Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army												Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0304270A / *Electronic Warfare Development*							
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	-	75.520	99.938	137.186	-	137.186	48.689	11.665	11.789	11.863	0.000	396.650
CK3: *TLS Echelon Above Brigade (EAB)*	-	19.505	29.657	66.469	-	66.469	42.837	5.737	5.798	5.805	0.000	175.808
EW6: *ARAT-TSS*	-	5.391	10.813	5.722	-	5.722	5.852	5.928	5.991	6.058	0.000	45.755
FJ5: *Terrestrial Layer System*	-	50.624	59.468	64.995	-	64.995	-	-	-	-	0.000	175.087

A. Mission Description and Budget Item Justification

This Program Element encompasses engineering and manufacturing development for tactical Electronic Warfare (EW) terrestrial (ground) employment applications. The systems under this program provide the Army with the capability to detect, identify, locate, collect/process, report, and engage (disrupt, degrade or deny) hostile forces to prevent their effective use of communications & non-communications networks, counter-mortar/counter-battery radars, surveillance radars, electronically fused munitions and other enemy threats using the Electro-Magnetic Spectrum (EMS). A portion of this funding line is a key enabler of the Army Modernization Priorities in support of Terrestrial Layer System. The remaining portion enables the reprogramming of mission software in response to changes in threat signatures for the Army Reprogramming Analysis Team (ARAT).

Project CK3 supports the development of Terrestrial Layer System Echelons Above Brigade (TLS EAB). TLS EAB will provide Signals Intelligence (SIGINT), Electronic Warfare (EW), and Cyber-enabling integrated solution to support Multi Domain Battle capability gaps and provide Force Protection, Situational Development, and Information Superiority to Army Divisions, Corps and Multi-Domain Task Forces. TLS EAB- Priority #2 Enablers - Supported/endorsed by Network Cross Functional Team (CFT), Assured Position Navigation and Timing (APNT)/Space CFT, Long Range Precision Fire (LRPF) CFT. The remainder of the TLS Echelon Above Brigade (EAB) is fully funded across the Future Years Defense Program. Enables integration, interoperability and force modernization with emerging capabilities in support of Multi-Domain Task Forces and Operational Needs Statements.

Project EW6 provides for the Army Reprogramming Analysis Team (ARAT), a Department of the Army established project to develop techniques, methods, tools and architecture to reprogram mission software embedded in Army EW systems, Force Protection Systems (FPS), and Target Sensing Systems (TSS) in response to changes in threat signatures. ARAT Research and Development enables continuous development of: 1) automated threat analysis tools to rapidly detect (flag) threat changes within intelligence systems, 2) tools to minimize the time to develop EW Mission Software and Products (MSP) for both air and ground EW systems, 3) tools and technology to minimize the time required to test and validate MSPs, 4) improved communications conduits to transmit mission software changes to field users, and 5) enhanced mission-software uploading tools. These efforts allow for rapid threat analysis, simulation, mission software development, distribution and uploading of mission software changes directly to the supported Soldier in the field. The ARAT project will develop, test and equip an Army-wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems.

Project FJ5 supports the development of the Middle Tier Acquisition, Terrestrial Layer System Brigade Combat Team (TLS BCT), an effort that initiated in FY 2020 (funded with PE 0604021A / AW7). TLS BCT will provide Signals Intelligence (SIGINT), Electronic Warfare (EW), and Cyber-enabling integrated solution to support

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0304270A *I Electronic Warfare Development*

Multi Domain Battle capability gaps and provide Force Protection, Situational Development, and Information Superiority in support of Multi-Domain Task Forces and Operational Needs Statements. TLS BCT will equip mounted formations with vehicles organic to their formations (SBCT- Stryker MEV DVAH1, ABCT- AMPV) and a manpack solution for IBCTs. TLS BCT - MDO Relevancy: Priority #2 Enablers - Supported/endorsed by Network Cross Functional Team (CFT), Assured Position Navigation and Timing (APNT)/Space CFT, Long Range Precision Fire (LRPF) CFT.

FY 2024 funds the Terrestrial Layer System Echelons Above Brigade (TLS EAB) efforts (Project CK3), Army Reprogramming Analysis Team (ARAT) efforts (Project EW6) and Terrestrial Layer System Brigade Combat Team (TLS BCT) efforts (Project FJ5).

The total cost of the TLS Echelon Above Brigade (EAB) Middle Tier of Acquisition effort is $164 million Research, Development, Test & Evaluation (RDT&E) from FY22 to FY26.

The total cost of the TLS BCT Middle Tier of Acquisition Rapid Prototyping effort is $312 million RDT&E from FY20 to FY25, including RDT&E ($269M) and procurement ($43M) of prototype units. The TLS BCT is fully funded across the Future Years Defense Program.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	75.520	56.938	36.427	-	36.427
Current President's Budget	75.520	99.938	137.186	-	137.186
Total Adjustments	0.000	43.000	100.759	-	100.759
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	43.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	100.759	-	100.759

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: EW6: *ARAT-TSS*		
Congressional Add: *Program Increase: Service Tactical Signal Intelligence (SIGINT) upgrades*	-	5.000
Congressional Add Subtotals for Project: EW6	-	5.000
Congressional Add Totals for all Projects	-	5.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0304270A *I Electronic Warfare Development*

Change Summary Explanation

FY 2024 RDTE dollars in the amount of $66.469 million to Project CK3 TLS EAB. This is an increase of $48.304 million from PB23 which supports the development of two (2) prototypes.

