Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army											Date: May 2021	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*							
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	-	4.606	6.296	6.454	-	6.454	-	-	-	-	-	-
EY2: *Integrated Soldier Power Data System - Core*	-	1.142	3.911	4.322	-	4.322	-	-	-	-	-	-
EY4: *Universal Battery Charger*	-	1.137	0.963	0.987	-	0.987	-	-	-	-	-	-
FK4: *Soldier Borne Sensor (SBS)*	-	1.201	1.422	1.145	-	1.145	-	-	-	-	-	-
S65: *Platoon Power Generator*	-	1.126	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program element contains four active projects:

Project EY2 - Integrated Soldier Power Data System - Core: Supports development of the Integrated Soldier Power and Data Hub, Conformal Wearable Battery (CWB), and Squad Power Manager (SPM). These capabilities fill the power and energy requirements for critical Integrated Tactical Network Soldier worn systems to include tactical leader radios, Nett Warrior, and the Integrated Visual Augmentation System (IVAS). These capabilities are critical enablers in closing the power and energy gaps created by the increase in mission essential, Soldier portable power consumers, GPS systems, weapon sensors, radios, and other devices.

Project EY4 - Universal Battery Charger (UBC): Supports development of the UBC and UBC-L chargers. These capabilities fill the power and energy requirements for critical Integrated Tactical Network Soldier worn systems to include tactical leader radios, Nett Warrior, and the Integrated Visual Augmentation System (IVAS). These capabilities are critical enablers in closing the power and energy gaps created by the increase in mission essential, Soldier portable power consumers, GPS systems, weapon sensors, radios, and other devices by providing a family of charging solutions capable of providing power to handheld communication devices and military issued batteries.

Project FK4 - Soldier Borne Sensor (SBS): The SBS is a small unmanned aerial vehicle. The SBS provides a near term solution to three Army War-fighting Challenges at the Infantry Squad level: develop situational understanding, conduct air-ground reconnaissance, and conduct joint combined arms maneuver. The system is simple to deploy and use to support the squad leader's decision-making process. The system allows Soldiers to obtain local situational awareness and understanding of their immediate surroundings while remaining in covered or concealed positions. The SBS will be procured in multiple Tranches/increments. RDTE funding will be used to develop, integrate, and qualify additional capabilities for each tranche. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy. This SBS project is not a new start: funding from this project transferred from PE: 06005053A / Grounds Robotics project 655053.FB8.

S65 - Soldier Power: Soldier Power enables dismounted Soldiers to efficiently execute missions for longer durations by reducing the logistical burden associated with fuel and primary (disposable) batteries. Platoon Power Generation (PPG) - PM E2S2: This project supports the demonstration and development of a PPG. The Small Unit Power (SUP) PPG (1kW Generator) will provide small units with sufficient portable power to sustain Modified Table of Organizational Equipment (MTOE)

unit power demand in support of 48 to 72 hour missions using a common logistical fuel (JP-8). It will be used for charging batteries and powering various types of Army communications and electronics devices.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	4.803	6.534	7.611	-	7.611
Current President's Budget	4.606	6.296	6.454	-	6.454
Total Adjustments	-0.197	-0.238	-1.157	-	-1.157
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.197	-0.238			
• Adjustments to Budget Years	-	-	-1.157	-	-1.157

Change Summary Explanation

The total decrease of $1.139 million, is cumulated across the associated projects. The decrease resulted from a reduction in inventory, and scaled back fuel requirement for the FK4 project. The decrease also, resulted from an across the board Army's decision to decrements project EY2, EY4, and FK4. Funding was reprioritized to support higher priority.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) EY2 / *Integrated Soldier Power Data System - Core*	

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
EY2: *Integrated Soldier Power Data System - Core*	-	1.142	3.911	4.322	-	4.322	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

ISPDS-C includes power and data managing/distribution devices, cutting-edge energy storage solutions, and power scavenging devices. These capabilities fill the power and energy gaps created by the increase in mission essential, Soldier portable power consumers, such as heads up displays, situational awareness displays, GPS systems, weapon sensors, radios, and other devices. This RDT&E line develops power sources and power management solutions for the individual Soldier and squad for use in all operating environments. ISPDS-C systems will enable dismounted Soldiers to execute their missions more efficiently, for longer durations and with fewer battery resupplies while reducing the logistical and physical burden associated with moving fuel and batteries, and allow dismounted Soldiers to operate independently for longer missions.

Justification: FY22 RDT&E develops and evaluates capabilities to fill the power and energy requirements for critical Integrated Tactical Network Soldier worn systems to include tactical leader radios, assured position navigation and timing, Next Generation Squad Weapon, Nett Warrior, and the Integrated Visual Augmentation System (IVAS).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Test and Evaluation	-	0.651	1.020
Description: Test and validate power solutions from new battery chemistries, fuel cells, and scavenging devices and integrating the solutions using common interfaces with the Power and Data Hub and Squad Power Manager. ***FY 2021 Plans:*** Develop and integrate power distribution technology, characterize Soldier peripherals, improve current battery chemistries, test and validate new battery chemistries, and evaluate ISW solutions. ***FY 2022 Plans:*** Continue to develop and integrate power distribution technology, characterize Soldier peripherals, improve current power source chemistries, and improve protective materials and integrate into functional battery packs and pouches. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Slight increase due to higher volume of testing.			
Title: System Engineering & Program Management	-	1.176	1.176

