Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army											Date: May 2021	
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	-	10.466	5.375	8.807	-	8.807	-	-	-	-	-	-
L59: *Diagnost/Expert Sys*	-	6.107	3.885	5.574	-	5.574	-	-	-	-	-	-
L65: *Test Equipment Development*	-	4.359	1.490	3.233	-	3.233	-	-	-	-	-	-

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 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, condition-based 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 also 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 Next Generation Automatic Test System (NGATS) being developed under this PE as the Army's standard off-platform Automatic Test System (ATS) for field and sustainment maintenance. The NGATS provides general-purpose state-of-the-art test and diagnostic capabilities, reducing cost and logistics footprint while providing the Warfighter fix-forward capability for current and future weapon systems in Multi-Domain Operations (MDO). NGATS is designed to support the Cross-Functional Teams (CFT) in the Army Futures Command (AFC) as they mature in accordance with the DoD ATS Strategy. Current NGATS capabilities support Abrams, Bradley, Common Remotely Operated Weapons Station (CROWS), Crew-Duke, Husky Mounted Detection System (HMDS), and Mounted Family of Computer Systems (MFoCS), with developments ongoing for Blackhawk, M777, Long Range Precision Fires (LRPF) Paladin Extended Range Cannon-Artillery (ERC-A), and Armored Multi-Purpose Vehicle (AMPV) in the Next Generation Combat Vehicle (NGCV) CFT.

FY 2022 Base funding for this PE continues incremental development of the Army's standard NGATS which will improve deployability and mobility of test and diagnostic equipment. The NGATS provides state-of-the-art test and diagnostic capabilities and a means for reducing the Army's test equipment operating and support costs and the costs for supporting a number of the Army's vital warfighting systems. The FY 2022 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

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and EO testing capability. It will also provide for technology insertions to modernize the Army's standard at-system tester to meet test and diagnostic requirements of the supported weapon systems, develop/redesign test program sets and hardware for support of legacy and emerging weapon systems, develop a network centric software framework for NGATS, 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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	10.915	5.578	4.051	-	4.051
Current President's Budget	10.466	5.375	8.807	-	8.807
Total Adjustments	-0.449	-0.203	4.756	-	4.756
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.449	-0.203			
• Adjustments to Budget Years	-	-	4.756	-	4.756

Change Summary Explanation

FY 2022 - Increase of $4.756 million to allow continuation of high priority automatic test equipment development efforts to support current and future Army weapons and combat support systems.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
L59: *Diagnost/Expert Sys*	-	6.107	3.885	5.574	-	5.574	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds development of and system enhancements for the Next Generation Automatic Test System (NGATS) and the Maintenance Support Device (MSD). The NGATS is a general-purpose automatic test system (ATS) that provides test and diagnostic capabilities required to support current and future weapons and combat support systems across the Cross-Functional Teams (CFT) in the Army Futures Command (AFC) and will facilitate retirement of aging and obsolete test equipment that is imposing increasing logistics and operations and support cost burdens. It is the platform for transitioning Agile Rapid Global Combat Support System (ARGCS) Advanced Concept Technology Demonstration (ACTD) technologies into the Army weapon system support structure. The ARGCS ACTD initiative was sponsored by the Department of Defense, and all Services are expected to transition demonstrated technologies into their ATS programs. 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 wireless at-platform test set (WATS) connectivity, develops 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. This Project also provides for continuing efforts in the development and testing of common procedures utilizing existing test program sets and software applications, and market surveys of commercially available test equipment, methods and procedures to determine applicability to Army 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 2020	FY 2021	FY 2022
Title: Next Generation Automatic Test System (NGATS) Radio Frequency (RF) Test Capability ***Description:*** Develop and integrate NGATS RF test capability	0.221	-	-
Title: NGATS Increment 2 ***Description:*** Develop and test hardware and software for NGATS Increment 2 support capability ***FY 2021 Plans:*** Continue development and testing of state-of-the-art hardware and software for support of emerging required capabilities to support the Armored Brigade Combat Teams (ABCTs). New ABCT requirements include high-speed digital, fiber channel, high-speed Ethernet and serial busses, and high power test (600V). Develop new software libraries to utilize instrument functions. ***FY 2022 Plans:***	0.371	0.300	0.500

