5.375	8.807	5.178	-	5.178	4.395	4.698	4.719	4.764	Continuing	Continuing
L59: *Diagnost/Expert Sys*	-	3.885	5.574	1.150	-	1.150	1.178	1.197	1.221	1.233	0.000	15.438
L65: *Test Equipment Development*	-	1.490	3.233	4.028	-	4.028	3.217	3.501	3.498	3.531	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) provides for development and testing of automatic test equipment, precision calibration instruments, general-purpose test equipment, state of-the-art diagnostics and prognostics technologies, and software and systems to support the increasingly complex electronic components of the Army's new and upgraded weapon systems focused on joint operations in a sophisticated multi-domain area of operation. It focuses on standardization and implementation of commercial test and diagnostic technologies across multiple weapon platforms to minimize the cost of troubleshooting and maintenance of Army equipment in the field. Funding supports modernization of the test equipment fleets by investigating technology insertions including, but not limited to, predictive and prognostic maintenance, instrument reduction/miniaturization, electro-mechanical, electro-optics (EO), radio frequency (RF), physical, radiological, chemical, and biological warfare sensor calibration support capabilities, and other emerging technologies. Funding also supports development of initial prototypes to enable refinement of Operational Requirements documented by Combatant Commands (COCOM), Program Executive Offices (PEO), Army Futures Command (AFC), Army Staff, US Army Training and Doctrine Command (TRADOC), and early user feedback to support future sustainment and testing capabilities required for emerging weapons platforms. This PE provides for continued development and improvement of general-purpose test equipment and calibration standards with emphasis on the incorporation of digital electronics and tailoring of configurations to improve deployability, mobility and survivability of the support equipment. It includes development, demonstration and testing of calibration standards and techniques to support new Army test equipment requirements; and, it provides for feasibility studies, market research, inventory analyses, bid sample testing and prototyping to support acquisition of calibration systems and general-purpose test and diagnostics equipment

The Department of Defense (DoD) has designated the Integrated Family of Test Equipment (IFTE), comprised of the Maintenance Support Device (MSD) and the Next Generation Automatic Test System (NGATS), as the authorized Army standard for field and sustainment maintenance. The MSD provides at-system automatic test and diagnostic support and the NGATS consolidates off-system automatic test and diagnostic equipment requirements. The IFTE systems being developed under this PE provide electronic fault isolation, diagnostic and repair capabilities at all levels of maintenance and do it more cost effectively than system-specific testers. They provide state-of-the-art test and diagnostic capabilities, reducing costs and logistics footprints while providing the Warfighter fix-forward capability for current and future weapon systems in multi-domain operations. The systems are designed to support the Cross-Functional Teams (CFT) in the Army Futures Command (AFC) as they mature in accordance with the DoD Automatic Test Systems strategy. The MSD is employed by more than thirty military occupational specialties to perform field level maintenance on approximately 50 weapon systems, including Abrams, Bradley, Stryker, aviation platforms, missile systems, and the Army's wheeled vehicle fleet.

FY 2023 base funding for this PE continues incremental development of the Army's standard At-Platform Automatic Test System, MSD, which will enhance testing and diagnostic capability required by supported weapon systems. Funding supports tactical vehicle sustainment concepts, evaluates evolving weapon system diagnostic testing requirements, incorporates additional organic diagnostic software capabilities to troubleshoot weapon systems, and ensures data bus compatibility and