FY 2024 RDTE dollars in the amount of $64.995 million to Project FJ5 TLS BCT. This increase is due to the revision of the Middle Tier of Acquisition Rapid Prototyping strategy requirement which was realigned from Procurement to Research Development Testing and Evaluation (RDTE) as well as a congressional plus up totaling $52.576 million. This supports the completion of Stryker BCT for the first unit of issuance and the initiation of Prototyping activities for the ABCT variant.

FY 2024 RDTE dollars in the amount of $5.722 million to Project EW6 ARAT TSS. This is a decrease of $.121 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / *Electronic Warfare Development*	Project (Number/Name) CK3 / *TLS Echelon Above Brigade (EAB)*	

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
CK3: *TLS Echelon Above Brigade (EAB)*	-	19.505	29.657	66.469	-	66.469	42.837	5.737	5.798	5.805	0.000	175.808
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is a key enabler of the Army Modernization Priorities in support of Terrestrial Layer System Echelons Above Brigade (TLS EAB). The TLS EAB will provide Army Divisions, Corps and Multi-Domain Task Forces (MDTF) extended range, integrated full spectrum Signals Intelligence (SIGINT), Electronic Warfare (EW), and Cyber-enabling non-kinetic offensive capabilities to support large scale combat operations. TLS EAB's information Superiority provides Indications and Warnings, Force Protection and Situational Awareness to influence the commander's decision cycle, improve targeting timeliness and accuracy, and provides electronic attack and offensive cyber warfare options to deny, degrade, disrupt, or otherwise manipulate the targeted force. TLS EAB employs technologically advanced systems with a modular open-system approach for multiple configurations that can be efficiently sustained and effectively upgraded to provide capabilities against changing near peer and emerging threats to address joint all domain capability gaps. TLS EAB- Priority #2 Enablers - Supported/endorsed by Network Cross Functional Team (CFT), Assured Position, Navigation and Timing (PNT)/Space CFT, Long Range Precision Fire CFT. Enables integration, interoperability and force modernization with emerging capabilities in support of Multi-Domain Task Forces and Operational Needs Statements.

The total cost of the TLS Echelon Above Brigade (EAB) Middle Tier of Acquisition effort is $164 million RDT&E from FY22 to FY26.

Justification:
FY24 RDT&E funds in the amount of $66.469 million will fund TLS EAB Integration, Demonstration/Experimentation/Prototyping, Technical/Program Management, Second Variant Non-Recurring Engineering (NRE), and Integration/Vendor Testing.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: TLS EAB Prototyping	14.500	21.336	33.052
Description: TLS Echelons Above Brigade (EAB) is fulfilling distinct capabilities to support Division, Corps and Multi-Domain Task Force commanders. TLS EAB will be integrated onto different prime mover platforms than TLS Brigade Combat Team (BCT) and will employ different technologies and hardware to fulfill the unique extended range capabilities to support large scale combat operations.			
FY 2023 Plans: In FY 2023, TLS EAB Launching Phase 2 Prototype build demonstration. Continue System Level Prototypes development, and platform integration. (Completing OTA Phase 1 development)			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** CK3 / *TLS Echelon Above Brigade (EAB)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
In FY24, TLS EAB will continue System Level Prototypes development, platform integration, supporting technical system testing and critical soldier touchpoints. (Full-scale Phase 2 of the OTA) ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 funding increase due to full-scale prototype development in Phase 2. Increase supporting system technology and critical soldier touchpoints.			
Title: TLS EAB PMO ***Description:*** Funds will provide for program management.	4.105	-	-
Title: Demonstration, Experimentation, and Prototyping ***Description:*** Funds will provide for demonstration, experimentation, and prototyping for TLS EAB. ***FY 2024 Plans:*** In FY24, planning includes participation in key events to continue to inform requirement (CDD)/Tactic, Techniques and Procedures (TTP). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** In FY24, planning includes participation in key events and enables parallel development and simultaneous demonstration, experimentation, and prototyping.	-	-	0.500
Title: Technical/Program Management ***Description:*** TLS EAB Technical/Program Management. ***FY 2023 Plans:*** Funding for TLS EAB Supporting the completion of Phase 1 OTA. Technical/Program Management, Planning of Prototype development of Phase 2 ***FY 2024 Plans:*** FY 2024 technical engineering and program management support for TLS EAB Full scale Phase 2 Prototype development. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** In FY24, increased technical engineering and program management support the increasing demand of prototyping development. These critical test events will occur during full Scale Phase 2 development.	0.900	1.988	6.618
Title: Second Variant Non-Recurring Engineering (NRE)	-	4.000	21.289