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** EY2 / *Integrated Soldier Power Data System - Core*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Description: Conduct system engineering and project management for ISDPS-C efforts and power characterization efforts. ***FY 2021 Plans:*** Conduct system engineering and project management for ISDPS-C efforts and power characterization studies. ***FY 2022 Plans:*** Continue to conduct system engineering, project management, and additional R&D center power characterization studies for ISPDS-C efforts.			
Title: ISPDS-C/CWB Capability Improvements Integration ***Description:*** Evaluate higher energy density power solutions. ***FY 2021 Plans:*** Conduct integration of power distribution technologies and fuel cells capable of supporting the variety of power devices used in tactical formations and Integrate emerging alternative fuel cell technologies such as SI-Anode batteries. ***FY 2022 Plans:*** Integrate emerging alternative power technologies and higher density batteries cells such as SI-Anode. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Slight increase due to transition to higher capacity fuel cell.	1.142	1.212	1.236
Title: Develop alternative CWB sources. ***Description:*** Develop alternative CWB sources. ***FY 2021 Plans:*** Test and evaluate alternative battery technologies. ***FY 2022 Plans:*** Continue to test and evaluate incremental improvement in CWB packaging battery technologies to increase overall conformal battery power capacity. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase to evaluate some incremental increase in CWB power capacity.	-	0.872	0.890
Accomplishments/Planned Programs Subtotals	1.142	3.911	4.322

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** EY2 / *Integrated Soldier Power Data System - Core*

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
• R08090: *Integrated Soldier Power Data System - Core*	20.379	17.818	5.947	-	5.947	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Pursue a variety of Soldier power products under full and open competition. Initiatives range from Commercial-Off-The-Shelf (COTS) solutions to developmental efforts. The type of solicitation depends on the maturity of the technology. The power initiatives will be evaluated through scheduled test and evaluation events, and if successful, selected for procurement and subsequent fielding and sustainment. The acquisition strategy varies by product. For example, the CWB acquisition strategy consists of two phases: Phase one includes the purchase of test articles using the Defense Logistics Agency (DLA) Special Operational (Spec Ops) Equipment Tailored Logistic Support Program (TLSP) and General Services Administration (GSA) contracts. Phase two establishes an Indefinite Delivery Indefinite Quantity (IDIQ) contract through the Army Contracting Command (ACC) which qualifies a minimum of two vendors to take into production. The Project Manager office will establish IDIQ contracts to support the ISPDS-C requirements over time. Each ISPDS-C system will be procured under purchase orders for production quantities that will be awarded on a Firm Fixed Price (FFP) contract.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) EY2 / *Integrated Soldier Power Data System - Core*	

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
System Engineering & Program Management Support	MIPR	Various : Various	2.675	-		1.176		1.176		-		1.176	Continuing	Continuing	-
		Subtotal	2.675	-		1.176		1.176		-		1.176	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
ISPDS-C, CWB Capability Improvements Integration	MIPR	Various : Various	4.954	1.142		1.212		1.236		-		1.236	Continuing	Continuing	-
Squad Power Manager ECP	MIPR	Various : Various	1.986	-		-		-		-		-	Continuing	Continuing	-
Develop alternative CWB sources	MIPR	Various : Various	-	-		0.872		0.890		-		0.890	Continuing	Continuing	-
		Subtotal	6.940	1.142		2.084		2.126		-		2.126	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
Test and Evaluation	MIPR	Various : Various	1.716	-		0.651		1.020		-		1.020	Continuing	Continuing	-
		Subtotal	1.716	-		0.651		1.020		-		1.020	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	11.331	1.142		3.911		4.322		-		4.322	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** EY2 / *Integrated Soldier Power Data System - Core*