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
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readability with commercial technology. It evaluates and incorporates cyber security enhancements into at-platform diagnostic hardware and software. Funding also provides for market research, feasibility assessment, and interaction with supported weapon systems to determine most effective methodology for diagnostic software to incorporate emerging At-Platform Predictive & Prognostic Maintenance (PPMx) requirements. The FY 2023 funding will develop or significantly modify test equipment to satisfy modular force and homeland security support requirements that cannot be accommodated with test equipment currently available in the commercial marketplace such as RF and EO testing capability. It will also develop and test general-purpose test equipment and calibration standards to meet Army weapon system support requirements, and initiate development of enhanced diagnostic software and interfaces to support emerging maintenance concepts for Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, and Air and Missile Defense. The funding will provide prototype test and evaluation of field level calibration and repair support for the Radiation Detection System (RDS) fielded in FY 2020-2021 in response to Operational Needs Statement ONS 17-22580. The project resolves significant radiation measurement accuracy gaps throughout the Department of the Army operational areas and CONUS. This funding also provides for analysis of courses of action to incorporate additional intrinsic calibration instruments and general-purpose test equipment to reduce the maintenance hierarchy, increase calibration intervals, extend lifecycle reliability, and increase supportability across generational changes in weapon systems and weapon support systems technology.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	5.375	8.807	0.000	-	0.000
Current President's Budget	5.375	8.807	5.178	-	5.178
Total Adjustments	0.000	0.000	5.178	-	5.178
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	5.178	-	5.178

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / *Automatic Test Equipment Development*	Project (Number/Name) L59 / *Diagnost/Expert Sys*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
L59: *Diagnost/Expert Sys*	-	3.885	5.574	1.150	-	1.150	1.178	1.197	1.221	1.233	0.000	15.438
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds development of system enhancements for the Maintenance Support Device (MSD) and the Next Generation Automatic Test System (NGATS). The MSD and the NGATS are general-purpose automatic test systems (ATS) that provide test and diagnostic capabilities required to support current and future weapons and combat support systems across the Cross-Functional Teams (CFTs) in the Army Futures Command (AFC) and will facilitate retirement of aging, obsolete and non-cyber secure test equipment that imposes increasing logistics and operations and support cost burdens. The MSD is the Army's standard at-system tester and requires continuing technology insertions to support modernization of the supported weapon systems. This Project funds development efforts to insert the most current relevant technology into the next generation MSD, supports capability enhancement of at-platform test adapters, develops and standardizes capabilities to minimize or eliminate Army dependency on expensive proprietary software to support tactical vehicles, and maintains compatibility with emerging platform hardware bus technology and software interface requirements. The test and diagnostic systems and procedures developed under this Project are essential for ensuring the operational readiness, accuracy and effectiveness of the Army's warfighting systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: NGATS Increment 2 ***Description:*** Develop and test hardware and software for NGATS Increment 2 support capability ***FY 2022 Plans:*** Develop and test state-of-the-art hardware and software for support of emerging required capabilities to support Cross-Functional Teams (CFT) such as Peripheral Component Interconnect (PCI) Extensions for Instrumentation (PXI) based instrument solutions providing increased readiness and smaller logistics footprint. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funds were reduced due to revised distribution plans for NGATS which reduced the need for additional efforts in this area.	0.300	0.297	-
Title: NGATS Electro-Optics (EO) Subsystem ***Description:*** Develop and test hardware and software for NGATS electro-optics (EO) subsystem (to include the capability to support new ground and aerial sensors for unmanned air and ground vehicles)	0.200	-	-
Title: Additional Software Capabilities for Use with NGATS	0.200	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L59 / *Diagnost/Expert Sys*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Description: Develop software capabilities to incorporate common logistics operating environment/netcentric and embedded diagnostics data collection and analysis for closed loop diagnostic maintenance in support of Predictive & Prognostic Maintenance (PPMx)			