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
Description: Second Variant Non-Recurring Engineering (NRE) for TLS EAB. ***FY 2023 Plans:*** Initiation of variant of non-recurring engineering. ***FY 2024 Plans:*** In FY24, TLS EAB will have additional variant for non-recurring engineering. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase in funding for FY24 due to additional variant for non-recurring engineering.			
Title: Prototype Test Activities ***Description:*** Prototyping Test Activities for TLS EAB. ***FY 2023 Plans:*** In FY23, TLS EAB supports planning for prototype articles test events. ***FY 2024 Plans:*** In FY24, TLS EAB will support the completion and additional prototype articles and increase vendor test events to refine system requirements and retrieve desired characteristics. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** In FY24, TLS EAB will have test events for additional prototypes	-	2.333	5.010
Accomplishments/Planned Programs Subtotals	19.505	29.657	66.469

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

A competitive acquisition approach was utilized for TLS EAB development. The TLS EAB will use a Middle Tier Acquisition (MTA) approach to rapidly deliver an integrated ground intelligence, electronic warfare and cyber capability on multiple platform types to align with maneuver forces. The TLS EAB will leverage authorities to accelerate delivery through rapid prototyping with rapid fielding authorities or a Milestone C Decision Point.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / *Electronic Warfare Development*	Project (Number/Name) CK3 / *TLS Echelon Above Brigade (EAB)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TLS EAB PMO	C/CPFF	MAG Aerospace : Aberdeen, MD	-	4.105	Jul 2022	-		-		-		-	0.000	4.105	-
Technical/Program Management	C/CPFF	MITRE & LUFCO : Aberdeen, MD	-	0.900	May 2022	1.988	Jun 2023	6.618	Jul 2024	-		6.618	0.000	9.506	-
		Subtotal	-	5.005		1.988		6.618		-		6.618	0.000	13.611	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TLS EAB Prototyping	C/FFP	ACC-APG : TBD	-	14.500	Aug 2022	21.336	Jun 2023	33.052	May 2024	-		33.052	0.000	68.888	-
Demonstration, Experimentation, and Prototyping	C/TBD	ACC-APG : TBD	-	-		-		0.500	Apr 2024	-		0.500	0.000	0.500	-
Second Variant Non-Recurring Engineering (NRE)	C/FFP	ACC-APG : TBD	-	-		4.000	Mar 2023	21.289	Jun 2024	-		21.289	0.000	25.289	-
		Subtotal	-	14.500		25.336		54.841		-		54.841	0.000	94.677	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prototype Test Activities	C/FFP	ACC-APG : TBD	-	-		2.333	Mar 2023	5.010	May 2024	-		5.010	0.000	7.343	-
		Subtotal	-	-		2.333		5.010		-		5.010	0.000	7.343	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	19.505		29.657		66.469		-		66.469	0.000	115.631	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** CK3 / *TLS Echelon Above Brigade (EAB)*

