Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army											Date: May 2021	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced 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	-	25.204	23.184	17.459	-	17.459	-	-	-	-	-	-
CF2: *Integrated Soldier Systems Prototyping (SL CFT)*	-	1.878	2.449	3.111	-	3.111	-	-	-	-	-	-
ET8: *Personnel Airdrop System Development*	-	0.285	1.219	1.155	-	1.155	-	-	-	-	-	-
S53: *Clothing And Equipment*	-	6.365	1.742	2.004	-	2.004	-	-	-	-	-	-
S54: *Small Arms Improvement*	-	13.956	15.495	6.911	-	6.911	-	-	-	-	-	-
VS4: *Soldier Protective Equipment*	-	2.720	2.279	4.278	-	4.278	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Program Element (PE), Advanced Component Development and Prototypes, manages the Soldier as a system to increase combat effectiveness, test and deliver tangible products that save Soldiers lives and improve combat capability. The PE provides funding for evaluating, developing, and testing emerging technologies and critical Soldier support systems to reduce technology risk.

CF2
The Integrated Squad effort includes the completion of the Adaptive Squad Architecture (ASA), Squad Performance Metrics (SPM) and the Soldier Integration Facility (SIF) programs. These efforts are Program Executive Office-Soldier (PEO-S) led and will develop a full system architecture for the Soldier and the Squad paired with a constructive and live integration capability with the SIF. This will be accomplished by developing Interface Control Documents (ICDs) in order to provide common established interfaces for internal and external stakeholders who will interface on or with the Soldier/Squad platforms. The critical elements are the development of the "Soldiers as Integrated Weapons Systems" and "Squad as an Integrated Combat Platform" vision based on threat, operational environment and collaboration with internal and external stakeholders to inform investment decisions out to Fiscal Year (FY) 2050. The ASA/SPM/SIF will develop a metric-based approach that will include virtual, constructive and live evaluations and tools across the Department of Defense (DoD), academia and industry which will be used for senior leaders to make deliberate decisions based on the analysis of Soldier/Squad performance.

ET8
Personnel Airdrop System improves Low Altitude and High Altitude personnel parachutes and associated equipment to include canopy improvement based on integration of new technology with the goal of enhancing the insertion capability and safety of the airborne Soldier and increasing the performance, reliability, and durability of personnel airdrop equipment.

S53

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 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603827A *I Soldier Systems - Advanced Development*

This Project evaluates and integrates technologies and representative or prototype systems that help expedite Soldier Clothing and Individual Equipment technology transition from the laboratory to operational use. Efforts focus on proving out commonality across as broad a spectrum of users as possible to provide a modular, integrated uniform/clothing system from skin out and head-to-toe. It funds efforts to transition new technologies and domestically available fabrics with Flame Resistant (FR), moisture wicking, insect protection and camouflage technologies, including integration of fabrics appropriate for uniforms and equipment used in jungle/tropical and arctic environments. New technologies are identified to monitor health and improve Soldier survivability, reduce weight, and improve affordability, mobility and comfort in combat and training/administrative environments. Includes integration and interface on the Soldier system.

S54
The Small Arms Improvement Advanced Component Development and Prototypes (ACD&P) program provides funds to mature, demonstrate, test and evaluate emerging technology from Budget Activity (BA) 3 Program Element 0603607A Joint Service Small Arms Program (JSSAP) Project 627 Defense Advanced Research Projects Agency (DARPA), Department of Energy National Laboratories, Research Development & Engineering Centers (RDECs) and other domestic and foreign sources for small arms weapon systems and technology. Small arm weapon systems include weapons ranging up to 40 millimeter in caliber. Current and future efforts focus on improvements designed to enhance lethality, target acquisition and tracking, fire control, usability, training effectiveness and reliability of weapons to include ammunition when developing and/or evaluating standard and non-standard weapons. Focus areas include the maturing of technology through testing and evaluation of sub-system or system prototypes which demonstrates light weight materials, wear resistant/protective/anti-reflective coatings, observation/situational awareness improvements, human-systems integration, robotic armament capability, non-lethal capability, and equipment enhancements. Benefits include continuous improvements to small arms weapon systems, fire control equipment, optics, gun barrels, training devices, suppressors, component mounts, weapon mounts, and weapon/ammunition interface. Includes costs associated with efforts for integration and interface of products on Soldiers' head, body and weapons.

VS4
This Project supports efforts to evaluate integrated technologies and representative or prototype systems that help expedite Personal Protective Equipment (PPE) technology transition from the laboratory to operational use.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	26.113	26.138	30.945	-	30.945
Current President's Budget	25.204	23.184	17.459	-	17.459
Total Adjustments	-0.909	-2.954	-13.486	-	-13.486
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.909	-0.954			
• Adjustments to Budget Years	-	-	-13.486	-	-13.486

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 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603827A *I Soldier Systems - Advanced Development*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: S53: *Clothing And Equipment*		
Congressional Add: *Cold Weather Clothing*	4.000	-
Congressional Add Subtotals for Project: S53	4.000	-
Congressional Add Totals for all Projects	4.000	-

Change Summary Explanation

The decrease from PB21 to PB22 for FY 2022 is due to progression of technology into 6.5 RDTE.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) CF2 / *Integrated Soldier Systems Prototyping (SL CFT)*	

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
CF2: *Integrated Soldier Systems Prototyping (SL CFT)*	-	1.878	2.449	3.111	-	3.111	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Verify and maintain tools that provide Systems Engineering, Configuration Management, and Evaluations in a virtual and physical environment. Verify and maintain the Adaptive Squad Architecture (ASA) and Squad Performance Metrics (SPM) with emphasis on development of Interface Control Documents (ICDs), specifically to support the rapid integration of the Soldier Lethality Cross Functional Team (SL CFT) priority programs with all other dismounted Soldier equipment. Prototype capabilities for evaluation and integration. Execute evaluation of new measurements and methodologies from the S&T community, execute system level evaluation environments, and support Soldier system modeling. Funding for this project aligns with the Army's priorities in support of the National Defense Strategy and is a priority of the Soldier Lethality Cross Functional Team.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Integrated Soldier Systems Prototyping	1.878	2.449	3.111
Description: Verify and maintain tools that provide Systems Engineering, Configuration Management, and Evaluations in a virtual and physical environment. Verify and maintain the ASA and SPM with emphasis on development of ICDs, specifically to support the rapid integration of the Soldier Lethality Cross Functional Team (SL CFT) priority programs with all other equipment the dismounted Soldier will use. Provide prototyping of capabilities for evaluation and integration. Execute evaluation of new measurements and methodologies from the S&T community, execute system level evaluation environments, and support Soldier system modeling. Funding for this project aligns with the Army's priorities in support of the National Defense Strategy and is a priority of the Soldier Lethality Cross Functional Team. ***FY 2021 Plans:*** Accelerate the development of components, algorithms, and demonstrations in support of Squad as an Integrated Combat Platform ***FY 2022 Plans:*** Continue to develop components, algorithms, and demonstrations in support of Squad as an Integrated Combat Platform. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increase continue to support the development of the Adaptive Squad Architecture, Squad Performance Metrics and the Soldier Integration Facility.			
Accomplishments/Planned Programs Subtotals	1.878	2.449	3.111

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** CF2 / *Integrated Soldier Systems Prototyping (SL CFT)*

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
• CF3: *Integrated Soldier Systems (SL CFT)*	6.818	4.429	4.371	-	4.371	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Develop and validate the verification and operation of the ASA tools (Configuration Database (CD), Architectural Assessment Tool (AAT), Squad Performance Metrics (SPM)) under full and open competition. Attempt to utilize one vendor for, at a minimum, maintenance of the CD and AAT. Conduct evaluations to support the SPM, with the Government acting as the lead developer.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) CF2 / *Integrated Soldier Systems Prototyping (SL CFT)*	

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
FY 2022 SBIR/STTR Transfer	TBD	Various : Various	-	-		-		0.156		-		0.156	0.000	0.156	-
		Subtotal	-	-		-		0.156		-		0.156	0.000	0.156	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
Adaptive Squad Architecture (ASA) Squad Performance Metrics (SPM)	C/FFP	TBD : TBD	-	0.374	Jan 2020	0.931	Jan 2021	0.607	Jan 2022	-		0.607	Continuing	Continuing	Continuing
		Subtotal	-	0.374		0.931		0.607		-		0.607	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
ASA/SPM Test & Eval	C/FFP	TBD : TBD	-	1.504		1.518	Dec 2020	2.348	Dec 2021	-		2.348	Continuing	Continuing	Continuing
		Subtotal	-	1.504		1.518		2.348		-		2.348	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	-	1.878		2.449		3.111		-		3.111	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** CF2 / *Integrated Soldier Systems Prototyping (SL CFT)*