Title: NGATS Performance Enhancement ***Description:*** NGATS core instrument/software modifications to increase NGATS performance ***FY 2022 Plans:*** Improve system software and libraries to take advantage of WIN10 processing structure and new Application Program Interface (API) which will increase system processing and throughput. Use of instrument vendor WIN10 drivers will increase measurement accuracy and reliability. Improvements in architecture will allow faster remote system updates and provide enhanced communication channels for support of Predictive & Prognostic Maintenance (PPMx). ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funds were reduced due to ongoing and planned performance enhancements that are projected to end in FY 2022.	0.700	0.500	-
Title: Abrams/Bradley Test Program Set (TPS) Design ***Description:*** Design, test and evaluate Abrams/Bradley TPSs to utilize modern core NGATS instrumentation vice continuing to execute on single-purpose instrumentation specifically developed to emulate Abrams/Bradley legacy test equipment (i.e., Direct Support Electrical System Test Set (DSESTS)) ***FY 2022 Plans:*** Continue redesign of Abrams/Bradley TPSs to execute on core commercial NGATS instrumentation vice single-purpose NGATS instrumentation. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funds were reduced due because all scheduled TPS design requirements are projected to end in FY 2022.	0.700	2.612	-
Title: NGATS Logistics Support Products ***Description:*** Develop NGATS initial logistics support products (including provisioning, technical manuals and calibration) ***FY 2022 Plans:*** Develop updates to technical manuals, technical data packages, depot maintenance work requirements and provisioning as NGATS system and TPS changes occur. ***FY 2022 to FY 2023 Increase/Decrease Statement:***	0.853	0.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L59 / *Diagnost/Expert Sys*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Funding is decreased because the Initial logistics support products are projected to be completed in FY 2022.			
Title: Maintenance Support Device (MSD) Technology Enhancements ***Description:*** Modernizes the current MSD fleet by investigating and incorporating relevant technology into the next-generation MSD and supporting capability enhancement of the Wireless At-platform Test Set (WATS). Develops diagnostic capabilities to minimize or eliminate Army dependency on proprietary software to support tactical vehicles and maintain compatibility with emerging platform hardware bus technology and software interface requirements. Provides a data processing capability to enable Predictive & Prognostic Maintenance (PPMx) on weapon systems. ***FY 2022 Plans:*** Continue to incorporate greater range of supported weapons system diagnostic code fault detection into Diagnostic Software to minimize dependency on proprietary software, support tactical system sustainment concepts, and ensure data bus compatibility and readability. Evaluate emerging technology for insertion into next generation At-Platform Automatic Test System (APATS) to support evolving weapon system diagnostic testing concepts. Complete and test software that enables transition to the Army's emerging single interactive electronic technical manual (IETM) viewer/authoring environment for use with future generation APATS and Diagnostic Software. Continue market research, feasibility assessment, and interaction with supported weapon systems to determine best methodology to collect and aggregate weapon system PPMx information. ***FY 2023 Plans:*** Continue market research for the Next Generation At-Platform Test System (Maintenance Support Device). Continue to incorporate greater range of supported weapon systems diagnostic code fault detection into diagnostic software to minimize dependency on proprietary/non-cyber compliant software. Continue to evaluate and incorporate cyber security enhancements into at-platform diagnostic hardware and software. Continue market research, feasibility assessment, and interaction with supported weapon systems to determine most effective methodology to incorporate emerging Predictive & Prognostic Maintenance (PPMx) capabilities. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding requirement increased to meet cyber security needs.	0.633	0.962	1.150
Title: TPS Development Environment ***Description:*** Develop a standardized TPS development environment for NGATS ***FY 2022 Plans:***	0.299	0.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Continue development of COTE TPS development software for NGATS to be used for emerging systems including those planned for CFTs. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funds were reduced due to the projected completion of Phase V of COTE TPS development environment.			
Title: FY 2022 SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2022 Plans:*** Funding transferred in accordance with Title 15 USC ?638203. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC ?638.	-	0.203	-
Accomplishments/Planned Programs Subtotals	3.885	5.574	1.150