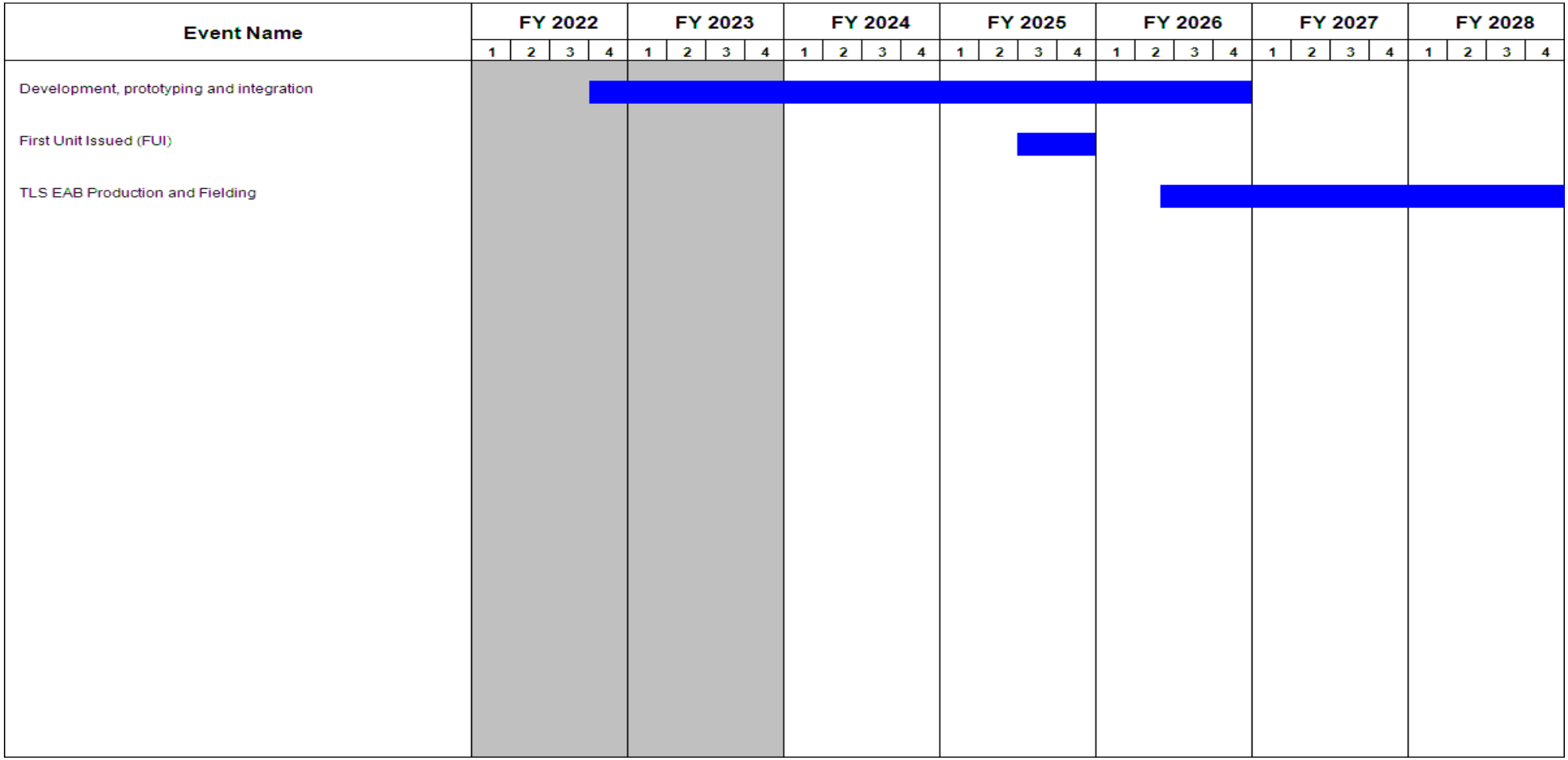

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** CK3 / *TLS Echelon Above Brigade (EAB)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Development, prototyping and integration	4	2022	4	2026
First Unit Issued (FUI)	3	2025	4	2025
TLS EAB Production and Fielding	2	2026	4	2030

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / *Electronic Warfare Development*	Project (Number/Name) EW6 / *ARAT-TSS*	

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
EW6: *ARAT-TSS*	-	5.391	10.813	5.722	-	5.722	5.852	5.928	5.991	6.058	0.000	45.755
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Army Reprogramming Analysis Team (ARAT) is a Department of the Army established program to develop techniques, methods, tools, and architecture to rapidly reprogram mission software embedded in Army Electronic Warfare (EW) Force Protection Systems (FPS) in response to changes in threat signatures. The regulatory guidance directing this mission is contained in Army Regulation (AR) 525-15, AR 525-22, and AR 95-1. The ARAT develops integrated technical solutions required to counter increasingly sophisticated EW Signal threats to US Forces. The ARAT mission software reprogramming infrastructure supports the Army Campaign Plan to provide the Regionally Aligned Forces tactical Commander timely rapid-reprogramming capability of EW systems with mission software. The ARAT mission responsibility is to develop and distribute Mission Software and Products to forward deployed combat forces. ARAT identifies and analyzes worldwide threat signature changes which affect EW systems; determines the impact of observed Signal Intelligence (SIGINT) signature changes; rapidly develops new mission software to adapt friendly systems to detect and defeat enemy threats to U.S. Army ground and air platforms; disseminates the Mission Software and Products to forward deployed forces, and provides government developed tools and software to upload new mission software into the affected EW systems.

A. Mission Description and Budget Item Justification

Current military operations are conducted in a rapidly changing threat environment, where Improvised Explosive Devices (IEDs), Infra Red (IR) man-portable air defense systems (MANPADS) seekers, radar guided surface-to-air-missiles (SAM), laser guided weapons, anti-helicopter mines, and targeting sensors are proliferating and evolving. Integrated solutions are required to counter increasingly sophisticated EW threats. The ARAT reprogramming infrastructure supports the tactical Commander by providing timely rapid reprogramming of mission software and information dissemination for Army supported, Joint and allied services. ARAT supports integrated reprogramming of target acquisition, target engagement, vehicle survivability, and Aircraft Survivability Equipment (ASE). ARAT rapid-reprogramming infrastructure supports tactical requirements for deployed aircraft and ground-based (e.g. Counter Radio-Controlled Improvised Explosive Device (CREW)) survivability systems. ARAT identifies and analyzes threat signature changes which affect EW systems; determines the impact of observed signature changes; develops new mission software to adapt the system to the changes; disseminates the mission software; and provides methods to upload the new mission software into the affected EW systems. Each element within the ARAT infrastructure plays a specific role within the program's rapid reprogramming process, providing the Soldier with the capability to install mission and target identification software at the lowest possible level, thus maximizing flexibility for tactical commanders. ARAT participates in the operational and developmental test design of Army EW systems, and supports Joint Service Reprogramming Exercises in all theaters. ARAT Research and Development enables continuous development of: 1) automated threat analysis tools to rapidly detect (flag) threat changes within the intelligence system, 2) tools to minimize the time to develop Mission Software and Products (MSP), 3) tools and technology to minimize the time required to test and validate MSPs, 4) improved communications conduits to rapidly transmit mission software to upload into supported EW systems. These efforts allow for rapid threat analysis, threat modeling and simulation, mission software development and testing, distribution and uploading of mission software directly to the supported Soldier in the field.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Keeping Pace with the Enemy and Technology	2.657	2.721	2.703