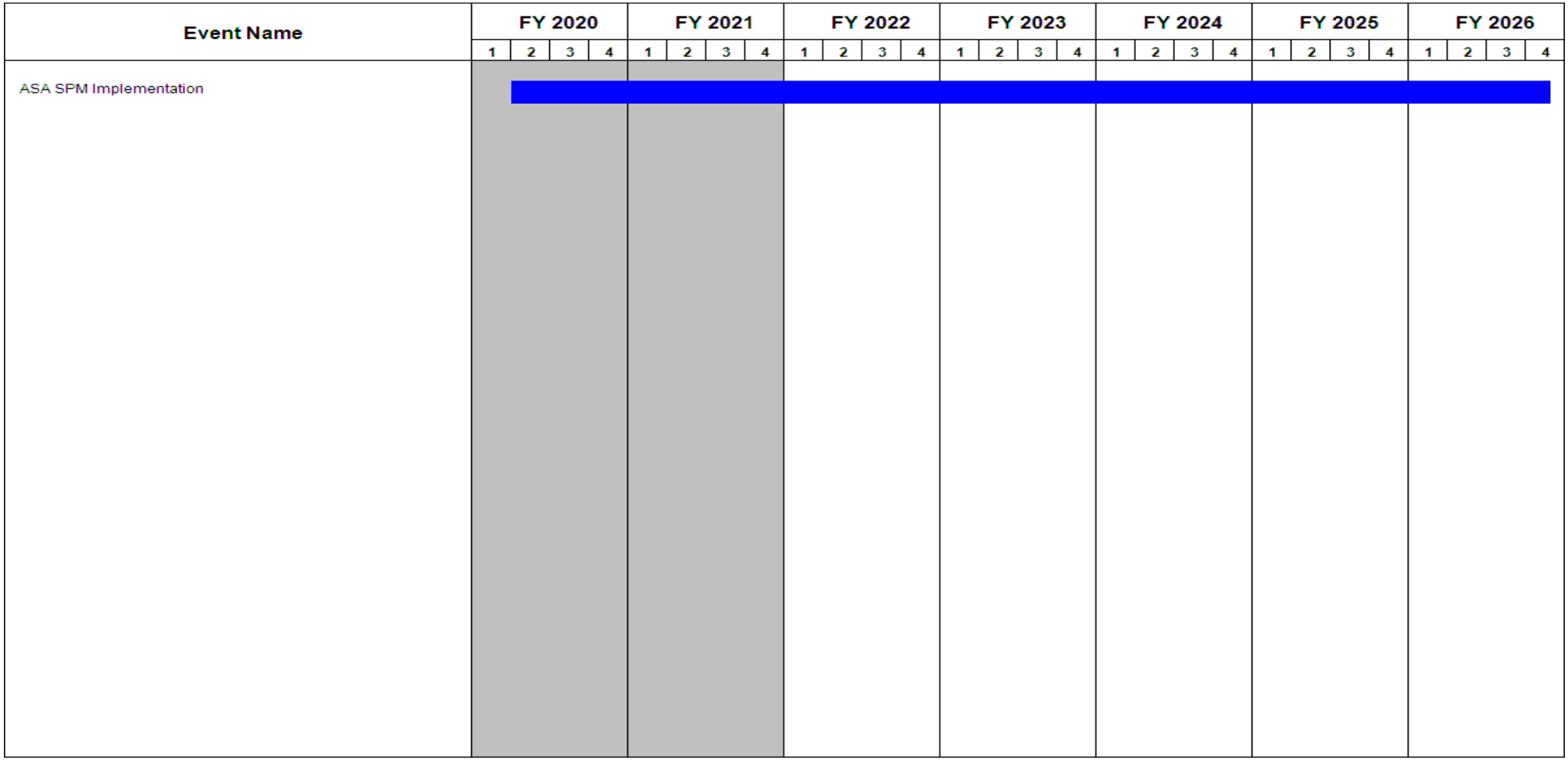


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** CF2 / *Integrated Soldier Systems Prototyping (SL CFT)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
ASA SPM Implementation	2	2020	4	2026

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) ET8 / *Personnel Airdrop System 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
ET8: *Personnel Airdrop System Development*	-	0.285	1.219	1.155	-	1.155	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding in this project supports the Army's Cross Functional Teams (CFT) initiatives. Project ET8, Personnel Airdrop System Development, improves Low Altitude and High Altitude personnel parachutes and associated equipment to include canopy improvement based on integration of new technology with the goal of enhancing the insertion capability and safety of the airborne Soldier and increasing the performance, reliability, and durability of personnel airdrop equipment. This project will transition capabilities from our Science and Technology partners to increase performance and safety of Soldier clothing and equipment. It will continue to support cross-service initiatives to improve commonality.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Personnel Airdrop System Development	0.285	1.219	1.155
Description: Improve Low Altitude and High Altitude personnel parachutes and associated equipment to include canopy improvements based on integration of new technology with the goal of enhancing the insertion and safety of the airborne soldier and increasing the performance, reliability, and durability of personnel airdrop equipment. ***FY 2021 Plans:*** Continue development and begin evaluation of Low Altitude Static Line Reserve Parachute Automatic Activation Devices. ***FY 2022 Plans:*** Continue evaluation of Low Altitude Static Line Reserve Parachute Automatic Activation Devices. Begin development and evaluation of Smart Universal Static Line Snap Hook (SUSH). ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding decrease nominal. No change in plans.			
Accomplishments/Planned Programs Subtotals	0.285	1.219	1.155

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
• ES9: *Advanced Tactical Parachute System*	6.345	1.761	2.705	-	2.705	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** ET8 / *Personnel Airdrop System 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
• MA7801: *Advanced Tactical Parachute System*	42.622	53.021	38.159	-	38.159	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Programs pursue technology maturation and prototype development, culminating in the transition of mature technologies (Technology Readiness Level (TRL) 6-7) to system development and demonstration (SDD).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) ET8 / *Personnel Airdrop System Development*	

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
Developmental Contracts	C/FFP	TBD : TBD	-	0.255		0.953		0.590		-		0.590	2.588	4.386	-
Engineering Support	MIPR	CCDC Natick, MA : various	0.556	-		-		0.101		-		0.101	0.827	1.484	-
		Subtotal	0.556	0.255		0.953		0.691		-		0.691	3.415	5.870	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
Program Management Support	Allot	PM SCIE : Belvoir	0.345	0.030		0.266		0.125		-		0.125	0.811	1.577	-
		Subtotal	0.345	0.030		0.266		0.125		-		0.125	0.811	1.577	N/A

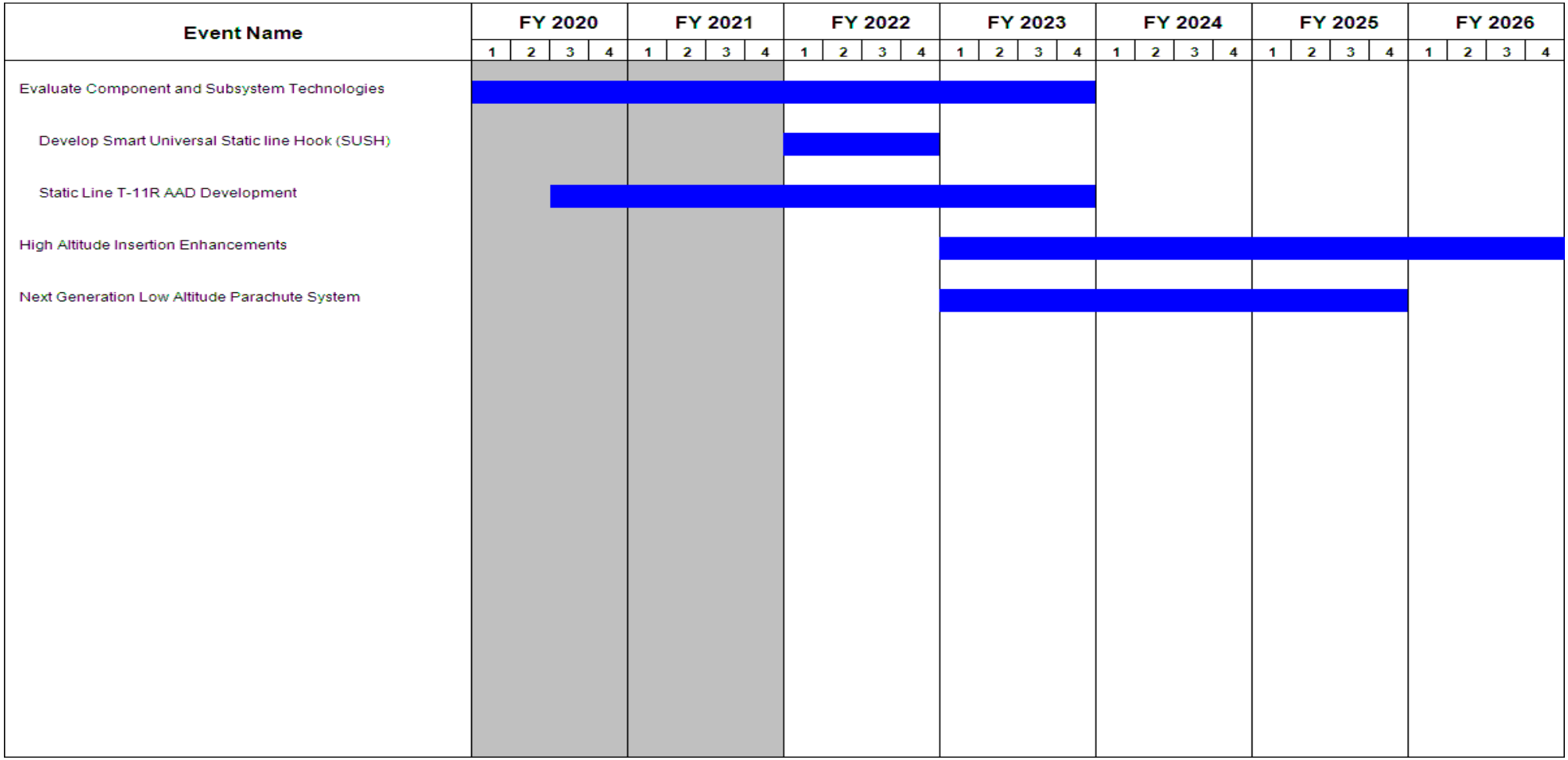
Test and Evaluation ($ in Millions)

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
Test and Evaluation	MIPR	TBD : TBD	0.635	-		-		0.339		-		0.339	0.782	1.756	-
		Subtotal	0.635	-		-		0.339		-		0.339	0.782	1.756	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	1.536	0.285		1.219		1.155		-		1.155	5.008	9.203	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** ET8 / *Personnel Airdrop System Development*



Note

High Altitude Insertion Enhancements includes the following: Glide Technology, Situational Awareness Aids, and GPS Denied Navigation Aid.