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MB4000: *Integrated Family Of Test Equipment (IFTE)*	77.214	42.934	36.514	-	36.514	31.162	12.161	12.192	12.187	0.000	224.364

Remarks

D. Acquisition Strategy

This developmental Project consists of organic and contractual actions. When the necessary expertise and capability are available within the Department of Defense, services required for the individual development projects are ordered from the government source via a support agreement; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Developmental efforts for the Next Generation Automatic Test System (NGATS) are being completed under a number of contracts awarded to the prime contractor for the Integrated Family of Test Equipment off-platform testers and other contractors with automatic test equipment (ATE) and test program set development capabilities. NGATS followed an evolutionary acquisition strategy using incremental development to satisfy Army depot and field testing requirements for new and existing systems.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management	Various	Various : Various	0.849	-		-		-		-		-	0.000	0.849	-
FY 2022 SBIR/STTR Transfer	Various	Various : Various	-	-		0.203	Mar 2022	-		-		-	0.000	0.203	-
		Subtotal	0.849	-		0.203		-		-		-	0.000	1.052	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development/ Verification/Validation	Various	Various, : Various	44.778	1.646	Feb 2021	2.568	Apr 2022	0.640	Jan 2023	-		0.640	0.000	49.632	-
Hardware/Support Items Development	Various	Various, : Various	75.291	1.839	Jan 2021	2.253	Apr 2022	0.345	Jan 2023	-		0.345	0.000	79.728	-
		Subtotal	120.069	3.485		4.821		0.985		-		0.985	0.000	129.360	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Support	Various	Various, : Various	51.863	0.300	Dec 2020	0.450	Apr 2022	0.115	Dec 2022	-		0.115	0.000	52.728	-
Other Direct	Various	Various, : Various	6.228	0.100	Dec 2020	0.100	Apr 2022	0.050	Dec 2022	-		0.050	0.000	6.478	-
		Subtotal	58.091	0.400		0.550		0.165		-		0.165	0.000	59.206	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental/ Operational Testing	Various	Various, : Various	3.096	-		-		-		-		-	0.000	3.096	-
		Subtotal	3.096	-		-		-		-		-	0.000	3.096	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L59 / *Diagnost/Expert Sys*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Test program set (TPS) and contractor developmental test and evaluation are included in the product development cost.

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	182.105	3.885		5.574		1.150		-		1.150	0.000	192.714	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L59 / *Diagnost/Expert Sys*