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** EW6 / *ARAT-TSS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This effort focuses on developing a capability for the Government to rapidly develop and distribute organic mission software solutions for multiple EW systems. The Army must continually modernize and enhance software tools, hardware modernization, and processes counter enemy technology. ARAT EW6 executes Research, Development, Test, and Evaluation (RDTE) funding to provide an organic Army capability for this organization to rapidly develop, test and distribute mission software solutions for forward deployed combat forces. ***FY 2023 Plans:*** ARAT EW6 has increased funding in FY23. The funding will be utilized to enhance the hardware and software development, testing, and distribution classified infrastructure. Enhancement efforts will include development of hardware and software tools that will modernize ARAT EW6's ability to create simulations of enemy Electronic Warfare (EW) systems. Higher fidelity is required to simulate sophisticated peer and near peer threats to Army air and ground forces are required. ***FY 2024 Plans:*** ARAT plans to execute funding to enhance current software development and test infrastructure. ARAT will modernize to include threat simulations utilizing Software Defined Radios (SDR). ARAT EW6 plan to integrate Software Defined Radios into the program's software development and test infrastructure to enhance the Army's ability to replicate sophisticated peer and near peer Electronic Warfare systems. The modernized Software Defined Radios once integrated into the laboratory will allow for expedited development and testing of mission software to detect and defeat enemy Electronic Warfare systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort			
Title: Infrastructure Improvements Multispectral ***Description:*** This effort focuses on enhancing the Army's Multispectral Missile Warning System (MWS) software sustainment infrastructure. With the worldwide proliferation of MANPADS the Army must have the capability to rapidly analyze and develop mission software solutions that detect and counter MANPADS to defend Army Aviation platforms against this lethal threat. ***FY 2023 Plans:*** ARAT EW6 has increased funding in FY23. The funding will be utilized to enhance the multispectral software development, testing, and distribution classified infrastructure. Enhancement efforts will include development of hardware and software tools that will modernize ARAT EW6's ability to create simulations of enemy Electronic Warfare (EW) systems. Higher fidelity is required to simulate sophisticated peer and near peer threats to Army air and ground forces. ***FY 2024 Plans:***	0.616	0.747	0.719

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** EW6 / *ARAT-TSS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
ARAT will continue infrastructure enhancements to include preparations for integrating new ground Electronic Warfare systems into the ARAT Development and Testing Enterprise in support of migrating to a multispectral capability to incorporate Multi-Domain Operations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort			
Title: Infrastructure Improvement Radio Frequency General ***Description:*** This effort focuses on enhancing the Army's Radio Frequency (RF) EW system Mission Software and Products (MSP) development and distribution infrastructure. The Army must fight in a contested and congested EW environment. Mission software solutions to defend against RF threats must be rapidly developed, tested, and distributed to Soldiers on an ever changing battlefield. ***FY 2023 Plans:*** ARAT EW6 will continue focus on the Army's ability to overmatch against peer and near peer Electronic Warfare threats. ARAT EW6 have planned efforts to modernize the Radio Frequency detection and identification via hardware and software tools. Modernizing the Radio Frequency infrastructure will provide the Army with expediting threat analysis, mission software development and testing. ARAT EW6 plan is to modernize the infrastructure that enables to Army the ability to rapidly detect changes in enemy Electronic Warfare systems and create and test mission software solutions for systems that are onboard Army air and ground platforms. ***FY 2024 Plans:*** ARAT will continue with modernization efforts to enhance Radio Frequency simulations of sophisticated peer and near peer threat systems. The modernization efforts will provide the Army the ability to rapidly program aircraft Radar Warning Receivers (RWR) to accurately detect and defeat enemy radar guided missiles directed against Army Aviation platforms. ARAT EW6 will leverage modernized Software Defined Radio technologies that will provide more accurate representation of enemy Electronic Warfare systems. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort	1.004	1.289	1.271
Title: Threat Flagging and Mission Data Set Reprogramming Tool Development ***Description:*** This effort focuses on enhancing the Army's capability to monitor changes in enemy Electronic Warfare systems that affect system performance of Army detection, declaration, and countermeasure Electronic Warfare systems onboard both air and ground platforms. The enemy is continuously developing or modifying it's Electronic Warfare systems. For Army platforms to have protection against enemy systems it must have a robust capability to immediately detect changes in threat system	1.114	1.056	1.029