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** ET8 / *Personnel Airdrop System Development*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Evaluate Component and Subsystem Technologies	1	2019	4	2023
Develop Smart Universal Static line Hook (SUSH)	1	2022	4	2022
Static Line T-11R AAD Development	3	2020	4	2023
High Altitude Insertion Enhancements	1	2023	4	2027
Next Generation Low Altitude Parachute System	1	2023	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) S53 / *Clothing And Equipment*	

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
S53: *Clothing And Equipment*	-	6.365	1.742	2.004	-	2.004	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding in this project supports the Army's Cross Functional Teams (CFT) initiatives. This Project supports efforts to evaluate and integrate technologies and representative or prototype systems that help expedite Soldier Clothing and Individual Equipment technology transition from the laboratory to operational use. Efforts focus on proving out commonality across a broad spectrum of users to provide a modular, integrated uniform/clothing system from base layer to outer layer and head-to-toe. It funds efforts to transition new, improved technologies and domestically available fabrics with capabilities such as Flame Resistance (FR), moisture wicking, insect protection and innovative camouflage technologies to include female specific uniform items. This project also funds integration of fabrics for uniforms and equipment for use in a multitude of environment, like jungle, tropical and arctic. New technologies are indentified to monitor health and improve Soldier survivability, reduce weight, and improve affordability, mobility and comfort in combat and training/administrative environments. This program supports research and development to improve individual soldier equipment resulting in enhanced survivability on the battlefield in austere conditions. This project will transition capabilities from our Science and Technology partners to increase performance and safety of Soldier clothing and equipment. It will continue to support cross-service initiatives to increase commonality across the adaptive system architecture. This technology enables combat operations in a gender integrated fighting force.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Soldier Uniforms and Clothing	1.893	1.365	1.616
Description: Develop superior and sustainable integrated clothing and footwear for the Soldier in a rapidly changing global environment. ***FY 2021 Plans:*** Continue Flame Resistant clothing upgrades. Analyze Flame Resistant garment upgrades and review/improve testing protocols. Continue Signature Management efforts in Camouflage Flame Resistant clothing and equipment. Develop enhanced OCIE capabilities for Soldiers operating in cold and extreme cold environments. Continue testing novel materials and processes to improve clothing and equipment for extreme climates. Improve size standardization for all individually sized items. ***FY 2022 Plans:*** Funding supports the Secretary of the Army's directive to identify opportunities for commonality in OCIE across all Services (Army, Navy, Air Force, Marines, Coast Guard). Evaluate transitioned fabric and system designs that provide specific protection, enhanced camouflage and identification capability and improved comfort for inclusion in tactical and environmental clothing. Transition materials for incorporation into combat uniforms to enhance Identification Friend or Foe (IFF). Transition functional textiles to mitigate Ground Surveillance Radar (GSR) detection by opposing forces. Transition materials that will improve cooling/airflow for dismounted Soldiers and reduce thermal signature to further mitigate detection. Investigate and evaluate			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S53 / *Clothing And Equipment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
conductive textiles (fabric level). Transition materials that will protect against emerging microwave threats. Continue uniform, clothing, and footwear improvements with an emphasis on commonality. Analyze Flame Resistant garment upgrades and review/ improve testing protocols. Continue to develop novel solutions for parachutist clothing above 25,000 feet. Develop enhanced Organizational Clothing and Individual Equipment capabilities for Soldiers operating all climatic zones and environments. Continue testing novel materials and processes to improve clothing and equipment for all climates. Improve size standardization for all individually sized items. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increase from Fiscal Year (FY) 2021 to FY 2022 due to anticipated changes in requirements.			
Title: Individual Equipment ***Description:*** Develop and provide superior and sustainable integrated individual equipment for the Soldier in a rapidly changing global environment. ***FY 2021 Plans:*** Analyze Flame Resistant garment upgrades and review/improve testing protocols. Begin development of a Toxic Industrial Chemicals/Toxic Industrial Materials (TIC/TIM) filtration capability for the Individual Water Treatment Device (IWTD). Evaluate current load carriage equipment to asses its ability to support the modernization of current individual weapons and situational awareness capabilities. Optimize the capability of Load Carriage items to support modernization for weapons and tactical gear. ***FY 2022 Plans:*** Funding supports the Secretary of the Army's directive to identify opportunities for commonality in SCIE across all Services (Army, Navy, Air Force, Marines, Coast Guard). Evaluate new technology for the desalinization of salt water as part of the Individual Water Treatment Device program. Evaluate new technology to effectively camouflage and reduce thermal signature on exposed skin (face, neck, hands, etc) and technology to temporarily camouflage individual equipment. Evaluate materials and perform laboratory testing to support down-selection in support of Cold Weather Gear and Cold Weather Survival Blanket programs. Evaluate current load carriage equipment to asses its ability to support the modernization of current individual weapons and situational awareness capabilities. Continue to optimize the capability of Load Carriage items to support modernization for weapons and tactical gear. Develop individual over the snow mobility and protection equipment. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increase from FY 2021 to FY 2022 due to anticipated changes in requirements.	0.472	0.377	0.388
Accomplishments/Planned Programs Subtotals	2.365	1.742	2.004

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S53 / *Clothing And Equipment*

	FY 2020	FY 2021
Congressional Add: Cold Weather Clothing	4.000	-
FY 2020 Accomplishments: Cold Temperature Arctic Protection System (CTAPS)- Continued research and development on novel fabrics, fibers and technology that can be applied or used in garment end items to enhance Soldier environmental protection. This research included, but not limited to woven, knit, natural and man-made fibers, laminates, coatings insulated layers and end-items that will enhance soldier protection while allowing longer exposure times. Created a Start-guide application to assist the warfighter in the correct usage of CTAPS, which will improve functionality and fit for Soldiers. Investigated and Developed an insulated ensemble that can be used by high altitude parachutists. This ensemble will support extremely cold temperatures experienced at high altitudes, for example above 25,000 feet/-40 degrees Fahrenheit. Areas of protection include face, hands, arms and torso during long exposure times (>60min) while under canopy. Continued development of the process for the mercerization of wool for softer wool for next to skin applications. Conducted probability of detection study to determine how the currently issued overwhites perform against enemy sensors such as Short Wave Infrared and Thermal.		
Congressional Adds Subtotals	4.000	-

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
• S60: *Clothing & Equipment*	6.188	6.472	5.393	-	5.393	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Programs pursue technology maturation and prototype development, culminating in the transition of mature technologies (Technology Readiness Level (TRL) 6-7) to Systems Development and Demonstration. This Project continues to exercise competitively awarded contracts using best value source selection procedures.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) S53 / *Clothing And Equipment*	

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
Program Management Support	TBD	PM SCIE : Ft. Belvoir, VA	15.780	0.296		0.282		0.236		-		0.236	Continuing	Continuing	Continuing
		Subtotal	15.780	0.296		0.282		0.236		-		0.236	Continuing	Continuing	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
Engineering Support	MIPR	NSRDEC : Natick, MA	16.665	1.441		0.334		0.434		-		0.434	Continuing	Continuing	Continuing
Development Contracts	C/FFP	Various : Various	34.804	2.487		0.360		0.446		-		0.446	Continuing	Continuing	Continuing
		Subtotal	51.469	3.928		0.694		0.880		-		0.880	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
Program OfficeSupport Costs	MIPR	Natick,MA : Natick, MA	8.704	0.296		0.310		0.306		-		0.306	Continuing	Continuing	Continuing
		Subtotal	8.704	0.296		0.310		0.306		-		0.306	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
Testing Costs	MIPR	Various : Various	27.350	1.845		0.456		0.582		-		0.582	Continuing	Continuing	Continuing
		Subtotal	27.350	1.845		0.456		0.582		-		0.582	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) S53 / *Clothing And Equipment*	

	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	103.303	6.365		1.742		2.004		-		2.004	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S53 / *Clothing And Equipment*