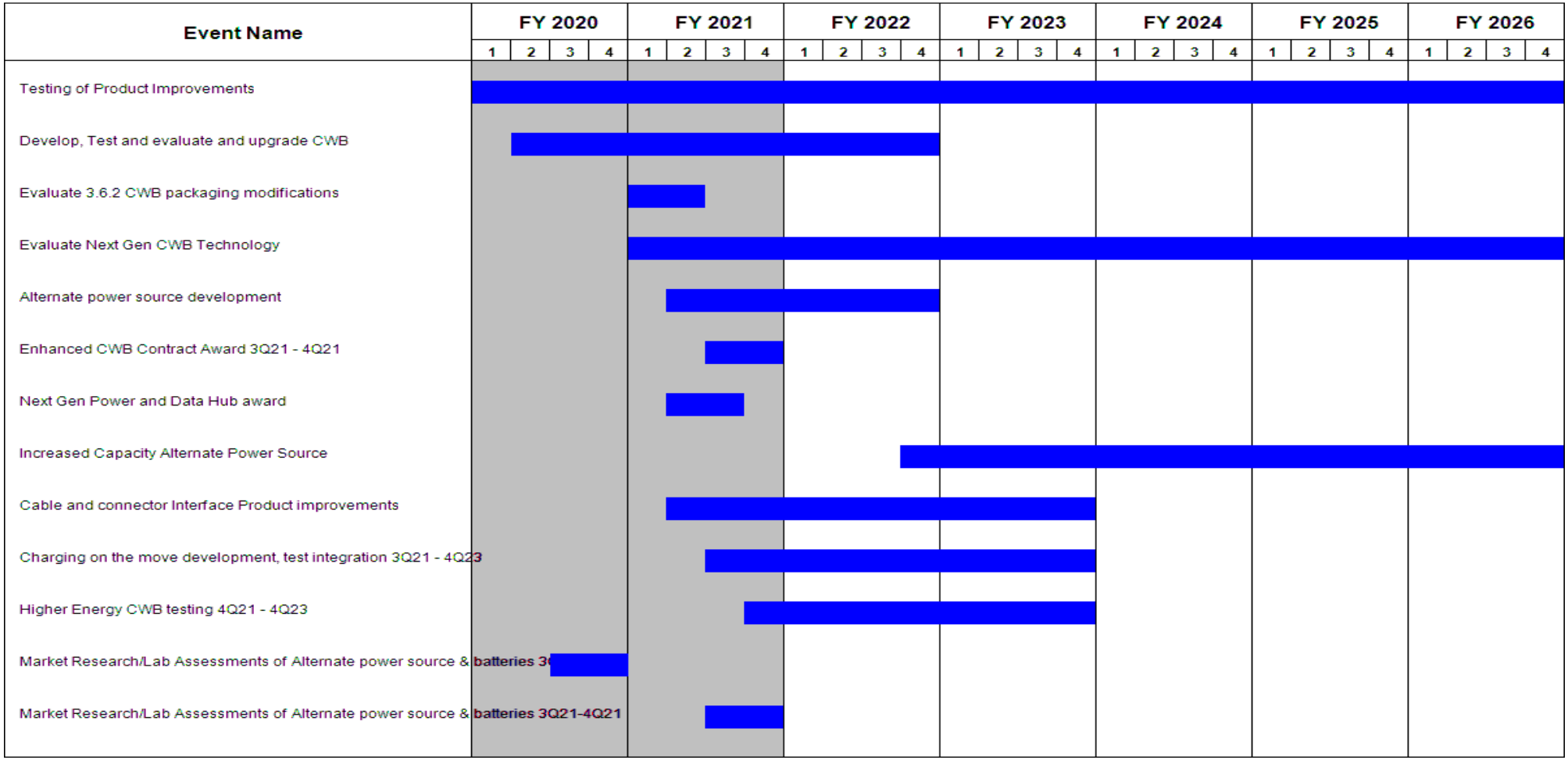

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** EY2 / *Integrated Soldier Power Data System - Core*