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** EW6 / *ARAT-TSS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
performance and rapidly develop, test, and distribute a mission software solution that counters the threat. This effort will enhance the Army's capability bridge detection of a change in enemy threat and the rapid development of Mission Software and Products. ***FY 2023 Plans:*** ARAT EW6 will develop mission software tools that will provide the Army the ability to ingest large volumes of national level intelligence data to monitor emissions of enemy Radio Frequency systems. The flagging model is a software tool that will provide the Army the ability to rapidly determine enemy Multispectral and Radio Frequency changes in enemy system operational characteristics and performance. ***FY 2024 Plans:*** ARAT EW6 will continue to enhance threat change detection capabilities and tailor the flagging model to system specific to Electronic Warfare systems on Blackhawk and Apache helicopters. Threat change detection provides the Army the capability to rapidly assess parametric changes in enemy Radio Frequency radar systems. The ability to detect changes in enemy Radio Frequency systems increases the accuracy of mission software for Radar Warning systems on Army Aviation platforms. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort			
Accomplishments/Planned Programs Subtotals	5.391	5.813	5.722

	FY 2022	FY 2023
Congressional Add: Program Increase: Service Tactical Signal Intelligence (SIGINT) upgrades	-	5.000
FY 2023 Plans: Congressional Interest Item for Service Tactical Signal Intelligence (SIGINT) upgrades		
Congressional Adds Subtotals	-	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

ARAT has no other Program funding.

D. Acquisition Strategy

The efforts to be funded in this project will require a combination of systems specific and high-tech knowledge. The contractual services portion for the project will be obtained from both the Communications-Electronics Command (CECOM) Software Engineering Center (SEC) competitive omnibus and the Program Executive Office - Simulation, Training and Instrumentation (PEO STRI), GSA SBIR, and the Defense Technical Intelligence Center (DTIC) high tech contracts.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / *Electronic Warfare Development*	Project (Number/Name) EW6 / *ARAT-TSS*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
USG Labor	Various	CECOM SEC : Various Locations	5.056	0.576		0.596		0.596		-		0.596	Continuing	Continuing	Continuing
Travel	Various	CECOM SEC : Various Locations	1.090	0.092		0.096		0.098		-		0.098	Continuing	Continuing	Continuing
		Subtotal	6.146	0.668		0.692		0.694		-		0.694	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various	CECOM SEC, RDECOM, DTIC : Various Locations	55.523	4.723	Mar 2022	5.121	Apr 2023	5.028	Mar 2024	-		5.028	Continuing	Continuing	Continuing
SIGINT Upgrades	TBD	TBD : TBD	-	-		5.000		-		-		-	0.000	5.000	-
		Subtotal	55.523	4.723		10.121		5.028		-		5.028	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	61.669	5.391		10.813		5.722		-		5.722	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** EW6 / *ARAT-TSS*

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Software Development Enhancement Support (see notes in Schedule Detail)																												

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Software Development Enhancement Support (see notes in Schedule Detail)																												

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** EW6 / *ARAT-TSS*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Software Development Enhancement Support (see notes in Schedule Detail)	1	2015	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / *Electronic Warfare Development*	Project (Number/Name) FJ5 / *Terrestrial Layer System*	

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
FJ5: *Terrestrial Layer System*	-	50.624	59.468	64.995	-	64.995	-	-	-	-	0.000	175.087
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is a key enabler of the Army Modernization Priorities in support of Terrestrial Layer System Brigade Combat Team (TLS BCT), a Middle Tier of Acquisition program, which provides Army maneuver forces integrated full spectrum Signals Intelligence (SIGINT), Electronic Warfare (EW), and Cyber-enabling non-kinetic offensive operation options to Brigade Combat Team (BCT) commanders. TLS BCT's information Superiority provides Indications and Warnings, Force Protection and Situational Awareness to influence the commander's decision cycle, improve targeting timeliness and accuracy, and provide the maneuver commander with electronic attack and offensive cyber warfare options to deny, degrade, disrupt, or otherwise manipulate the targeted force. TLS BCT employs technologically advanced systems with a modular open-system approach for multiple configurations that can be efficiently sustained and effectively upgraded to provide capabilities against changing near peer and emerging threats to address multi-domain capability gaps. TLS BCT enables integration, interoperability and force modernization with emerging capabilities in support of Multi-Domain Task Forces and Operational Needs Statements. TLS BCT will equip mounted formations with vehicles organic to their formations (SBCT- Stryker MEV DVAH1, ABCT- AMPV) and a manpack solution for IBCTs. TLS BCT - MDO Relevancy: Priority #2 Enablers - Supported/endorsed by Network Cross Functional Team (CFT), Assured Position Navigation and Timing (APNT)/Space CFT, Long Range Precision Fire (LRPF) CFT.

The total cost of the TLS BCT Middle Tier of Acquisition Rapid Prototyping effort is $312 million RDT&E from FY20 to FY25, including RDT&E ($269M) and procurement ($43M) of prototype units. The TLS BCT is fully funded across the Future Years Defense Program.