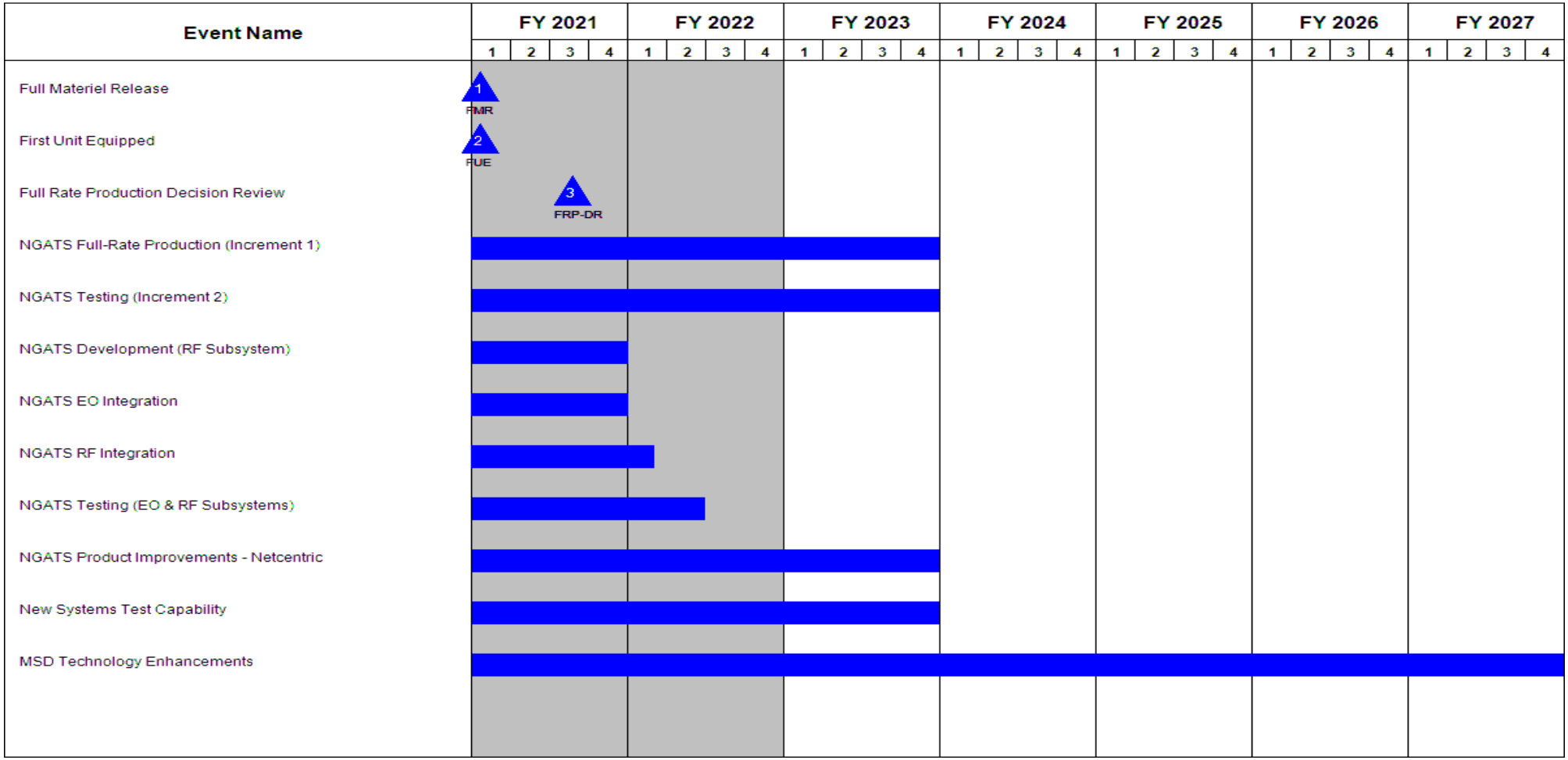

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NGATS Testing (Increment 1)	1	2011	1	2012
Production for First Article	1	2015	2	2017
Training Materiel Release	4	2019	4	2019
Full Materiel Release	1	2021	1	2021
First Unit Equipped	1	2021	1	2021
Full Rate Production Decision Review	3	2021	3	2021
NGATS Testing (Increment 1 Follow-On DT/OT)	1	2016	3	2016
NGATS Full-Rate Production (Increment 1)	2	2019	4	2023
NGATS System Development and Demonstration (SDD) (Increment 2)	1	2016	4	2020
NGATS Testing (Increment 2)	1	2016	4	2023
FOT&E Completed (DT)	3	2018	3	2018
NGATS Development (EO Subsystem)	4	2010	4	2015
NGATS Development (RF Subsystem)	1	2016	4	2021
NGATS EO Integration	3	2016	4	2021
NGATS RF Integration	3	2017	1	2022
NGATS Testing (EO & RF Subsystems)	1	2016	2	2022
NGATS Product Improvements - Netcentric	1	2016	4	2023
New Systems Test Capability	1	2016	4	2023
MSD Technology Enhancements	1	2016	4	2027