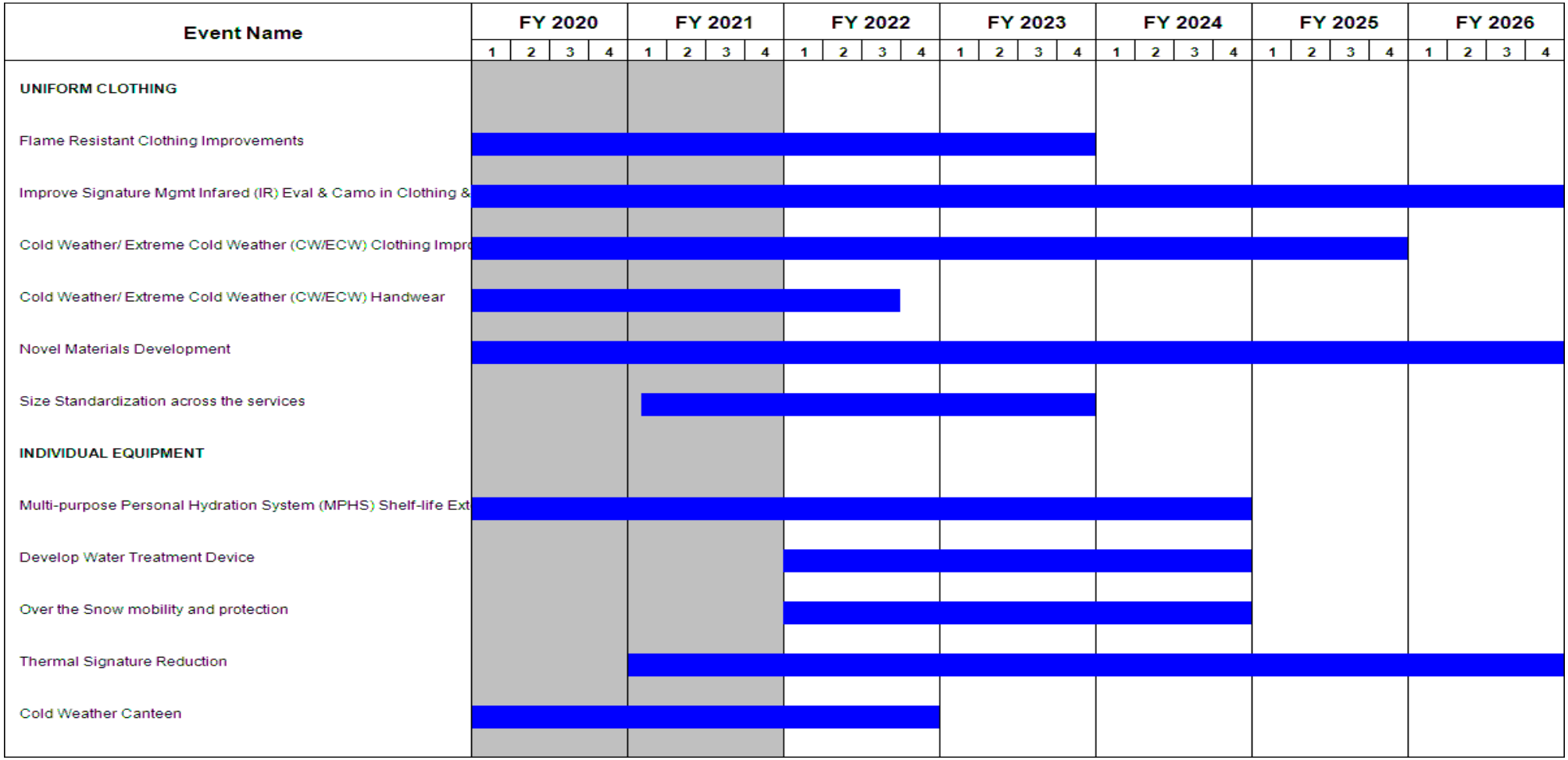


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S53 / *Clothing And Equipment*

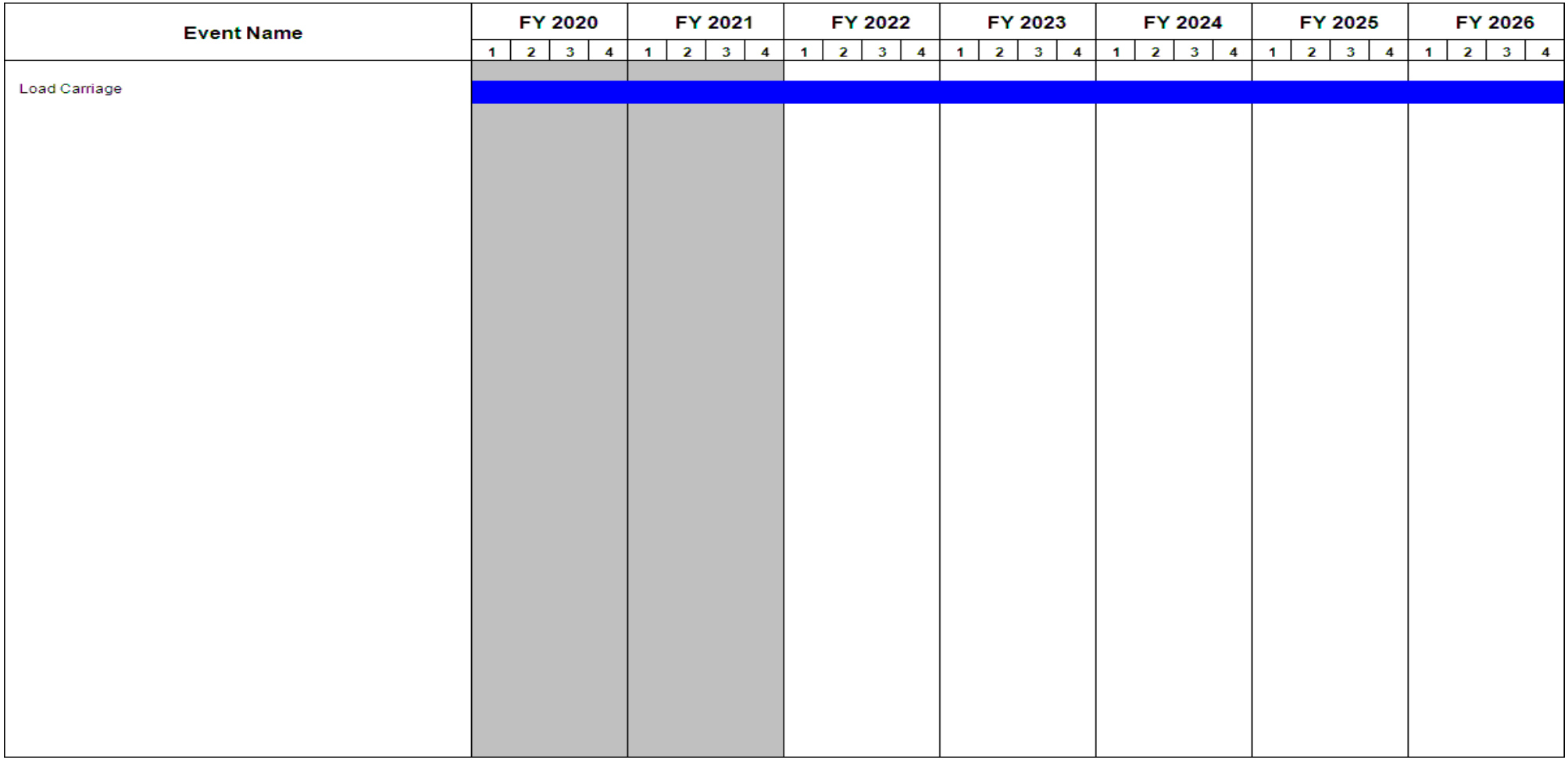


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S53 / *Clothing And Equipment*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
UNIFORM CLOTHING	1	2010	4	2025
Flame Resistant Clothing Improvements	1	2012	4	2023
Improve Signature Mgmt Infared (IR) Eval & Camo in Clothing & Equipment	2	2012	4	2026
Cold Weather/ Extreme Cold Weather (CW/ECW) Clothing Improvements	1	2019	4	2025
Cold Weather/ Extreme Cold Weather (CW/ECW) Handwear	1	2020	3	2022
Novel Materials Development	1	2020	4	2026
Size Standardization across the services	1	2021	4	2023
INDIVIDUAL EQUIPMENT	4	2015	4	2025
Multi-purpose Personal Hydration System (MPHS) Shelf-life Extension Evaluation	1	2019	4	2024
Develop Water Treatment Device	1	2022	4	2024
Over the Snow mobility and protection	1	2022	4	2024
Thermal Signature Reduction	1	2021	4	2026
Cold Weather Canteen	1	2020	4	2022
Load Carriage	1	2020	4	2026

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) S54 / *Small Arms Improvement*	