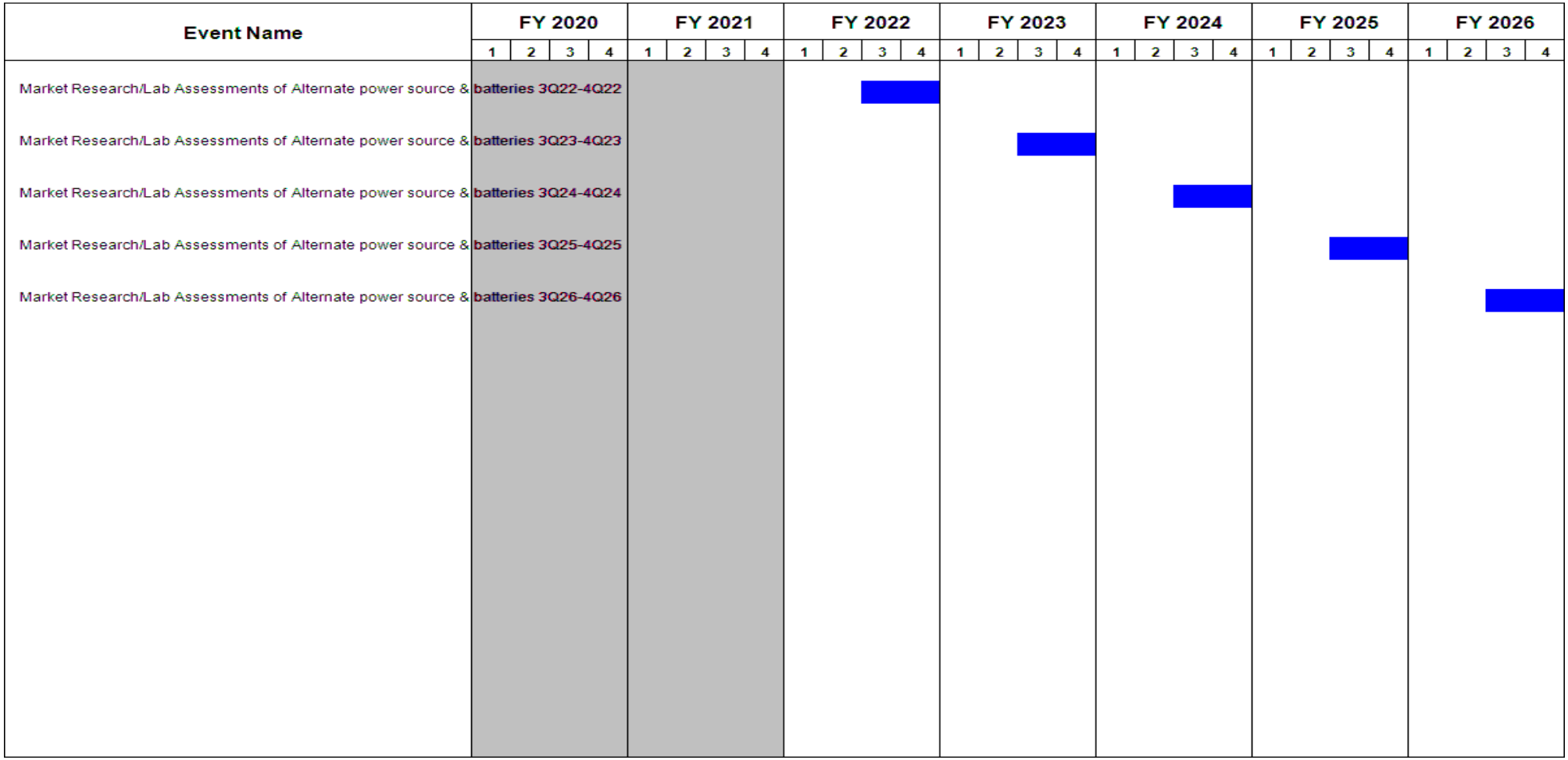

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** EY2 / *Integrated Soldier Power Data System - Core*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Testing of Product Improvements	1	2020	4	2026
Develop, Test and evaluate and upgrade CWB	2	2020	4	2022
Evaluate 3.6.2 CWB packaging modifications	1	2021	2	2021
Evaluate Next Gen CWB Technology	1	2021	4	2026
Alternate power source development	2	2021	4	2022
Enhanced CWB Contract Award 3Q21 - 4Q21	3	2021	4	2021
Next Gen Power and Data Hub award	2	2021	3	2021
Increased Capacity Alternate Power Source	4	2022	4	2026
Cable and connector Interface Product improvements	2	2021	4	2023
Charging on the move development, test integration 3Q21 - 4Q23	3	2021	4	2023
Higher Energy CWB testing 4Q21 - 4Q23	4	2021	4	2023
Market Research/Lab Assessments of Alternate power source & batteries 3Q20-4Q20	3	2020	4	2020
Market Research/Lab Assessments of Alternate power source & batteries 3Q21-4Q21	3	2021	4	2021
Market Research/Lab Assessments of Alternate power source & batteries 3Q22-4Q22	3	2022	4	2022
Market Research/Lab Assessments of Alternate power source & batteries 3Q23-4Q23	3	2023	4	2023
Market Research/Lab Assessments of Alternate power source & batteries 3Q24-4Q24	3	2024	4	2024
Market Research/Lab Assessments of Alternate power source & batteries 3Q25-4Q25	3	2025	4	2025
Market Research/Lab Assessments of Alternate power source & batteries 3Q26-4Q26	3	2026	4	2026

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) EY4 / *Universal Battery Charger*	

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
EY4: *Universal Battery Charger*	-	1.137	0.963	0.987	-	0.987	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Universal Battery Charger: Universal Battery Charger (UBC) fills the power and energy gap created by the increase in mission essential, Soldier portable power consumers, by providing a family of charging solutions capable of providing power to handheld communication devices and military batteries to support mounted and dismounted formations. The UBC is suited for mounted and dismounted operations at the company level and below in multi-domain and austere operating environments. The system can draw power from wall outlets, vehicle power, generators, and solar power sources. The UBC enables dismounted Soldiers to execute their missions with fewer battery resupplies, thus reducing the logistical burden associated with moving fuel and batteries. The UBC capability allows dismounted Soldiers to operate independently for longer missions. The UBC fills the power and energy gap associated with bulk charging. This project also develops and integrates vehicular on-the-move charging and scavenging systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Test & Evaluation	0.756	0.576	0.592
FY 2021 Plans: Evaluation and improvement of Family of UBCs by decreasing weight and increasing battery recharging performance. Test and evaluation efforts also consider bulk charging initiatives. Develop and integrate vehicular on-the-move charging systems.			
FY 2022 Plans: Continue to evaluate improvements to charger performance and bulk charging capabilities. Continue to develop and integrate vehicular on-the-move charging systems and reduce SWAP-C of the UBC product line.			
FY 2021 to FY 2022 Increase/Decrease Statement: Slight increase due to higher volume of testing.			
Title: System Engineering & Program Management	0.381	0.387	0.395
FY 2021 Plans: Conduct design and development of improved UBC and bulk charging capabilities.			
FY 2022 Plans: Update technical drawings and provisioning data to establish NSNs, tech manual changes and safety release documentation for improved Family UBC and bulk charging.			
FY 2021 to FY 2022 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** EY4 / *Universal Battery Charger*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Slight increase due to growth in integration activities.			
Accomplishments/Planned Programs Subtotals	1.137	0.963	0.987

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
• R09103: *Universal Battery Charger*	7.865	10.066	6.243	-	6.243	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Contracts will be awarded to test, evaluate, and procure the next generation family of battery chargers to meet the increased power demand on the Soldier. A full and open, five year Indefinite Delivery Indefinite Quantity (IDIQ) production contract was awarded 27 January 2016 to procure the UBC. The PM will initiate efforts to establish a new Indefinite Delivery Indefinite Quantity (IDIQ) contract with Firm Fixed Price (FFP) delivery orders through the Army Contracting Command (ACC) Aberdeen Proving Grounds. The program office may also utilize the Defense Logistics Agency - Tailored Logistics Support competitively awarded contracts to procure UBC systems in FY 2021 and beyond.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) EY4 / *Universal Battery Charger*	

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
System Engineering/ Program Management Support	MIPR	Various : Various	0.496	0.381		0.387		0.395		-		0.395	Continuing	Continuing	-
		Subtotal	0.496	0.381		0.387		0.395		-		0.395	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
Test & Evaluation	MIPR	Various : Various	2.528	0.756		0.576		0.592		-		0.592	Continuing	Continuing	-
		Subtotal	2.528	0.756		0.576		0.592		-		0.592	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	3.024	1.137		0.963		0.987		-		0.987	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** EY4 / *Universal Battery Charger*