Note

Test program set (TPS) compatibility testing runs continually throughout the product development process.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / *Automatic Test Equipment Development*	Project (Number/Name) L65 / *Test Equipment Development*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
L65: *Test Equipment Development*	-	1.490	3.233	4.028	-	4.028	3.217	3.501	3.498	3.531	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports Program Executive Office (PEO) and Army Futures Command (AFC) system support requirements with modernization of calibration instruments, techniques, and existing Army calibration systems by investigating technology insertions including automated and autonomous operations and other emerging technologies. Funding also supports development of initial prototypes to enable refinement of Operational Requirements and early user feedback to support future calibration systems and general-purpose test, measurement and diagnostic equipment (TMDE) acquisitions. This Project develops calibration software and calibration capability for electro-optical, chemical, biological agent, radiation sourcing and detection systems, signal measurement from direct current to microwave ranges, physical and mechanical measurements such as torque, pressure, and temperature, and improvements in test and measurement performance envelopes. It provides for product improvements and development/evaluation of advanced technologies to increase reliability of calibration systems and general-purpose TMDE. The product improvements eliminate gaps in existing organic capabilities and ensure operational readiness and safety of Army weapons and combat support systems. These improvements employ reconfigurable open-electronics architecture and computer-based instrumentation where feasible and focus on reduced test equipment footprints to improve deployability and mobility in complex multi-domain areas of operation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Calibration Sets (CALSETS) Software Environment and Calibration Procedures	0.356	0.499	0.500
Description: Continue development and testing of Army automated calibration environment (ACE) and develop calibration procedures. Develop and test an enterprise data system to capture management and test data for reporting, metrics, and dashboard to inform management and leader decisions in acquisition and operations. Test and evaluate automated calibration equipment software efforts in support of the Army risk management framework (RMF). ***FY 2022 Plans:*** Develop calibration software and test/update cyber security to accelerate the program and develop support for a wider range of Army test, measurement and diagnostic equipment (TMDE); populate the enterprise database with historical information and begin collection of new data to test the agility of the enterprise under load from global imports. Develop metrics and dashboard for managers and leaders to inform decisions in acquisition and operations. ***FY 2023 Plans:*** Develop automated support capability in the Army automated calibration environment (ACE) for a wider range of Army test, measurement and diagnostic equipment (TMDE). Development of ACE features to support enhanced data sharing capabilities. ***FY 2022 to FY 2023 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Relatively small increase in funding required in FY 2023 to meet schedules of planned projects.			
Title: Physical Instruments ***Description:*** Research, develop, and test physical parameter calibration instrumentation to support areas such as intrinsic high reliability physical and dimensional standards. Modernize force and torque calibration capability. Develop radiological, chemical and biological agent detection systems, small arms gage calibration, pneumatic pressure systems, and temperature radiometer calibration related to target detection in the infrared spectrum. ***FY 2022 Plans:*** Complete existing projects in small arms gage calibration, infrared systems calibration, and radiation sources to support on-system calibration of radiation detection sensors. Initiate projects in chemical and biological agent defense systems calibration and develop performance requirements for Army primary level measurement in pressure, temperature, and mass for increased reliability and extended periods between scheduled maintenance actions and calibration. ***FY 2023 Plans:*** Complete development of measurement standards for vapor contamination in support of chemical warfare agent (CWA) detector JCAD, as well as begin Bio-Sensor Calibrator research to provide an alternative solution in support of biological warfare agent (BWA) detector JBPDS. Complete NIST on a chip (NOAC) mass measurement project to modernize Army mass support system. Initiate development of torque multiplier calibration capability on the torque calibration system (TCS) in support of aviation maintenance equipment. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding decrease from FY 2022 to FY 2023 after radiation source prototype development in FY22.	0.433	1.837	1.048
Title: Electrical Instruments ***Description:*** Research, develop, and test electrical parameter calibration instrumentation to support modernization and replacement of aged and obsolete test instruments in areas such as intrinsic electrical standards, electrical transport standards and electro-optic standards. Develop calibration support for advanced capability in spectral and vector dense signal analysis in complex Multi-Domain areas of operation. ***FY 2022 Plans:*** Develop solutions to meet expanding gaps in measurement capability for optical time domain reflectometry. Continue development of fiber optic power source calibration, Army-wide alternating current/direct current (AC/DC) voltage measurement modernization, and replacement of 30+ year old microwave power sensor calibration to national standards meeting Army Futures	0.306	0.554	2.075

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Command support requirements for Multi-Domain secured signal send and receive capability with integrated antenna functionality advancements. ***FY 2023 Plans:*** Complete testing of Army-wide alternating current/direct current (AC/DC) voltage measurement modernization project. Complete replacement and testing of microwave power sensor calibration to national standards meeting Army Futures Command support requirements for Multi-Domain secured signal send and receive capability with integrated antenna functionality. Develop Quantum Hall Resistance (QHR) system to reduce recurring operational costs and improve mission readiness in support of Army?s sustainment and traceability for all electrical resistance measurement systems. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increased funding required in FY 2023 to meet schedules of planned projects and develop prototypes.			
Title: Test Equipment Modernization (TEMOD) ***Description:*** Perform market research, bid sample testing and evaluation of commercial general-purpose electronic test equipment (GPETE), and develop performance specifications for TEMOD acquisitions. ***FY 2022 Plans:*** Perform market research and evaluation of commercial GPETE and validate performance specifications for improved test equipment. Conduct bid sample testing to support acquisition program. The GPETE will support numerous Army weapon systems to include multiple CFT?s. ***FY 2023 Plans:*** Perform market research and evaluation of commercial GPETE and validate performance specifications for improved test equipment. Conduct bid sample testing to support acquisition program. The GPETE will support numerous Army weapon systems to include multiple CFT?s. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increased to meet support demand of numerous Army weapon systems.	0.395	0.225	0.405
Title: FY 2022 SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2022 Plans:*** Funding transferred in accordance with Title 15 USC ?638. ***FY 2022 to FY 2023 Increase/Decrease Statement:***	-	0.118	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L65 / *Test Equipment Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred in accordance with Title 15 USC ?638.			
Accomplishments/Planned Programs Subtotals	1.490	3.233	4.028