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
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 2021 to FY 2022 Increase/Decrease Statement:*** Increase required to complete this effort according to schedule.			
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) ***FY 2021 Plans:*** Develop model production EO subsystem to achieve cost savings of production. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** No funding required for this effort In FY 2022.	0.021	0.200	-
Title: Additional Software Capabilities for Use with NGATS ***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 condition-based maintenance ***FY 2021 Plans:*** Develop software to enhance performance of health monitoring of NGATS system. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** No funding required for this effort in FY 2022.	0.171	0.200	-
Title: NGATS Performance Enhancement ***Description:*** NGATS core instrument/software modifications to increase NGATS performance ***FY 2021 Plans:*** Develop and test NGATS shelter modification to allow addition of electro-optics and radio frequency subsystems. ***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	0.621	0.700	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
measurement accuracy and reliability. Improvements in architecture will allow faster remote system updates and provide enhanced communication channels for support of Condition Based Maintenance Plus (CBM+). ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Additional funding allocated to this effort in FY 2021 to meet scheduled support requirements reduced the funding required in FY 2022.			
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 2021 Plans:*** Continue redesign of Abrams/Bradley TPSs to execute on core commercial NGATS instrumentation versus continuing to execute on single-purpose instrumentation specifically developed for testing Abrams/Bradley LRUs. Continue redesign of ICDs to incorporate printed circuit boards and ribbon cables to reduce cost and maintenance. ***FY 2022 Plans:*** Continue redesign of Abrams/Bradley TPSs to execute on core commercial NGATS instrumentation vice single-purpose NGATS instrumentation. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase in funding required to allow fielding of redesigned TPSs as scheduled.	2.372	0.700	2.612
Title: Electro-Optic (EO) TPS Development ***Description:*** Develop Increment 2 and 3 EO TPSs for use with NGATS EO asset to utilize (Army standard) core NGATS instrumentation vice legacy automatic test systems such as DSESTS and Base Shop Test Facility (BSTF)(V)5	0.271	-	-
Title: NGATS Logistics Support Products ***Description:*** Develop NGATS initial logistics support products (including provisioning, technical manuals and calibration) ***FY 2021 Plans:*** Develop updates to technical manuals and technical bulletins to support organic calibration of NGATS. ***FY 2022 Plans:***	1.248	0.853	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Develop updates to technical manuals, technical data packages, depot maintenance work requirements and provisioning as NGATS system and TPS changes occur. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding requirement adjusted to meet projected need for documentation changes.			
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 Condition Based Maintenance Plus (CBM+) on weapon systems. ***FY 2021 Plans:*** Complete next-generation MSD market research. Incorporate greater range of supported weapons system diagnostic code fault detection into diagnostic software to support tactical vehicle sustainment concepts and ensure data bus compatibility and readability. Develop software to complete transition to the Army's emerging single IETM viewer/authoring environment for use with future generation MSD and diagnostic software. ***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 CBM+ information. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase in funding required to meet needs for support of emerging weapon system improvements.	0.604	0.633	0.962
Title: TPS Development Environment ***Description:*** Develop a standardized TPS development environment for NGATS ***FY 2021 Plans:***	-	0.299	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Develop the C-Oriented Test Executive (COTE) TPS development software for NGATS. Develop test executive that is standard and compliant with DoD initiatives, framework working group and the Automatic Test Equipment Management Board (AMB). Standardized test executive will promote long-term maintainability of TPSs. ***FY 2022 Plans:*** Continue development of COTE TPS development software for NGATS to be used for emerging systems including those planned for CFTs. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increased funding required to maintain scheduled completion of this effort.			
Title: Anti-Tamper/Cyber Security ***Description:*** Develop an Anti-Tamper/Cyber Security (AT/CS) software capability for NGATS	0.207	-	-
Accomplishments/Planned Programs Subtotals	6.107	3.885	5.574

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• MB4000: *Integrated Family Of Test Equipment (IFTE)*	81.058	77.214	42.934	-	42.934	-	-	-	-	-	-

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; 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 is following an evolutionary acquisition strategy using incremental development to satisfy Army depot and field testing requirements for new and existing systems. It will replace existing legacy Army ATE (i.e., Base Shop Test Facility (BSTF)(V)3, BSTF(V)5, and Direct Support Electrical System Test Set) as well as Army depot system-specific ATE.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management	Various	Various : Various	0.849	-		-		-		-		-	0.000	0.849	-
		Subtotal	0.849	-		-		-		-		-	0.000	0.849	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development/ Verification/Validation	Various	Various, : Various	41.417	3.361	Feb 2020	1.646	Feb 2021	2.676	Jan 2022	-		2.676	0.000	49.100	-
Hardware/Support Items Development	Various	Various, : Various	73.031	2.260	Jan 2020	1.839	Jan 2021	2.348	Jan 2022	-		2.348	0.000	79.478	-
		Subtotal	114.448	5.621		3.485		5.024		-		5.024	0.000	128.578	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Support	Various	Various, : Various	51.475	0.388	Jan 2020	0.300	Dec 2020	0.450	Dec 2021	-		0.450	0.000	52.613	-
Other Direct	Various	Various, : Various	6.130	0.098	Jan 2020	0.100	Dec 2020	0.100	Dec 2021	-		0.100	0.000	6.428	-
		Subtotal	57.605	0.486		0.400		0.550		-		0.550	0.000	59.041	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 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