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
S54: *Small Arms Improvement*	-	13.956	15.495	6.911	-	6.911	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Small Arms Improvement Advanced Component Development and Prototypes (ACD&P) program provides funds to mature, demonstrate, test and evaluate emerging technology from Budget Activity (BA) 3 Program Element (PE) 0603607A Joint Service Small Arms Program (JSSAP) Project 627 Defense Advanced Research Projects Agency (DARPA), Department of Energy National Laboratories, Research Development & Engineering Centers (RDECs) and other domestic and foreign sources for small arms weapon systems and technology. Small Arms Improvement supports the Army Modernization priorities (Build a More Lethal Force) through enhancement of Joint Lethality in contested environments by minimizing and eliminating erosion of close combat capability relative to peer competitors in complex terrain as outlined in the National Defense Strategy (NDS). Small Arms weapon systems include weapons ranging up to 40 millimeter in caliber and recoilless rifles . Current and future efforts focus on improvements designed to enhance lethality, target acquisition and tracking, fire control, usability, training effectiveness and reliability of weapons to include ammunition when developing and/or evaluating standard and non-standard weapons. Focus areas include the maturing of technology through testing and evaluation of sub-system or system prototypes which demonstrates light weight materials, wear resistant/protective/anti-reflective coatings, observation/situational awareness improvements, human-systems integration, robotic armament capability, non-lethal capability, and equipment enhancements. Benefits include continuous improvements to small arms weapon systems, fire control equipment, optics, gun barrels, training devices, suppressors, component mounts, weapon mounts, ancillary Items and weapon/ammunition interface. Includes costs associated with efforts for integration and interface of products on Soldiers' head, body and weapons.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: New Weapon Systems	1.500	2.590	0.336
Description: Development of new small arms weapon systems. ***FY 2021 Plans:*** Next Generation Weapons will begin to support technology development for future Next Generation Weapon variants addressing operational force needs for increased lethality, increased probability of hit, increased solider acceptance, decreased signature, reduced recoil, reduced soldier aim error, and reduced engagement time. New weapons may be variants or enhancements of the NGSW-R and NGSW-AR or new weapon platforms to fulfill other roles such as machine guns, sniper rifles, and others. Externally Powered Weapon will complete maturation and upgrade of prototype system based on test and experimentation results. Continue with integration of intelligence/networking/remote operation capabilities. Will work with Maneuver and Maneuver Support Capabilities Development and Integration Directorate (M-CDID and MS-CDID) Futures and Concepts Centers regarding the Capability Development Document.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S54 / *Small Arms Improvement*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
New and Legacy Weapon Systems Evaluation and Assessments: Will perform initial and follow-on evaluations, assessments and integration of new weapons to include various new weapon system platforms. ***FY 2022 Plans:*** Advanced Technologies for Machine Gun: Will conduct market research, evaluations, trade studies and assessments for new Medium Machine Gun technologies to address capability needs. These technologies may include, but are not limited to, novel recoil mitigation, alternative lightweight materials, barrel technologies, suppressor technologies, mounting and fire control interfaces. New and Legacy Weapon Systems Evaluation and Assessments: Will continue to perform initial and follow-on evaluations, assessments and integration of new weapons to include various new weapon system platforms. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY 2022 Decrease due to Next Generation Squad Weapon progression into 6.5 RDTE.			
Title: Small Arms Weapon Systems Enhancements ***Description:*** Enhancements and development of small arms weapon systems. ***FY 2021 Plans:*** Next Generation Weapons/Enhancements will begin to support technology development for future Next Generation Weapon variants addressing operational force needs for increased lethality, increased probability of hit, increased solider acceptance, decreased signature, reduced recoil, reduced soldier aim error, and reduced engagement time. New weapons may be variants or enhancements of the Next Generation Squad Weapon Rifle (NGSW-R) and Next Generation Squad Automatic Rifle (NGSAR) or new weapon platforms to fulfill other roles such as machine guns, sniper rifles, and others. Small Business Innovative Research (SBIR) Enhancements: Continue future efforts to focus on improvements designed to enhance lethality, target acquisition and tracking, fire control, training effectiveness and reliability of weapons. Advanced Small Unit Technologies: Will investigate and demonstrate advanced technologies to achieve capabilities identified in the draft Tiered Capabilities Matrix (TCM) for the Precision Grenadier System (PGS) as well as potential use in future fire control and weapon modernization efforts. Enhanced System for Remote Weapon Stations & Kinetic Counter-UAS Weapons: Will evaluate the integration of an Inertial Navigation System (INS) to the CROWS to enhance the CROWS overall spatial environment awareness and improve accuracy	6.385	8.058	2.475

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
in slewing to targets provided from external remote sources. i.e. off-board radar systems in support of network lethality operation. Also software development and integration to include BLADE CUAS kinetic defeat functionality into the CROWS Baseline software. Prototyping and testing of an enhanced CROWS slip ring to incorporate full 360 degree operation of BLADE CUAS kinetic defeat functionality on CROWS and provide ability to integrate other sensors and effectors onto the CROWS platform. Non-Standard Weapons Assessments will conduct baseline testing of commercial weapon systems and perform capability analysis of unique weapon characteristics. Will utilize test information to conduct trade off assessments of Non-Developmental Item solutions for pending requirements as well as establish safety parameters for the training mission of Regionally Aligned Forces and other non Department of Defense (DOD) customers. Will establish a sustainment strategy for long term support of weapons procured to support the training of Regionally Aligned Forces and Security Force Assistance Brigades in foreign weapons. Will conduct safety assessments of limited distribution materiel systems considered for Table of Organization and Equipment (TOE) and Common Table of Allowances (CTA) approvals. Will conduct market research of commercially available weapon systems. Picatinny Smart Rail System Controller and Remote will integrate different components together and then demonstrate its ability to control devices and manage data traffic. The completion of this effort will provide a path for future capability growth to systems such as Next Generation Squad Weapon Fire Control, Fire Control for M3E1, and Family of Weapon Sights ? Individual (FWS-I). This effort will be critical in ensuring we don?t have duplicative hardware on weapon systems as well as ensuring the devices on the weapons can properly communicate with each other. Power and Data Integration onto Open Architecture Accessory Rails will integrate power and data capability onto a Modern Lock (M-Lok) style rail. This will have potential applicability to Next Generation Squad Weapon-Rifle/Automatic Rifle, Precision Sniper Rifle, and Next Generation Medium/Heavy Machine Gun. Current and Legacy Weapon Improvements will assess and evaluate selected capabilities and improvements for all current and legacy weapon systems. ***FY 2022 Plans:*** Small Business Innovative Research (SBIR) Enhancements: Will continue future efforts to focus on improvements designed to enhance lethality, target acquisition and tracking, fire control, training effectiveness and reliability of weapons. Next Generation Weapons/Enhancements continue to support technology development for future Next Generation Weapon variants addressing operational force needs for increased lethality, increased probability of hit, increased soldier acceptance, decreased signature, reduced recoil, reduced soldier aim error, and reduced engagement time. New weapons may be variants or			

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
enhancements of the Next Generation Squad Weapon Rifle (NGSW-R) and Next Generation Squad Automatic Rifle (NGSAR) or new weapon platforms to fulfill other roles such as machine guns, sniper rifles, and others. Advanced Small Unit Technologies: Will continue to investigate and demonstrate advanced technologies to achieve capabilities identified as a capability gap for targets in defilade in the draft Tiered Capabilities Matrix (TCM) as well as potential use in future fire control and weapon modernization efforts. Enhanced System for Remote Weapon Stations & Kinetic Counter-UAS Weapons: Will evaluate the integration of an Inertial Navigation System (INS) to the CROWS to enhance the CROWS overall spatial environment awareness and improve accuracy in slewing to targets provided from external remote sources. i.e. off-board radar systems in support of network lethality operation. Also software development and integration to include BLADE CUAS kinetic defeat functionality into the CROWS Baseline software. Prototyping and testing of an enhanced CROWS slip ring to incorporate full 360 degree operation of BLADE CUAS kinetic defeat functionality on CROWS and provide ability to integrate other sensors and effectors onto the CROWS platform. Non-Standard Weapons Assessments: Will continue to conduct baseline testing of commercial weapon systems and perform capability analysis of unique weapon characteristics. Continue to utilize test information to conduct trade off assessments of Non-Developmental Item solutions for pending requirements as well as establish safety parameters for the training mission of Regionally Aligned Forces, Security Force Assistance Brigades, and other Department of Defense (DOD) customers. Will continue to establish a sustainment strategy for long term support of weapons procured to support the Regionally Aligned Forces and Security Force Assistance Brigade training missions. Will conduct safety assessments of limited distribution materiel systems considered for Table of Organization and Equipment (TOE) and Common Table of Allowances (CTA) approvals. Continue to conduct market research of commercially available weapon systems. Picatinny Smart Rail System Controller and Remote will continue to integrate different components together and then demonstrate its ability to control devices and manage data traffic. The completion of this effort will provide a path for future capability growth to systems such as, but not limited to Next Generation Squad Weapon Fire Control, Fire Control for M3E1, and Family of Weapon Sights ? Individual (FWS-I). This effort will be critical in ensuring we don?t have duplicative hardware on weapon systems as well as ensuring the devices on the weapons can properly communicate with each other. Power and Data Integration onto Open Architecture Accessory Rails will continue to integrate power and data capability in a negative space rail system. This will have potential applicability to systems such as, but not limited to Next Generation Squad Weapon-Rifle/Automatic Rifle, Precision Sniper Rifle, and Next Generation Medium/Heavy Machine Gun.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S54 / *Small Arms Improvement*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Current and Legacy Weapon Improvements will continue to assess and evaluate selected capabilities and improvements for all current and legacy weapon systems. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY 2022 Decrease due to technology progression into 6.5 RDTE.			
Title: Ammunition ***Description:*** Small arms ammunition improvement.	0.100	-	-
Title: Combat Optics ***Description:*** Improvement of small arms combat optics. ***FY 2021 Plans:*** Advanced Combat Optics (formerly called Next Generation Optics): Will integrate current and emerging target acquisition component technologies into binoculars and variable magnification spotting scopes. Will evaluate state of the art advances in optical component technologies for inclusion in future combat optic products. ***FY 2022 Plans:*** Advanced Combat Optics (formerly called Next Generation Optics): Will continue to integrate current and emerging target acquisition component technologies such as, but not limited to rifle optics, binoculars and variable magnification spotting scopes. Will continue to evaluate state of the art advances in optical component technologies for inclusion in future combat optic products. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY 2022 Decrease due to technology progression into 6.5 RDTE.	0.100	0.100	0.050
Title: Fire Control ***Description:*** Small arms fire control. ***FY 2021 Plans:*** Next Generation Fire Control Technology Enhancements will support technology integration with Next Generation Weapons addressing soldier aim error, engagement time, probability of hit, situational awareness, lethality, and soldier acceptance. Iterative prototyping will be utilized to develop component technologies to support future variants of the Next Generation Squad Weapon. Technology may include enhanced camera based technology, target tracking, automatic target detection, increased networked lethality, reduced signature, increased user acceptance, along with other emerging weapon, ammunition, and fire control technologies that will increase the lethality of the next generation squad weapons.	5.821	4.000	4.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S54 / *Small Arms Improvement*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Small Arms Fire Control Enhancements / Wind Sensing will research test and evaluation efforts on laser based wind sensors, proof-of-concept devices, and other optical designs for prototypes that incorporate fire control sensors and ballistic solver software and integration of sensor input and communication with ammunition for all small arms weapon platforms. ***FY 2022 Plans:*** Next Generation and Fire Control Technology Enhancements: Will continue to support technology integration with Next Generation Weapons addressing soldier aim error, engagement time, probability of hit, situational awareness, lethality, and soldier acceptance. Iterative prototyping will be utilized to develop component technologies to support future variants of the Next Generation Squad Weapon. Technology may include enhanced camera based technology, target tracking, automatic target detection, increased networked lethality, reduced signature, increased user acceptance, along with other emerging weapon, ammunition, and fire control technologies that will increase the lethality of the next generation squad weapons. Small Arms Fire Control Enhancements / Wind Sensing: Will continue research test and evaluation efforts on laser based wind sensors, proof-of-concept devices, and other optical designs for prototypes that incorporate fire control sensors and ballistic solver software and integration of sensor input and communication with ammunition for all small arms weapon platforms. The purpose of this effort is to evaluate downrange wind sensing technologies for incorporation into future fire control systems. Downrange wind sensing is the largest unmeasured variable remaining in ballistic calculation.			
Title: Research and Analysis ***Description:*** Research and analysis of small arms. ***FY 2021 Plans:*** Will conduct Market Research and Benefit Analysis of 360 degree situational awareness, active stabilization, advanced kinetic weapons, low flying drone engagement, and other small arms research to include new technologies in emerging robotic and aerial armaments. ***FY 2022 Plans:*** Plan to continue Market Research and Benefit Analysis of 360 degree situational awareness, active stabilization, advanced kinetic weapons, low flying drone engagement, and other small arms research to include new technologies in emerging robotic and aerial armaments. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY 2022 Decrease due to technology progression into 6.5 RDTE.	0.050	0.747	0.050
Accomplishments/Planned Programs Subtotals	13.956	15.495	6.911