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• N10000: *Calibration Sets Equipment*	2.511	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• N11000: *Test Equipment Modernization (TEMOD)*	14.941	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• G02510: *Test Equipment Modernization (TEMOD)*	-	24.304	32.734	-	32.734	36.734	54.364	54.599	54.579	0.000	257.314

Remarks

Funds in SSNs N10000 and N11000 for FY 2022 through FY 2026 have been realigned to Test Equipment Modernization, SSN G02510.

D. Acquisition Strategy

Projects focus on commercial and nondevelopmental item technologies. Department of Defense services provide programmatic, engineering expertise and capability for individual development projects; otherwise, commercial service contracts are used to obtain required capabilities. Equipment required for development projects is obtained from commercial suppliers. Candidate commercial equipment and nondevelopmental items are identified and evaluated through market research and government test and evaluation.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / *Automatic Test Equipment D evelopment*	Project (Number/Name) L65 / *Test Equipment Development*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
In-house Engineering	SS/ Various	Various : Various	6.667	-		-		-		-		-	0.000	6.667	-
FY 2022 SBIR/STTR Transfer	Various	various : Various	-	-		0.118	Mar 2022	-		-		-	0.000	0.118	-
		Subtotal	6.667	-		0.118		-		-		-	0.000	6.785	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALSETS Software Environment and Calibration	Various	Various : Various	7.824	0.119	Feb 2021	0.247	Apr 2022	0.271	Mar 2023	-		0.271	Continuing	Continuing	-
Physical Instruments	Various	Various : Various	9.558	0.166	Apr 2021	1.050	Feb 2022	0.600	Feb 2023	-		0.600	Continuing	Continuing	-
Electrical Instruments	Various	Various : Various	11.015	0.089	Feb 2021	0.280	Mar 2022	1.216	Mar 2023	-		1.216	Continuing	Continuing	-
Test Equipment Modernization	Various	Various : Various	3.747	0.237	Feb 2021	0.135	Feb 2022	0.243	Mar 2023	-		0.243	Continuing	Continuing	-
		Subtotal	32.144	0.611		1.712		2.330		-		2.330	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering	C/FFP	Various : Various	3.462	0.473	Feb 2021	0.260	Jan 2022	0.145	Feb 2023	-		0.145	Continuing	Continuing	-
		Subtotal	3.462	0.473		0.260		0.145		-		0.145	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / *Automatic Test Equipment Development*	Project (Number/Name) L65 / *Test Equipment Development*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALSETS Software Environment and Calibration	Various	Various : Various	2.068	0.079	Feb 2021	0.165	Apr 2022	0.180	Mar 2023	-		0.180	Continuing	Continuing	-
Physical Instruments	Various	Various : Various	3.653	0.110	Apr 2021	0.701	Feb 2022	0.400	Feb 2023	-		0.400	Continuing	Continuing	-
Electrical Instruments	Various	Various : Various	2.812	0.059	Feb 2021	0.187	Mar 2022	0.811	Mar 2023	-		0.811	Continuing	Continuing	-
Test Equipment Modernization	Various	Various : Various	2.730	0.158	Feb 2021	0.090	Feb 2022	0.162	Mar 2023	-		0.162	Continuing	Continuing	-
		Subtotal	11.263	0.406		1.143		1.553		-		1.553	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	53.536	1.490		3.233		4.028		-		4.028	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L65 / *Test Equipment Development*