Remarks

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
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	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	175.998	6.107		3.885		5.574		-		5.574	0.000	191.564	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
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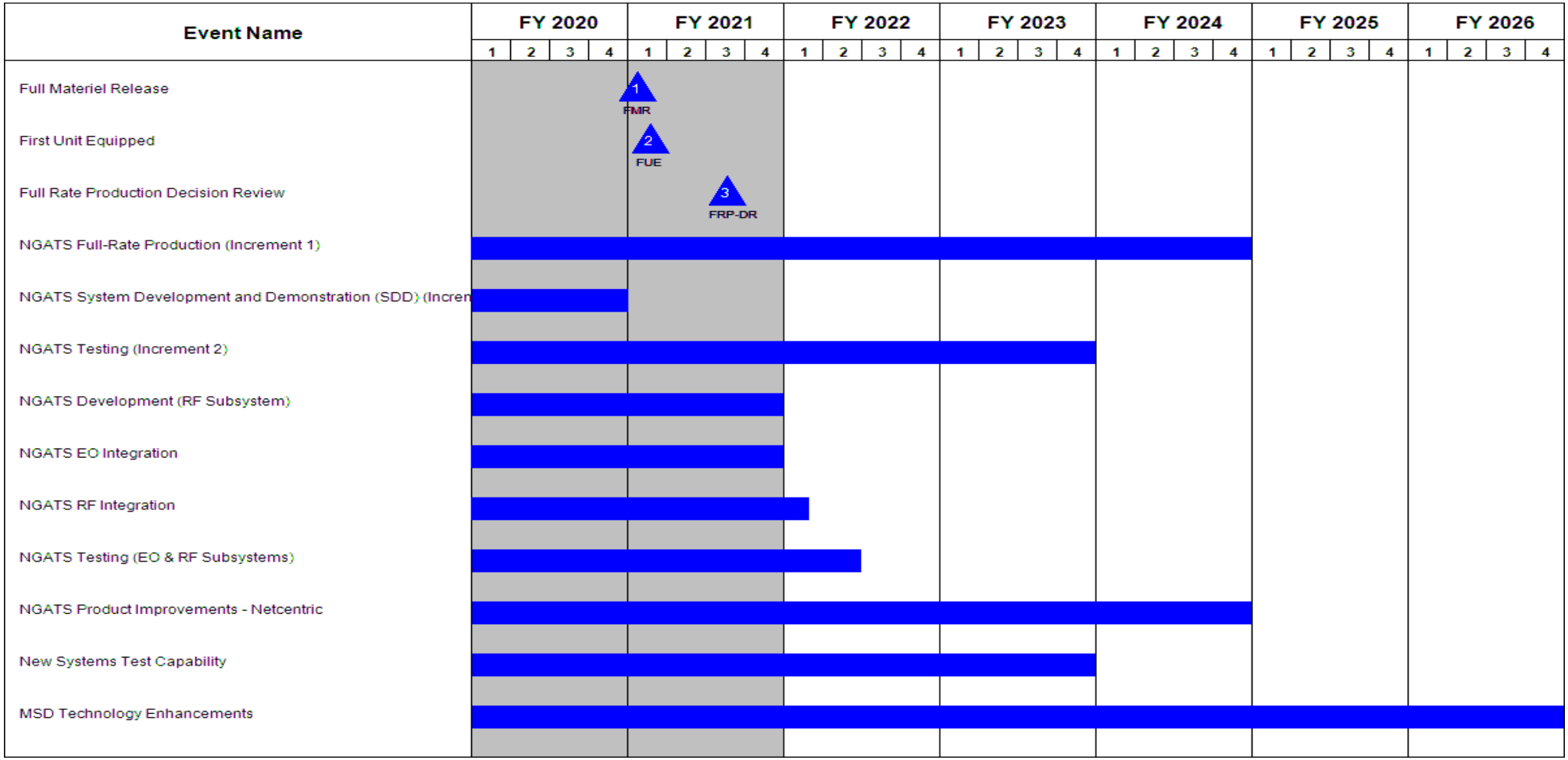

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
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Schedule Details

	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	2024
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	2024
New Systems Test Capability	1	2016	4	2023
MSD Technology Enhancements	1	2016	4	2026