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S54 / *Small Arms Improvement*

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
• EW4: *Crew Served Weapons Engineering Development*	3.982	9.608	2.443	-	2.443	-	-	-	-	-	-
• FF2: *Small Arms Fire Control*	14.095	9.782	11.107	-	11.107	-	-	-	-	-	-
• FI2: *Lightweight 30mm Cannon*	1.327	-	-	-	-	-	-	-	-	-	-
• FM4: *Next Generation Squad Weapons*	31.719	32.001	13.599	-	13.599	-	-	-	-	-	-
• S63: *Individual Weapons Engineering Development*	2.586	4.214	3.651	-	3.651	-	-	-	-	-	-
• FL4: *Small Caliber Ammo for Next Gen Squad Weapons*	17.432	26.483	28.372	-	28.372	-	-	-	-	-	-
• E06002: *NEXT GENERATION COMBAT ROUND*	-	11.988	65.056	-	65.056	-	-	-	-	-	-

Remarks

In support of Small Arms Initial Capability and Capability Development Requirements, advanced technology of small arms weapon systems is transitioned from Joint Service Small Arms Program (JSSAP), Project 627, Program Element 0603607A, (Budget Activity 3) to Small Arms Improvement, Project S54, Program Element 0603827A, (Budget Activity 4). After the technology is demonstrated and/or validated, the program transitions to Infantry Support Weapons, Program Element 0604601A, (Budget Activity 5) for engineering and manufacturing development.

In FY 2022, funding in the amount of $0.366 million for manpower was realigned to Operations and Maintenance. Program support costs have been accurately updated to reflect the realignments."

D. Acquisition Strategy

Primary strategy is to study, develop, demonstrate and evaluate emerging technologies that ultimately lead to modernizing, enhancing and/or improving the small arms inventory.

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
Program Management	Allot	PM Soldier Weapons, : Picatinny Arsenal	7.486	0.400	Mar 2020	0.560	Mar 2021	0.280	Mar 2022	-		0.280	Continuing	Continuing	Continuing
FY2019 SBIR / STTR Transfer	FFRDC	Army Budget Office : Pentagon, Washington DC	0.282	-		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	7.768	0.400		0.560		0.280		-		0.280	Continuing	Continuing	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
Hardware Development	MIPR	Army Research Development Engineering Centers, : Multiple	37.403	9.655	Mar 2020	9.918	Mar 2021	4.461	Mar 2022	-		4.461	Continuing	Continuing	Continuing
		Subtotal	37.403	9.655		9.918		4.461		-		4.461	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
Engineering	MIPR	Army Research Development Engineering Centers, : Multiple	28.213	2.000	Mar 2020	2.240	Mar 2021	0.980	Mar 2022	-		0.980	Continuing	Continuing	Continuing
		Subtotal	28.213	2.000		2.240		0.980		-		0.980	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) S54 / *Small Arms Improvement*	

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 Testing	MIPR	Army Test and Evaluation Centers, : Multiple	16.697	1.901	Mar 2020	2.777	Mar 2021	1.190	Mar 2022	-		1.190	Continuing	Continuing	Continuing
		Subtotal	16.697	1.901		2.777		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	90.081	13.956		15.495		6.911		-		6.911	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S54 / *Small Arms Improvement*

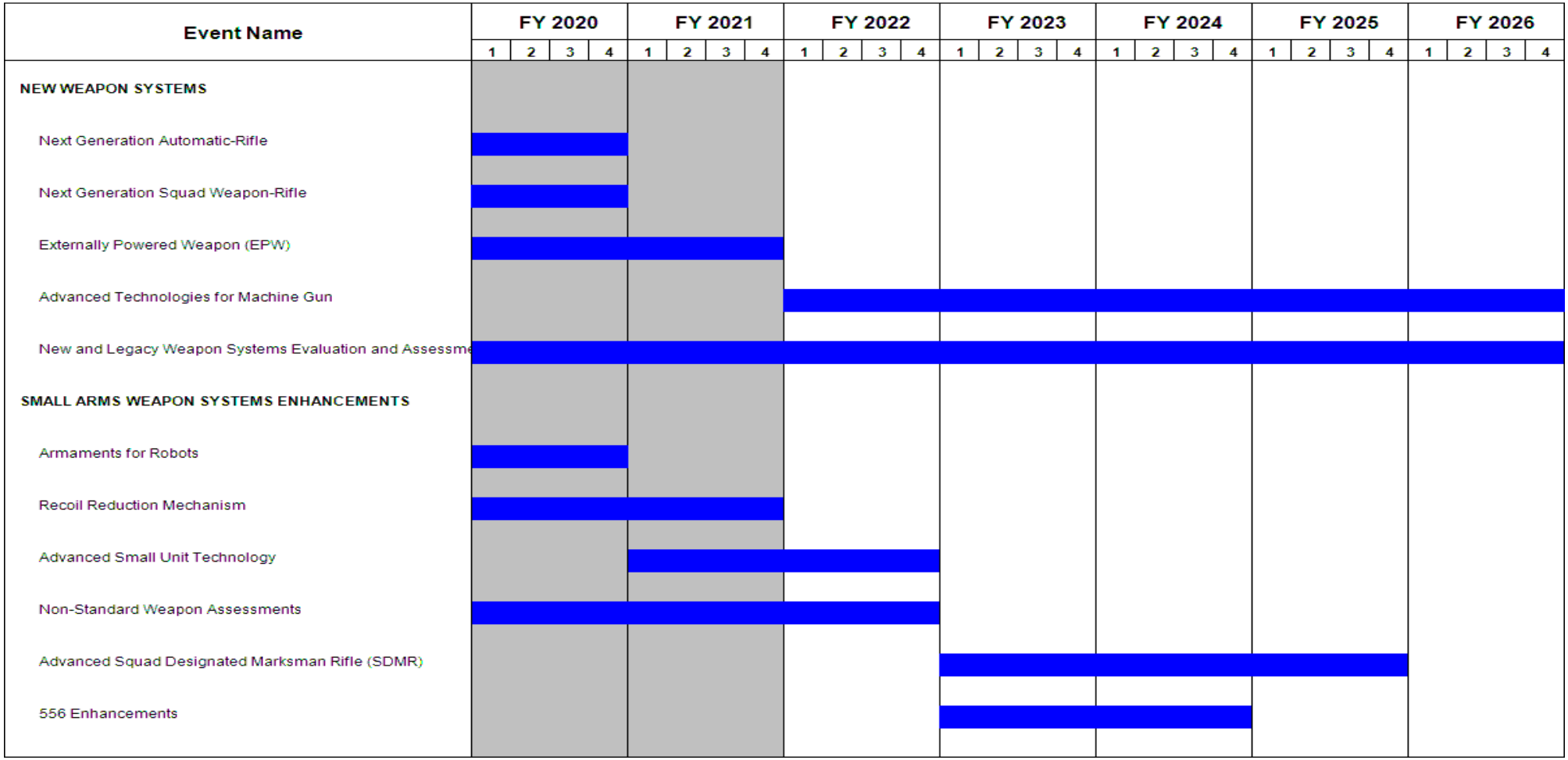

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S54 / *Small Arms Improvement*