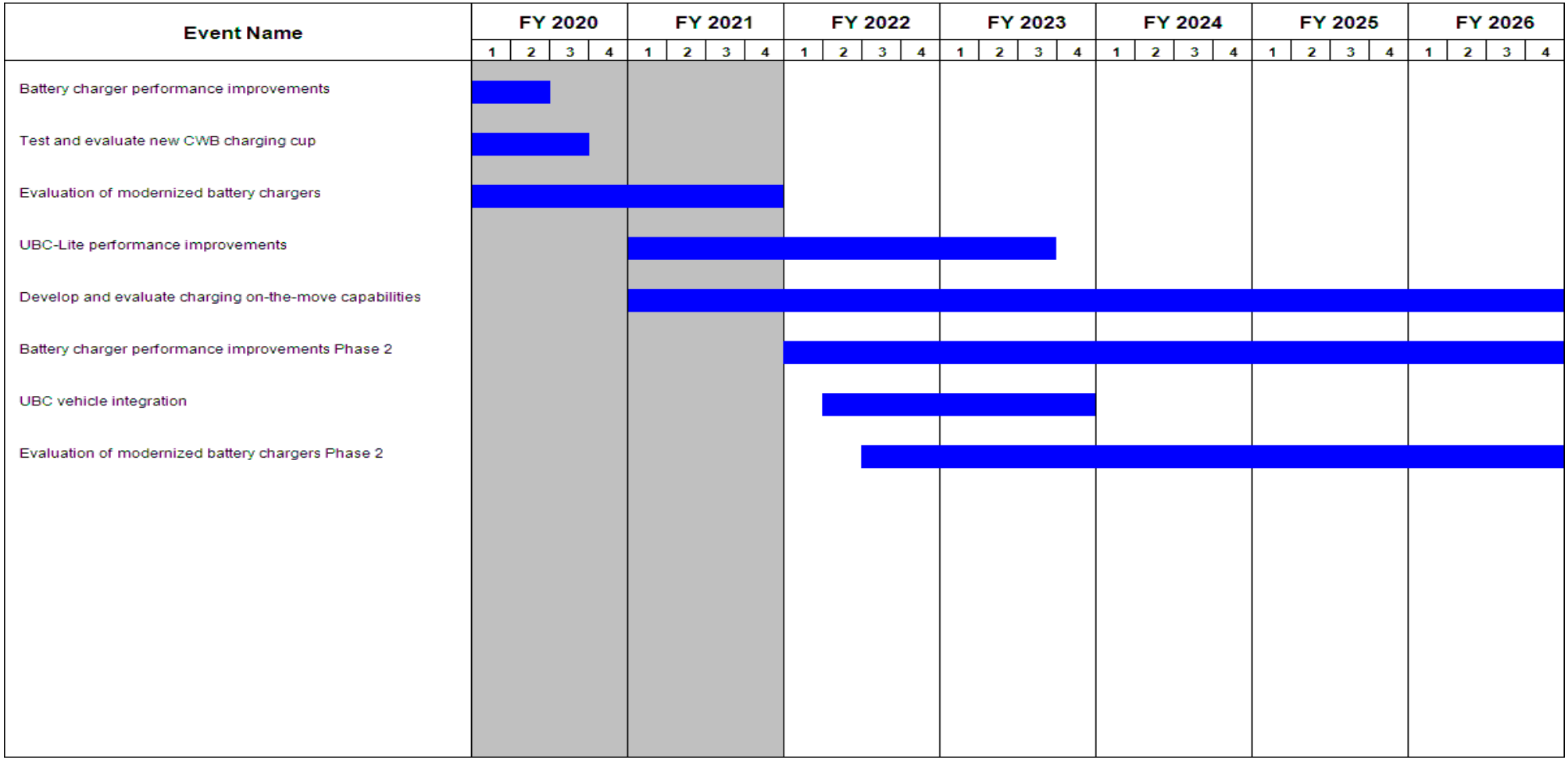

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** EY4 / *Universal Battery Charger*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Battery charger performance improvements	1	2020	2	2020
Test and evaluate new CWB charging cup	1	2020	3	2020
Evaluation of modernized battery chargers	1	2020	4	2021
UBC-Lite performance improvements	1	2021	3	2023
Develop and evaluate charging on-the-move capabilities	1	2021	4	2026
Battery charger performance improvements Phase 2	1	2022	4	2026
UBC vehicle integration	2	2022	4	2023
Evaluation of modernized battery chargers Phase 2	3	2022	4	2026

Note

Beginning in FY 2018, funding for Universal Battery Charger was realigned from Program Element: 0604827A (Soldier Systems - Warrior Dem/Val)/Project S65/Soldier Power. Prior to this realignment Soldier and Small Unit Power initiated developmental and test power solutions for the UBC technologies.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) FK4 / *Soldier Borne Sensor (SBS)*	