Justification:
FY 2024 total program amount of $64.9M will fund technical/PMO support, vehicle integration and system development, new signal threat integration/signal relevancy, and test events.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Technical / Program Management	9.216	3.157	3.909
Description: Funds will provide for technical engineering and program management.			
FY 2023 Plans: FY 2023 TLS BCT technical engineering and program management support the development of ABCT- AMPV and manpack solution for IBCT. Completion of Stryker MEV DVAH1 prototypes.			
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
FY 2024 TLS BCT technical engineering and program management support the development and completion of additional Stryker MEV DVAH1 prototypes, completion of ABCT- AMPV prototypes and continued development of manpack solution for IBCT. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase in funding for FY 2024 due to additional development of Stryker MEV DVAH1 prototypes, integration and test activities across all variants.			
Title: Platform Integration and System Development ***Description:*** Development of System Level Prototypes and integration of TLS BCT mission equipment onto vehicle platforms that will enable TLS BCT platforms to match vehicle platforms organic to the unit. ***FY 2023 Plans:*** Development of System Level Prototypes and integration of TLS BCT mission equipment to the AMPV vehicle platform and other IBCT identified vehicle platforms. ***FY 2024 Plans:*** Continued development of System Level Prototypes and integration of TLS BCT mission equipment to Stryker, Manpack, AMPV and IBCT mounted variants. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase level of effort resulting from integration and test activities across all variants.	38.967	49.636	53.500
Title: Test Events ***Description:*** System and Operational test events ***FY 2023 Plans:*** FY 2023 Operational Demonstration for Stryker MEV DVAH1 prototypes. ***FY 2024 Plans:*** FY 2024 Continued testing of TLS BCT systems: Stryker MEV DVAH1 prototypes and Manpack solutions testing and refinement to achieve desired characteristics. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 Increase in funding due to the requirement to conduct System and Operational test efforts to achieve desired characteristics for TLS BCT systems.	0.500	4.500	5.786
Title: New signal threat integration and signal relevancy ***FY 2023 Plans:***	1.941	2.175	1.800

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** FJ5 / *Terrestrial Layer System*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Continues, but is not limited to, development and evaluation of Next Generation SIGINT, EA and Cyber capabilities into the TLS BCT baseline to increase signal processing capabilities for near peer and emerging enemy threat signals in support of Multi-Domain Task Forces and Operational Needs Statements. ***FY 2024 Plans:*** Continues, but is not limited to, development and evaluation of Next Generation SIGINT, EA and Cyber capabilities into the TLS BCT baseline to increase signal processing capabilities for near peer and emerging enemy threat signals in support of Multi-Domain Task Forces and Operational Needs Statements. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease in FY24 funding due to near completion of integration and relevancy efforts in FY2024.			
Accomplishments/Planned Programs Subtotals	50.624	59.468	64.995

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• B97610: *TERRESTRIAL LAYER SYSTEM BCT*	39.240	8.373	84.627	-	84.627	118.417	102.585	99.359	13.003	0.000	465.604

Remarks

D. Acquisition Strategy

The TLS BCT program will use a tailored competitive acquisition approach to rapidly deliver an integrated ground intelligence, electronic warfare and cyber capability on multiple platform types to align with maneuver forces. The TLS BCT program will leverage authorities including, but not limited to Middle Tier of Acquisition to accelerate delivery through rapid prototyping with rapid fielding authorities or a Milestone C Decision Point.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / *Electronic Warfare Development*	Project (Number/Name) FJ5 / *Terrestrial Layer System*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical / Program Management	C/FFP	MITRE & MAG Aerospace : Aberdeen, MD	7.318	9.216	Feb 2022	3.157	Feb 2023	3.909	Feb 2024	-		3.909	0.000	23.600	-
		Subtotal	7.318	9.216		3.157		3.909		-		3.909	0.000	23.600	N/A

Remarks

Efforts include FFRDC support from Contract #W56KGU-18-D-0004 to continue developing and managing the Signals processing and compute environment as well as from competitive contract #W15P7T-10-D-D421 for Systems Engineering and Technical Assistance (SETA) support.

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Vehicle Integration and System Development	C/FFP	Lockheed Martin : Syracuse, NY	28.036	38.967	Apr 2022	49.636	Dec 2022	53.500	Dec 2023	-		53.500	0.000	170.139	-
New signal threat integration and signal relevancy	C/FFP	Lockheed Martin : Syracuse, NY	-	1.941	Jan 2022	2.175	Jan 2023	1.800	Jan 2024	-		1.800	0.000	5.916	-
		Subtotal	28.036	40.908		51.811		55.300		-		55.300	0.000	176.055	N/A

Remarks

Competitive OTA #W15QKN-17-9-5555 for development and integration. FY2024 funding supports continued system development and integration on at least, but not limited to the Stryker vehicle platform, the AMPV vehicle platform and the IBCT vehicle platform that will enable TLS fielded systems to match vehicle platforms organic to the fielded unit.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Events	MIPR	ATEC : APG, MD	2.751	0.500	Mar 2022	4.500	Mar 2023	5.786	Mar 2024	-		5.786	0.000	13.537	-
		Subtotal	2.751	0.500		4.500		5.786		-		5.786	0.000	13.537	N/A

Remarks

FY2024 Test & Evaluation efforts will be accomplished via a combination of various support contracts and direct Government support.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0304270A / *Electronic Warfare Development*	Project (Number/Name) FJ5 / *Terrestrial Layer System*	