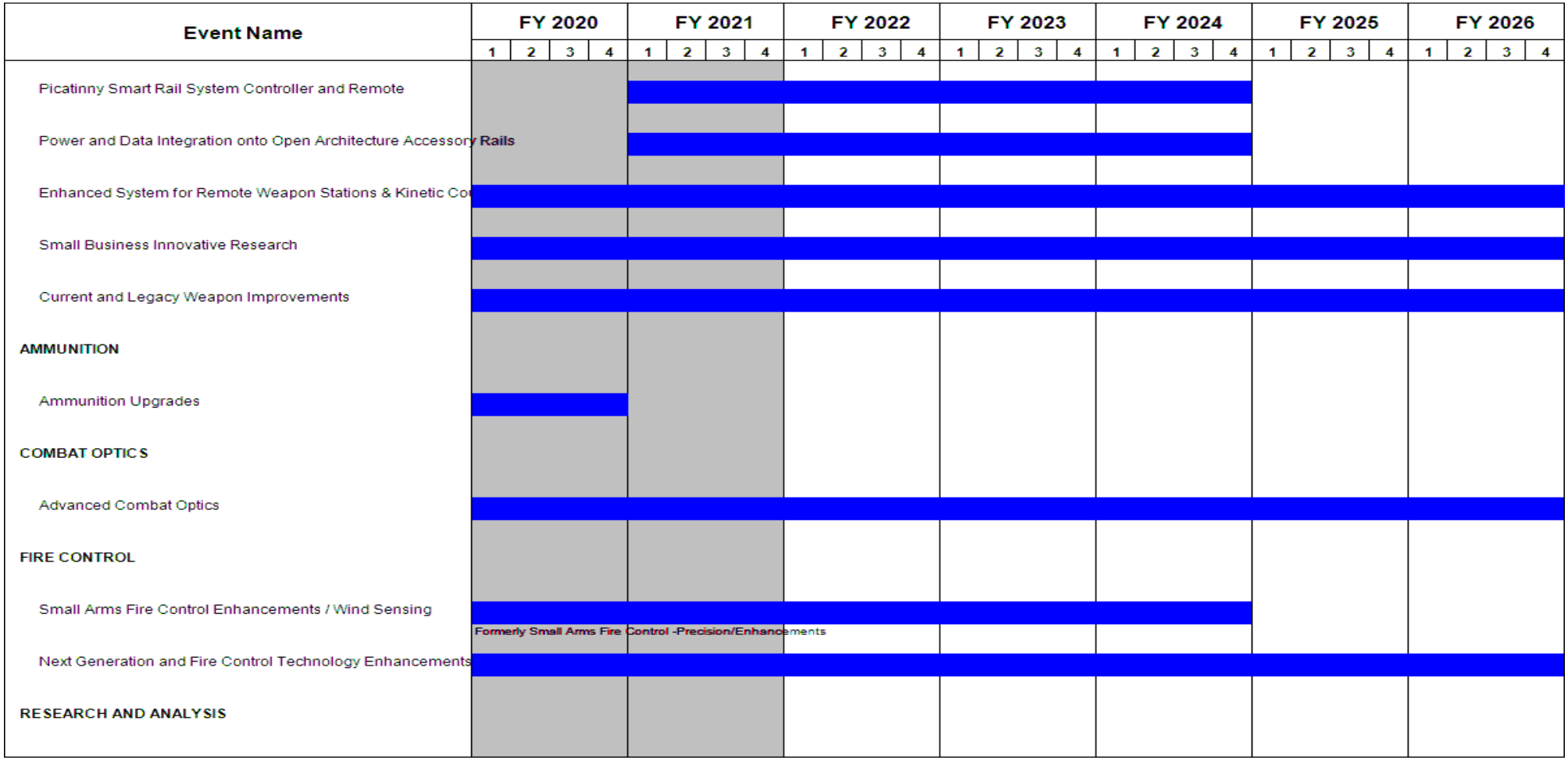

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S54 / *Small Arms Improvement*

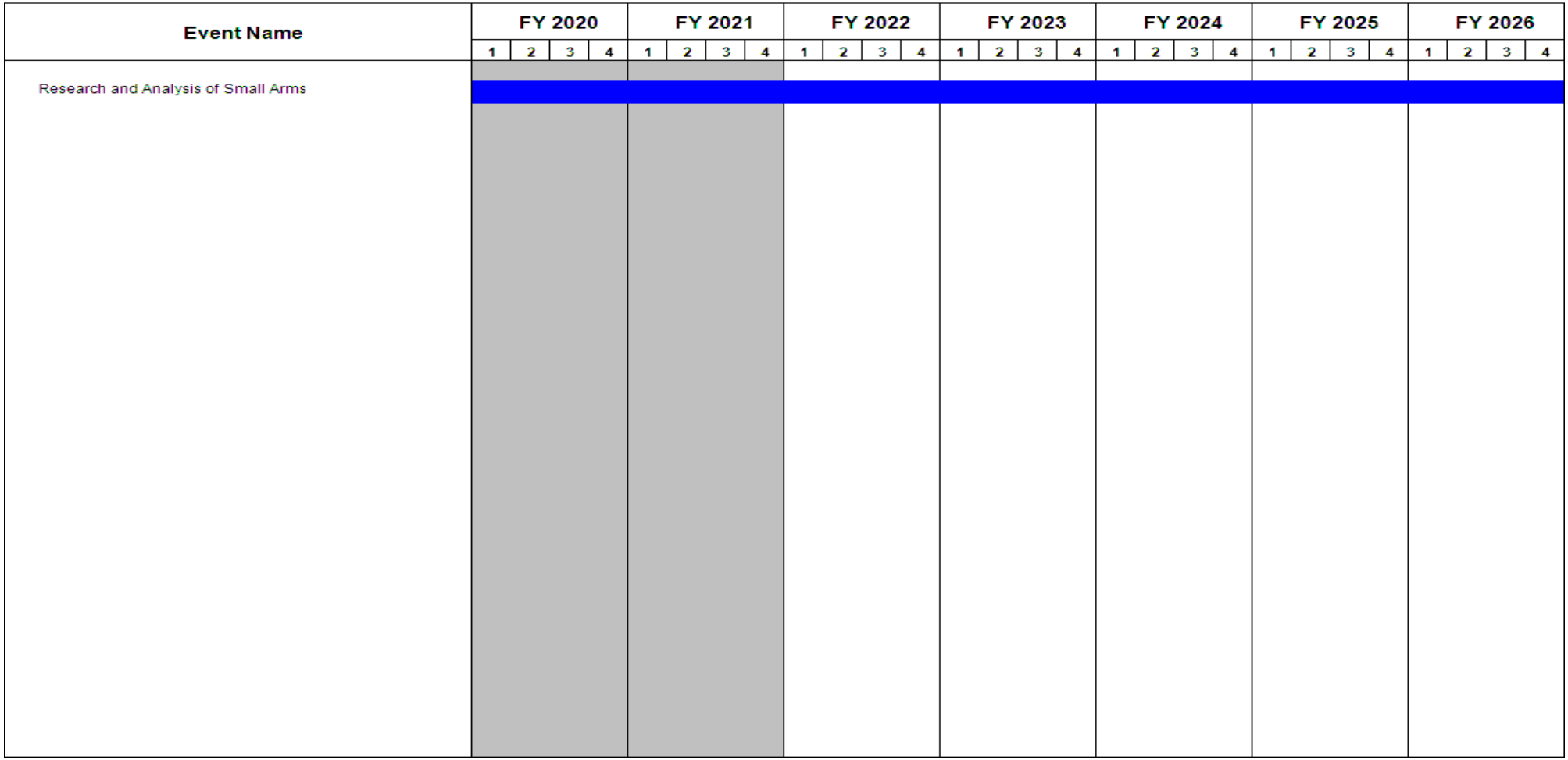

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** S54 / *Small Arms Improvement*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NEW WEAPON SYSTEMS	1	2008	4	2026
Next Generation Automatic-Rifle	1	2014	4	2020
Next Generation Squad Weapon-Rifle	2	2019	4	2020
Externally Powered Weapon (EPW)	1	2019	4	2021
Advanced Technologies for Machine Gun	1	2022	4	2027
New and Legacy Weapon Systems Evaluation and Assessments	1	2020	4	2026
SMALL ARMS WEAPON SYSTEMS ENHANCEMENTS	1	2008	4	2026
Armaments for Robots	1	2020	4	2020
Recoil Reduction Mechanism	1	2020	4	2021
Advanced Small Unit Technology	1	2021	4	2022
Non-Standard Weapon Assessments	1	2020	4	2022
Advanced Squad Designated Marksman Rifle (SDMR)	1	2023	4	2025
556 Enhancements	1	2023	4	2024
Picatinny Smart Rail System Controller and Remote	1	2021	4	2024
Power and Data Integration onto Open Architecture Accessory Rails	1	2021	4	2024
Enhanced System for Remote Weapon Stations & Kinetic Counter-UAS Weapons	1	2020	4	2027
Small Business Innovative Research	1	2015	4	2026
Current and Legacy Weapon Improvements	1	2020	4	2026
AMMUNITION	1	2016	4	2020
Ammunition Upgrades	1	2016	4	2020
COMBAT OPTICS	1	2008	4	2026
Advanced Combat Optics	1	2020	4	2026

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
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	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FIRE CONTROL	1	2008	4	2026
Small Arms Fire Control Enhancements / Wind Sensing	1	2017	4	2024
Next Generation and Fire Control Technology Enhancements	1	2019	4	2026
RESEARCH AND ANALYSIS	1	2012	4	2026
Research and Analysis of Small Arms	1	2015	4	2026

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) VS4 / *Soldier Protective Equipment*	

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
VS4: *Soldier Protective Equipment*	-	2.720	2.279	4.278	-	4.278	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding in this project supports the Army's Cross Functional Teams' (CFT) initiatives. This Project supports efforts to evaluate integrated technologies and representative or prototype systems that help expedite Personal Protective Equipment (PPE) technology transition from the laboratory to operational use. This project will transition capabilities from our Science and Technology partners to increase performance and safety of Soldier clothing and protective equipment. It will continue to support cross-service initiatives to increase commonality.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Soldier Protective Equipment (SPE)	2.720	2.279	4.278

Description: Effort to increase Warfighter survivability and mobility by optimizing Soldier protection while effectively managing all life cycle aspects of Personal Protective Equipment (PPE).