Note

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

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
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COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
L65: *Test Equipment Development*	-	4.359	1.490	3.233	-	3.233	-	-	-	-	-	-
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 2020	FY 2021	FY 2022
Title: Calibration Sets (CALSETS) Software Environment and Calibration Procedures	0.461	0.356	0.617
Description: Develop and test Version 3.0 of an Army automated calibration environment 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 2021 Plans: Test and evaluate Army calibration enterprise data collection and benchmark leading indicators for obsolescence planning gaps and TMDE readiness.			
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 2021 to FY 2022 Increase/Decrease Statement:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
FY 2022 increases investment in CALSETS Army Calibration Environment (ACE) software to develop, test, and evaluate automated calibration procedures and the global enterprise database before materiel fielding.			
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 2021 Plans:*** Test infrared emissivity corrections for infrared systems calibration; develop neutron radiation sources for NexGen radiation detector calibration; test and evaluate Army's flow transfer system. ***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 2021 to FY 2022 Increase/Decrease Statement:*** Additional funding required in FY 2022 to meet schedules of planned projects.	0.944	0.433	1.837
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 2021 Plans:*** Test precision DC volt standards; test and evaluate TMDE prototypes for ultraviolent irradiance and fiber-optic source stabilization. ***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	0.469	0.306	0.554

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Command support requirements for Multi-Domain secured signal send and receive capability with integrated antenna functionality advancements. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** High priority projects to meet emerging system support requirements increase the need for FY 2022 funding.			
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 2021 Plans:*** Perform market research and evaluation of commercial GPETE and validate performance specifications for improved test equipment. The market research will be expanded to cover emerging synthetic instrumentation to potentially replace multiple pieces of GPETE within one platform. Conduct bid sample testing to support acquisition program. The GPETE will support numerous Army weapon systems to include multiple Cross Functional Teams (CFT). ***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 2021 to FY 2022 Increase/Decrease Statement:*** Increase in funding requirement for FY 2022 is associated with the initiation of new acquisition projects.	2.485	0.395	0.225
Accomplishments/Planned Programs Subtotals	4.359	1.490	3.233

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• N10000: *Calibration Sets Equipment*	3.030	2.511	-	-	-	-	-	-	-	-	-
• N11000: *Test Equipment Modernization (TEMOD)*	10.732	14.941	-	-	-	-	-	-	-	-	-
• G02510: *Test Equipment Modernization (TEMOD)*	-	-	24.304	-	24.304	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L65 / *Test Equipment Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost

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 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604746A / *Automatic Test Equipment Development*	Project (Number/Name) L65 / *Test Equipment Development*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
In-house Engineering	SS/ Various	Various : Various	6.667	-		-		-		-		-	0.000	6.667	-
		Subtotal	6.667	-		-		-		-		-	0.000	6.667	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALSETS Software Environment and Calibration	Various	Various : Various	7.674	0.150	Feb 2020	0.119	Feb 2021	0.318	Apr 2022	-		0.318	Continuing	Continuing	-
Physical Instruments	Various	Various : Various	9.116	0.442	Feb 2020	0.166	Apr 2021	1.050	Feb 2022	-		1.050	Continuing	Continuing	-
Electrical Instruments	Various	Various : Various	10.860	0.155	Mar 2020	0.089	Feb 2021	0.280	Mar 2022	-		0.280	Continuing	Continuing	-
Test Equipment Modernization	Various	Various : Various	2.256	1.491	Feb 2020	0.237	Feb 2021	0.135	Feb 2022	-		0.135	Continuing	Continuing	-
		Subtotal	29.906	2.238		0.611		1.783		-		1.783	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering	C/FFP	Various : Various	2.833	0.629	Feb 2020	0.473	Feb 2021	0.260	Jan 2022	-		0.260	Continuing	Continuing	-
		Subtotal	2.833	0.629		0.473		0.260		-		0.260	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALSETS Software Environment and Calibration	Various	Various : Various	1.968	0.100	Feb 2020	0.079	Feb 2021	0.212	Apr 2022	-		0.212	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
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 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Physical Instruments	Various	Various : Various	3.358	0.295	Feb 2020	0.110	Apr 2021	0.701	Feb 2022	-		0.701	Continuing	Continuing	-
Electrical Instruments	Various	Various : Various	2.709	0.103	Mar 2020	0.059	Feb 2021	0.187	Mar 2022	-		0.187	Continuing	Continuing	-
Test Equipment Modernization	Various	Various : Various	1.736	0.994	Feb 2020	0.158	Feb 2021	0.090	Feb 2022	-		0.090	Continuing	Continuing	-
		Subtotal	9.771	1.492		0.406		1.190		-		1.190	Continuing	Continuing	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	49.177	4.359		1.490		3.233		-		3.233	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L65 / *Test Equipment Development*