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	38.105	50.624		59.468		64.995		-		64.995	0.000	213.192	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0304270A / *Electronic Warfare Development*	**Project (Number/Name)** FJ5 / *Terrestrial Layer System*

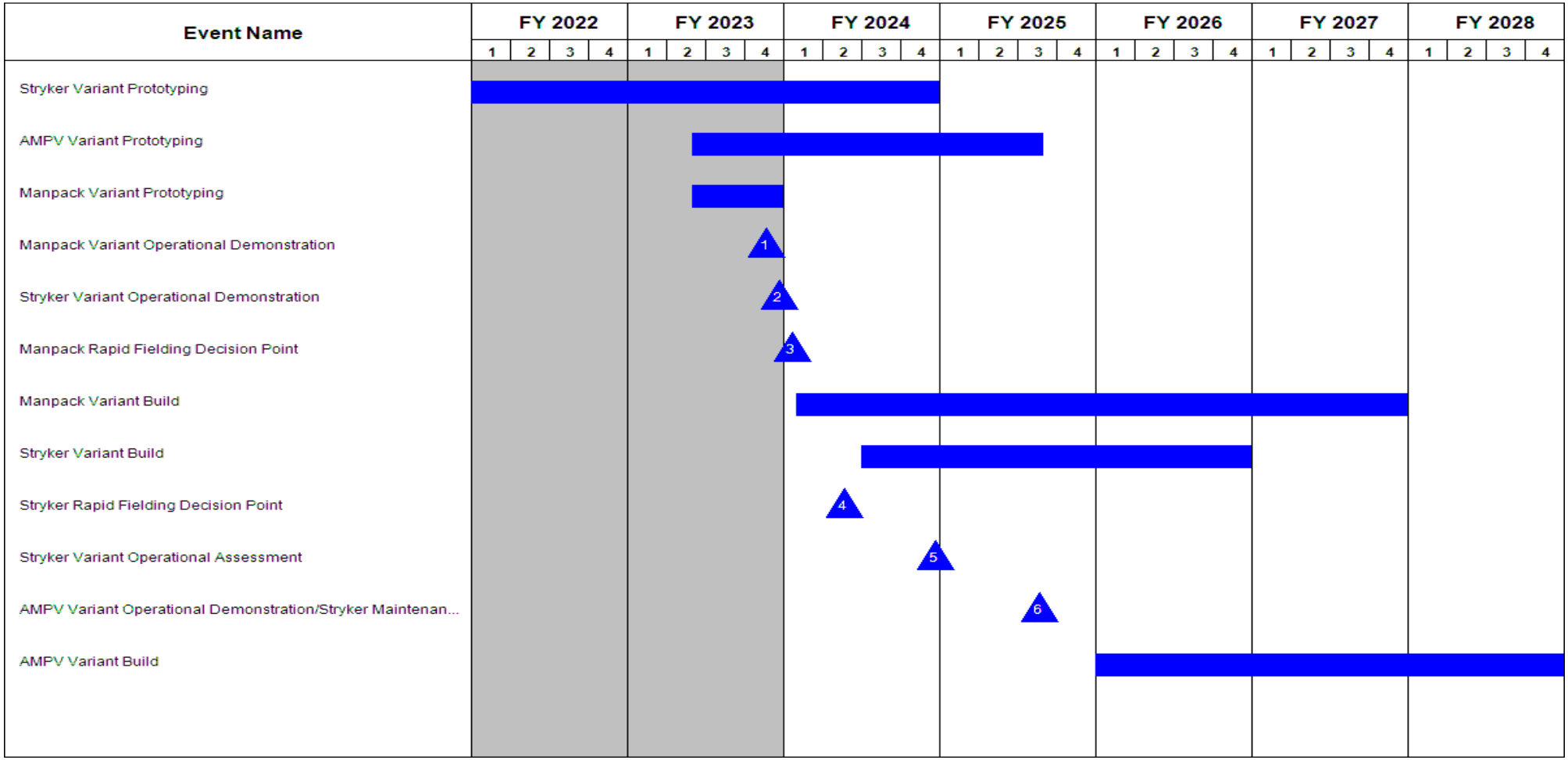

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Milestone A	2	2020	2	2020
Mid Tier Acquistion Approval	3	2020	3	2020
Stryker Variant Prototyping	3	2020	4	2024
Initial Operational Assessment	4	2021	4	2021
AMPV Variant Prototyping	2	2023	3	2025
Manpack Variant Prototyping	2	2023	4	2023
Manpack Variant Operational Demonstration	4	2023	4	2023
Stryker Variant Operational Demonstration	4	2023	4	2023
Manpack Rapid Fielding Decision Point	1	2024	1	2024
Manpack Variant Build	1	2024	4	2027
Stryker Variant Build	3	2024	4	2026
Stryker Rapid Fielding Decision Point	2	2024	2	2024
Stryker Variant Operational Assessment	4	2024	4	2024
AMPV Variant Operational Demonstration/Stryker Maintenance Demo	3	2025	3	2025
AMPV Variant Build	1	2026	4	2028