FY 2021 Plans:

Project will continue Technology/Maturation and Risk Reduction efforts across the PPE portfolio: Torso and Extremity Protection (TEP); Vital Torso Protection (VTP); Integrated Head Protection System (IHPS); Next Generation (NG) IHPS, and Military Combat Eye Protection (MCEP) to support Soldier Protection System (SPS) requirements for lighter-weight ballistic materials with improved performance and manufacturing/ testing process improvements. If new materials are ready, the Product Management Office will evaluate upgrades and inform stakeholders of new operational capabilities and then incorporate them into SPS designs as appropriate. Continue efforts to characterize and increase durability, shelf life, and functional service life of existing personal protective systems at the subsystem/component level. Product office will Continue the development of improved measurement processes for existing systems and emerging requirements.

FY 2022 Plans:

Project will continue Technology/Maturation and Risk Reduction efforts across the PPE portfolio: Torso and Extremity Protection (TEP); Vital Torso Protection (VTP); Integrated Head Protection System (IHPS); Next Generation (NG) IHPS, and Military Protective Eyewear Systems to support SPS requirements for lighter-weight ballistic materials with improved performance and manufacturing/ testing process improvements. When new materials are ready, the Product Management Office will evaluate upgrades and inform stakeholders of new operational capabilities and then incorporate them into SPS designs as appropriate. Continue efforts to characterize and increase durability, shelf life, and functional service life of existing personal protective systems at the subsystem/component level. Continue the development of improved measurement processes for existing systems and

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** VS4 / *Soldier Protective Equipment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
emerging requirements. Continue Head Protection efforts to pursue Durable Anti-fog Coatings for Combat Eye Protection and Transparent Surfaces, Lightweight Composite Hybrid Rifle Helmet, and Next Generation Blunt Impact Test Methods supporting the Secretary of the Army's directive to identify opportunities for commonality across all Services (Army, Navy, Air Force, Marines, and Coast Guard). Product office will begin efforts to update gender geometric anatomy into models, such as Operational Requirements-based Casualty Assessment, to inform designs, sizing, and variations development and improvements to support Department of Defense (DoD) Soldier protection needs. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding change in Soldier Protective Equipment portfolio is due to anticipated requirement changes in Fiscal (FY) 2021 and FY 2022 that result in an increase level of effort to address emerging threats.			
Accomplishments/Planned Programs Subtotals	2.720	2.279	4.278

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
• VS5: *Soldier Protective Equipment*	6.355	6.478	9.172	-	9.172	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Programs pursue technology transition from science and technology, maturation, and prototype development, culminating in the transition of mature technologies (Technology Readiness Levels (TRL) 6-7) to Engineering and Manufacturing Development. This Project continues to exercise competitively awarded contracts using best value source selection procedures where applicable.

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
Program Management Support	Allot	PM SSV Various : Various	3.146	0.300		0.482		0.954		-		0.954	Continuing	Continuing	Continuing
		Subtotal	3.146	0.300		0.482		0.954		-		0.954	Continuing	Continuing	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
Dev/Sys Engineering Spt	MIPR	Various : Various	8.902	0.750		0.300		0.500		-		0.500	Continuing	Continuing	Continuing
Dev/Integ Contracts	TBD	Various : Various	77.777	1.184		1.147		2.190		-		2.190	Continuing	Continuing	Continuing
		Subtotal	86.679	1.934		1.447		2.690		-		2.690	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
Misc Support Costs	MIPR	Various : Various	5.421	-		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	5.421	-		-		-		-		-	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
Ballistic/Blast/Nonballistic Testing	MIPR	Various : Various	18.695	0.486		0.350		0.634		-		0.634	Continuing	Continuing	Continuing
		Subtotal	18.695	0.486		0.350		0.634		-		0.634	Continuing	Continuing	N/A

	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 Cost Totals	113.941	2.720		2.279		4.278		-		4.278	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603827A / *Soldier Systems - Advanced Development*	Project (Number/Name) VS4 / *Soldier Protective Equipment*	

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** VS4 / *Soldier Protective Equipment*

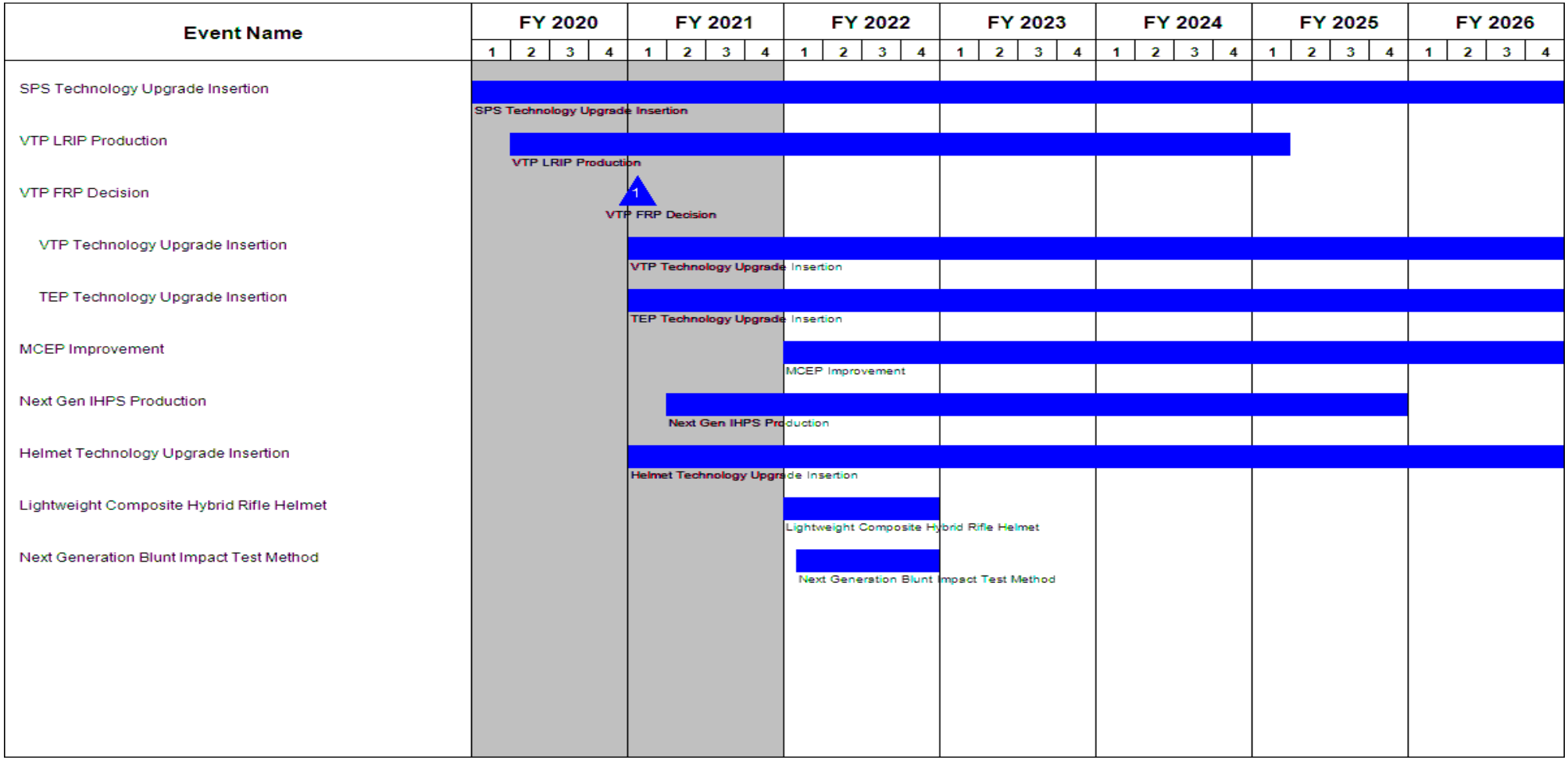

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603827A / *Soldier Systems - Advanced Development*	**Project (Number/Name)** VS4 / *Soldier Protective Equipment*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SPS Technology Upgrade Insertion	1	2018	4	2026
VTP LRIP Production	1	2020	1	2025
VTP FRP Decision	1	2021	1	2021
VTP Technology Upgrade Insertion	1	2021	4	2026
TEP Technology Upgrade Insertion	1	2021	4	2026
MCEP Improvement	1	2022	4	2026
Next Gen IHPS Production	2	2021	4	2025
Helmet Technology Upgrade Insertion	1	2021	4	2026
Lightweight Composite Hybrid Rifle Helmet	1	2022	4	2022
Next Generation Blunt Impact Test Method	1	2022	4	2022