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
FK4: *Soldier Borne Sensor (SBS)*	-	1.201	1.422	1.145	-	1.145	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project FK4 - Soldier Borne Sensor (SBS): The SBS is a small unmanned aerial vehicle. The SBS provides a near term solution to three Army War-fighting Challenges at the Infantry Squad level: develop situational understanding, conduct air-ground reconnaissance, and conduct joint combined arms maneuver. The system is simple to deploy and use to support the squad leader's decision-making process. The system allows Soldiers to obtain local situational awareness and understanding of their immediate surroundings while remaining in covered or concealed positions. The SBS Phase 1 will be procured through multiple phases. We will use the funding in this project to develop, integrate, and qualify additional capabilities for each phase. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Soldier Borne Sensor (SBS)	1.201	1.422	1.145
Description: The SBS provides the squad a "quick look" capability providing Situational Awareness (SA). ***FY 2021 Plans:*** The program will complete OTA prototype project(s) to rapidly incorporate new technologies including improved thermal cameras, improved obstacle avoidance, and integration with the Adaptive Squad Architecture into prototypes for evaluation. Additionally, the program plans to integrate SBS with systems such as Tactical Assault Kit (TAK)/Nett Warrior, Enhanced Night Vision Goggle (ENVG) and Heads Up Display (HUD) Integrated Visual Augmentation System (IVAS). ***FY 2022 Plans:*** This program will continue Phase 2 prototyping and rapidly incorporate new technologies matured during the Phase 2 technology development phase to include improved thermal cameras, improved obstacle avoidance, and integration with the Adaptive Squad Architecture. These prototypes will undergo testing and evaluation from 3QFY21 to 1QFY22. Additionally, the program plans to integrate SBS with systems such as Tactical Assault Kit (TAK)/Nett Warrior, Enhanced Night Vision Goggle (ENVG) and Integrated Visual Augmentation System (IVAS). ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease in funding from FY 2021 to FY 2022 as the integration of advanced technology matured with testing of Phase 2 prototypes.			
Accomplishments/Planned Programs Subtotals	1.201	1.422	1.145

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** FK4 / *Soldier Borne Sensor (SBS)*

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
• W63798: *Soldier Borne Sensor (SBS)*	23.362	18.907	18.654	-	18.654	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

SBS initiated an OTA prototype project in 3QFY 2020. The prototype system will be evaluated to determine whether it is a sufficient improvement to procure as a Phase 2 SBS system. The evaluation is planned for 3QFY21 to 1QFY22.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) FK4 / *Soldier Borne Sensor (SBS)*	

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 Admin (PMA)	MIPR	ASC : Ft Belvoir	-	0.058	Nov 2019	0.060	Nov 2020	0.062	Nov 2021	-		0.062	Continuing	Continuing	-
		Subtotal	-	0.058		0.060		0.062		-		0.062	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
Phase 2 Prototype	C/FFP	Vantage Robotics : San Leandro, CA 95577	-	0.810	Feb 2020	1.138	Feb 2021	0.143	Oct 2021	-		0.143	Continuing	Continuing	2.534
		Subtotal	-	0.810		1.138		0.143		-		0.143	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
Matrix Support	Various	Various : Multiple	-	0.333	Jan 2020	0.075	Nov 2020	0.077	Nov 2021	-		0.077	Continuing	Continuing	-
		Subtotal	-	0.333		0.075		0.077		-		0.077	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
Phase 2- Technology Integration and Testing	TBD	Various : Various	-	-		0.149	Apr 2021	0.863	Dec 2021	-		0.863	Continuing	Continuing	-
		Subtotal	-	-		0.149		0.863		-		0.863	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) FK4 / *Soldier Borne Sensor (SBS)*	

	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	-	1.201		1.422		1.145		-		1.145	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** FK4 / *Soldier Borne Sensor (SBS)*