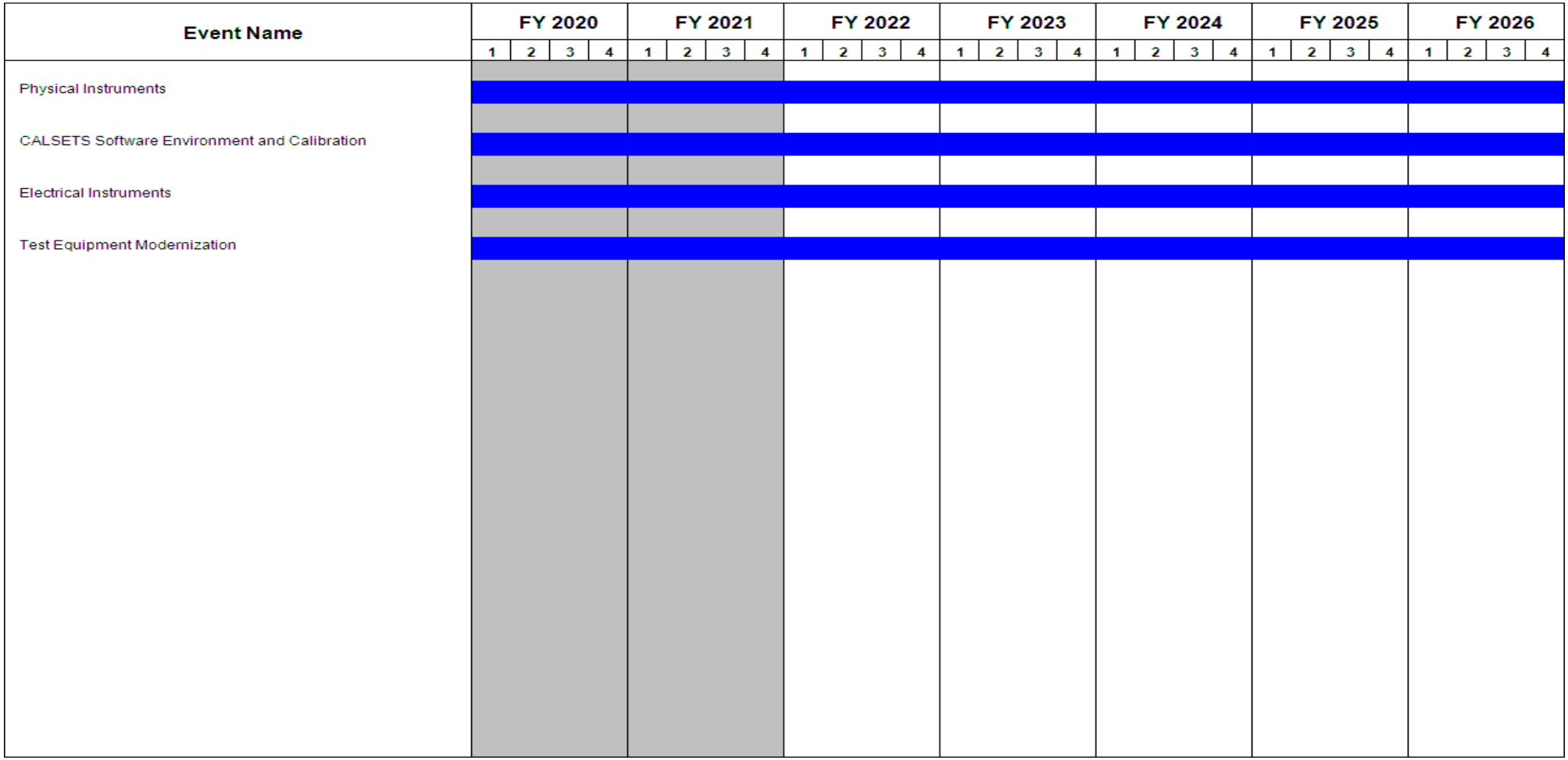

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604746A / *Automatic Test Equipment Development*	**Project (Number/Name)** L65 / *Test Equipment Development*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AN/GSM-421(V2) User Testing	2	2007	4	2012
Physical Instruments	1	2016	4	2026
CALSETS Software Environment and Calibration	1	2016	4	2026
Electrical Instruments	1	2016	4	2026
Test Equipment Modernization	1	2016	4	2026