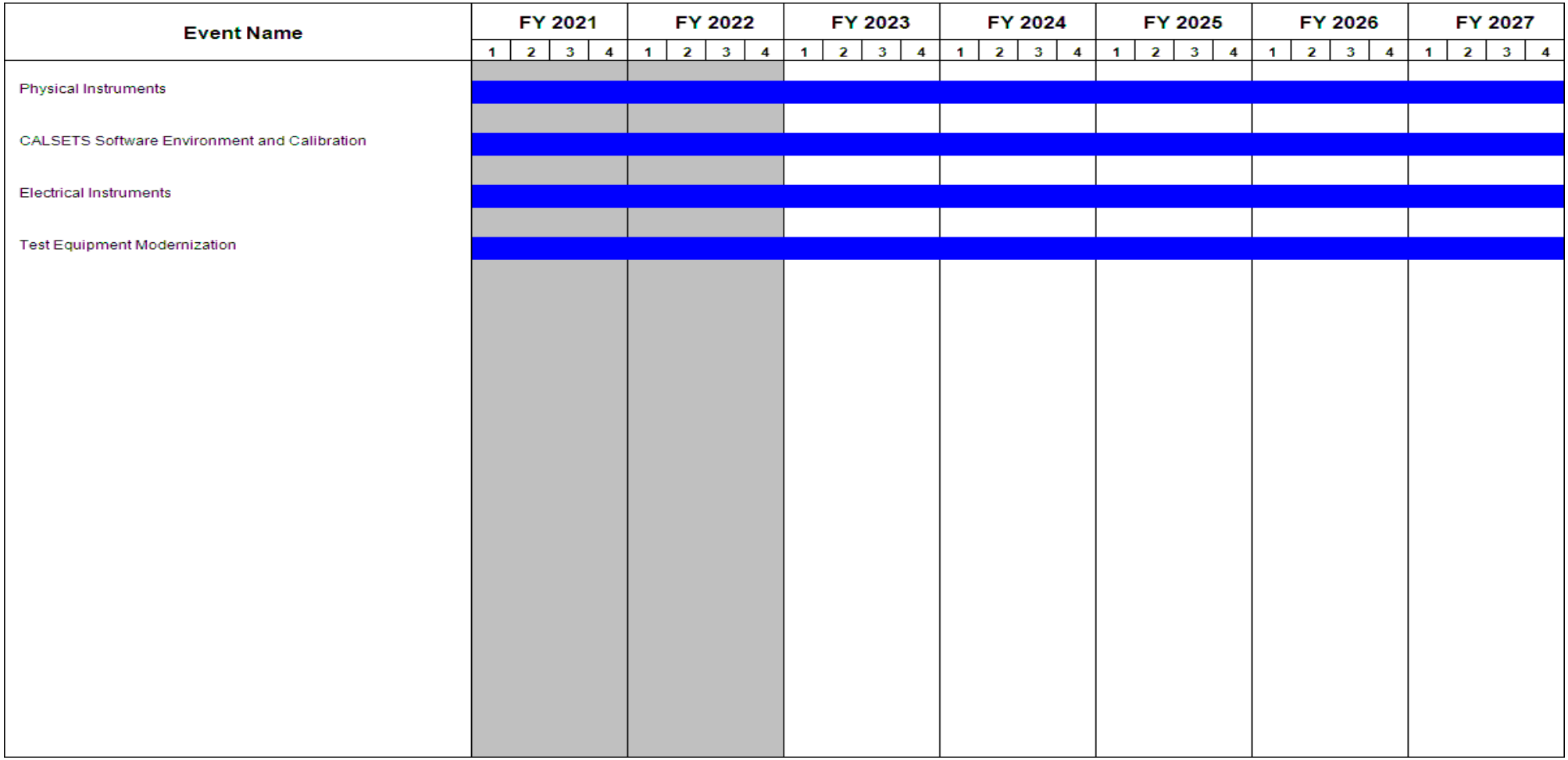

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L65 / *Test Equipment Development*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AN/GSM-421(V2) User Testing	2	2007	4	2012
Physical Instruments	1	2016	4	2027
CALSETS Software Environment and Calibration	1	2016	4	2027
Electrical Instruments	1	2016	4	2027
Test Equipment Modernization	1	2016	4	2027