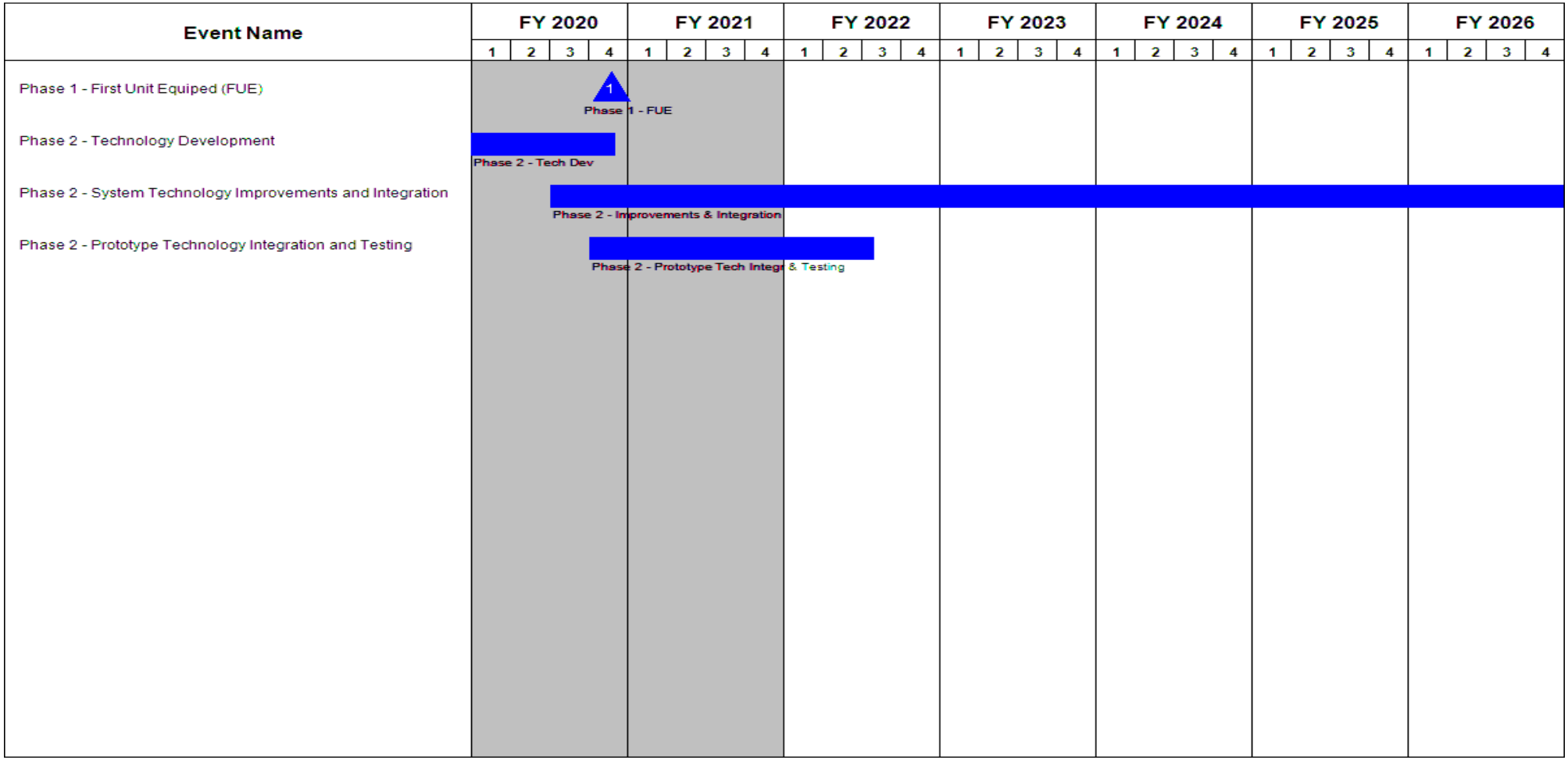

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** FK4 / *Soldier Borne Sensor (SBS)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Phase 1 - First Unit Equiped (FUE)	4	2020	4	2020
Phase 2 - Technology Development	4	2018	4	2020
Phase 2 - System Technology Improvements and Integration	3	2020	4	2026
Phase 2 - Prototype Technology Integration and Testing	4	2020	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) S65 / *Platoon Power Generator*	

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
S65: *Platoon Power Generator*	-	1.126	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mobile Soldier Power enables dismounted Soldiers to efficiently execute missions for longer durations by reducing the logistical burden associated with fuel and primary (disposable) batteries. Power solutions address energy deficits resulting from increased power demands associated with providing the Soldier with increased situational awareness displays, Global Positioning System (GPS) systems, weapon sensors, radios, and other devices. The Soldier and Small Unit Power system develops and tests power sources and solutions suited for the individual Soldier, team, squad, and platoon in the most austere operating environments. Develops and evaluates additional sources of power such as individual Soldier worn systems, renewable energy, and kinetic energy harvesting technologies. This effort is consistent with the Sep 2013 Small Unit Power CDD, the Dec 2011 Operational Energy ICD, and the Mar 2011 Soldier Protection CDD, and the Universal Battery Charger CPD (May 2015).

Platoon Power Generation - PM E2S2: This project supports the demonstration and development of a Platoon Power Generation (PPG). PPG will provide small units with no less than 900 Watts of portable power to sustain Modified Table of Organizational Equipment (MTOE) unit power demand in support of 48 to 72 hour missions using a common logistical fuel (JP-8). It will be used for charging batteries and powering various types of Army communications and electronics devices. It will provide sufficient power to recharge and power all Platoon equipment and fulfill residual power gaps at the Squad and Soldier level. The generator will provide Platoon power for charging batteries when away from vehicles in all Brigade Combat Teams (Stryker, Armor and Infantry), Rangers and Special Forces in austere environments. FY 2020 funds will be used to complete the Engineering and Manufacturing Development (EMD) Phase.

Funding supports modernization of the current power generation for Soldier borne sensors by investigating technology insertions including, but not limited to a modified COTS generator concept and proprietary fuel atomization. Funding also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational energy concepts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Platoon Power Generation (PPG) - PM E2S2	1.126	-	-
Description: Manage an EMD phase R&D contract for the PPG.			
Accomplishments/Planned Programs Subtotals	1.126	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** S65 / *Platoon Power Generator*

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
• R08090: *Integrated Soldier Power Data System - Core*	20.379	17.818	5.947	-	5.947	-	-	-	-	-	-
• R09103: *Universal Battery Charger*	7.865	10.066	6.243	-	6.243	-	-	-	-	-	-
• EY2: *Integrated Soldier Power Data System - Core*	1.142	3.911	4.322	-	4.322	-	-	-	-	-	-
• EY4: *Universal Battery Charger*	1.137	0.963	0.987	-	0.987	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

PEO CS/CSS Effort on the Platoon Power Generation - PM E2S2:

Utilizing Other Transactional Agreement (OTA) contract vehicle culminating in an EMD award of three (3) Firm Fixed Price (FFP) contracts supporting an 18-24 month Engineering and Manufacturing Development (EMD) phase. Three selected contractors have been awarded EMD contracts and will separately fabricate and produce the minimum order of 13 Small Unit Power Platoon Power Generation (>900 Watts) systems. After completing a successful down select, two contractors have been selected to undergo developmental test (DT), logistics development, and early operational assessment (EOA). Upon successful completion of these tests and completion of logistics supportability, the performance data and Soldier's feedback will be utilized in preparation for Milestone C (MS C).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) S65 / *Platoon Power Generator*	

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
Platoon Power Generation	Various	PM E2S2 : Fort Belvoir, VA	0.467	0.297		-		-		-		-	0.000	0.764	-
		Subtotal	0.467	0.297		-		-		-		-	0.000	0.764	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
Platoon Power Generation	C/FFP	Picatinny : Contractor Sites	9.358	-		-		-		-		-	1.500	10.858	-
		Subtotal	9.358	-		-		-		-		-	1.500	10.858	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
Platoon Power Generation	MIPR	APG : APG	3.419	-		-		-		-		-	0.600	4.019	-
		Subtotal	3.419	-		-		-		-		-	0.600	4.019	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
Platoon Power Generation	MIPR	Ft. Benning : Ft. Benning	0.511	0.829		-		-		-		-	0.220	1.560	-
		Subtotal	0.511	0.829		-		-		-		-	0.220	1.560	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	13.755	1.126		0.000		-		-		-	2.320	17.201	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / *Soldier Systems - Warrior Dem/Val*	Project (Number/Name) S65 / *Platoon Power Generator*	

	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 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** S65 / *Platoon Power Generator*

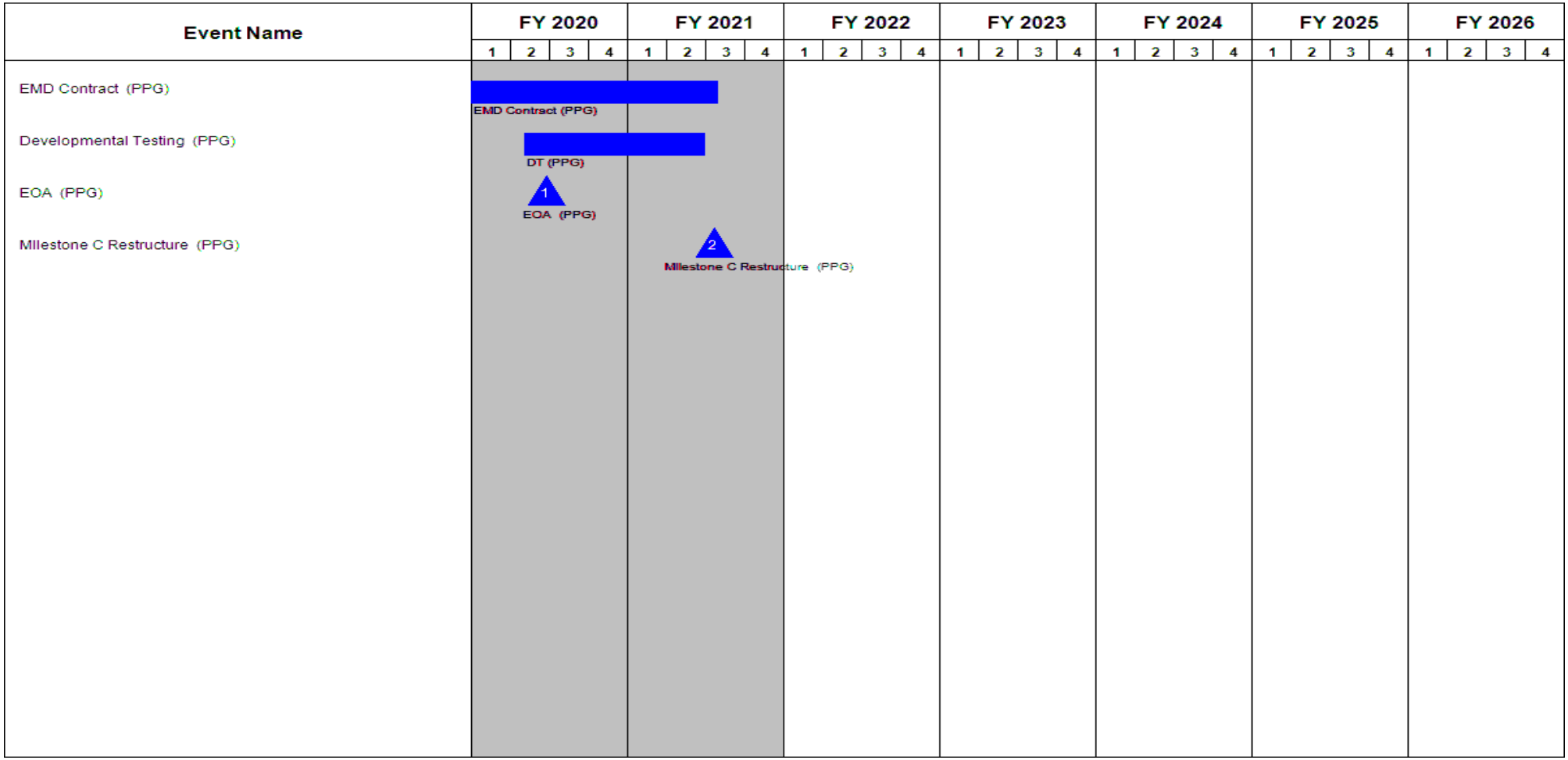

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604827A / *Soldier Systems - Warrior Dem/Val*	**Project (Number/Name)** S65 / *Platoon Power Generator*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Milestone B (PPG)	1	2019	1	2019
EMD Contract Award (PPG)	2	2019	2	2019
EMD Contract (PPG)	2	2019	3	2021
Critical Design Review (CDR) (PPG)	2	2019	2	2019
Developmental Testing (PPG)	2	2020	2	2021
EOA (PPG)	2	2020	2	2020
MIlestone C Restructure (PPG)	3	2021	3	2021