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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	10.044	4.803	6.534	-	6.534	7.611	9.016	10.571	10.144	Continuing	Continuing
<i>DX7: TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM</i>	-	0.325	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.325
<i>EY2: Integrated Soldier Power Data System - Core</i>	-	3.667	1.191	4.059	-	4.059	4.375	4.472	4.571	4.671	Continuing	Continuing
<i>EY3: Soldier Power Generator</i>	-	0.318	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.318
<i>EY4: Universal Battery Charger</i>	-	1.361	1.186	0.999	-	0.999	0.999	0.999	0.999	0.999	Continuing	Continuing
<i>FK4: Soldier Borne Sensor (SBS)</i>	-	0.000	1.252	1.476	-	1.476	2.237	3.545	5.001	4.474	Continuing	Continuing
<i>S65: Platoon Power Generator</i>	-	4.373	1.174	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.547

A. Mission Description and Budget Item Justification

This program element contains five projects:

Project DX7 - Tactical Communications and Protective System (TCAPS): TCAPS enables Soldiers to communicate over radios in combat environments while simultaneously providing hearing protection from both steady state and impulse noise.

Project EY2 - Integrated Soldier Power Data System - Core: Integrated Soldier Power and Data Hub, Conformal Wearable Battery, Squad Power Manager (SPM) fills the power and energy gaps created by the increase in mission essential, Soldier portable power consumers, such as situational awareness displays, GPS systems, weapon sensors, radios, and other devices.

Project EY3 - Soldier Power Generator (SPG) - fills the power and energy gap created by the increase in mission essential and power consuming devices, by providing a single charging solution capable of providing power to handheld communication devices and a suite of military batteries. SPG is intended for use in the most austere operating environments providing the Soldier with energy independency for extended mission duration. The system will provide the Soldier with a lightweight, worn or carried power generation capability, integrated within the warfighters combat load.

Project EY4 - 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 a suite of military batteries.

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>
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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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	10.382	5.803	3.917	-	3.917
Current President's Budget	10.044	4.803	6.534	-	6.534
Total Adjustments	-0.338	-1.000	2.617	-	2.617
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-1.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.338	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	2.617	-	2.617

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) DX7 / <i>TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
DX7: <i>TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM</i>	-	0.325	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.325
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Description: The Tactical Communications and Protective System (TCAPS) and TCAPS-Lite provide Soldiers with advanced, active hearing protection that simultaneously protects Soldiers' hearing while enabling situational awareness and mission command. TCAPS protects Soldiers against harmful impulse and steady state noises experienced in combat environments while also enabling Soldiers to communicate with each other using voice communications over a tactical radio, while TCAPS-Lite provides protection for Soldiers without a radio. Both systems enhance survivability and situational awareness by allowing Soldiers to amplify faint sounds that would not otherwise be audible. TCAPS and TCAPS-Lite reduces Soldiers noise induced hearing damage and includes integration and interface of products on Soldiers.

TCAPS and TCAPS-Lite contribute to the reduction of post-service disability compensation and limits lost in-service time related to hearing injuries. TCAPS Program of Record will continue to employ commercial-off-the-shelf (COTS) solutions that are evaluated periodically. The commercial solutions that meet the technical requirements and are rated the best by the Soldiers will transition to production and fielding.

Justification: No FY 2021 funding requested.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: TCAPS testing and evaluation.	0.182	-	-
Description: Test articles procurement and testing & evaluation.			
Title: FY 2019 Rescission	0.143	-	-
Description: TCAPS system engineering and program management support.			
Accomplishments/Planned Programs Subtotals	0.325	-	-

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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) DX7 / <i>TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• B55510: <i>Tactical Communications And Protective System</i>	10.368	-	0.000	-	0.000	-	-	-	-	0.000	10.368

Remarks

D. Acquisition Strategy

Program terminated. TCAPS was an ACAT IV program that leveraged commercial-off-the-shelf (COTS) technology. TCAPS conducted periodic relook of commercial technology to seek improved capabilities, reduce costs and transition to production. Used Defense Logistics Agency (DLA), General Services Administration (GSA) and other contracts to acquire products for evaluation and production.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604827A / Soldier Systems - Warrior Dem/Val				DX7 / TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM							
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SEPM	MIPR	PEO Soldier : Ft Belvoir, VA	0.870	0.064		-		-		-		-	0.000	0.934	-
Subtotal			0.870	0.064		-		-		-		-	0.000	0.934	N/A
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Articles (Engineering Assessment)	MIPR	DLA DSCP : Philadelphia, PA	0.082	-		-		-		-		-	0.000	0.082	-
Test Articles (Development Test)	MIPR	DLA DSCP : Philadelphia, PA	0.150	-		-		-		-		-	0.000	0.150	-
Test Articles (OT)	MIPR	DLA DSCP : Philadelphia, PA	0.405	-		-		-		-		-	0.000	0.405	-
Subtotal			0.637	-		-		-		-		-	0.000	0.637	N/A
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Annual Relook of Technology/Evaluation	MIPR	ATEC, AEC, OTC, ARL-SLAD : Various Locations	0.752	-		-		-		-		-	0.000	0.752	-
Developmental and Operational Test	Various	ATEC, AEC, OTC, ARL-SLAD : Various Locations	1.879	0.261		-		-		-		-	0.000	2.140	-
Customer Test	Various	Army Hearing Program Office : Various Locations	0.028	-		-		-		-		-	0.000	0.028	-
Subtotal			2.659	0.261		-		-		-		-	0.000	2.920	N/A

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) DX7 / <i>TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Annual Relook of Technology for Evaluation/Integration Test for FY16 Fielding	1	2015	3	2015
Technical Gen 2 headset test	3	2015	4	2015
Operation Gen 2 headset test	4	2015	4	2015
Developmental and Operational Assessment for FY16 Fielding	2	2015	4	2015
TCAPS/TCAPS Lite Post Implementation Review	4	2016	4	2016
VIC3 cable test	4	2016	4	2016
Annual Relook of Technology for Evaluation/Integration Test for FY17 Fielding	1	2016	3	2016
Developmental and Operational Assessment for FY17 Fielding	2	2016	4	2016
Annual Relook of Technology for Evaluation/Integration for FY18 Fielding	1	2017	3	2017
Developmental and Operational Assessment for FY18	2	2017	4	2017
Annual Relook of Technology for Evaluation/Integration Test for FY19 Fielding	1	2018	3	2018
Developmental and Operational Assessment for FY19 Fielding	2	2018	4	2018
Annual Technology Evaluation/Integration Test for FY20 Fielding	1	2019	3	2019
Developmental and Operational Assessment for FY20 Fielding	2	2019	4	2019
Termination Activities	1	2020	4	2020
Program Terminated	4	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) EY2 / <i>Integrated Soldier Power Data System - Core</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
EY2: <i>Integrated Soldier Power Data System - Core</i>	-	3.667	1.191	4.059	-	4.059	4.375	4.472	4.571	4.671	Continuing	Continuing
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: FY21 RDT&E develops and evaluates low power Intra-Soldier wireless solutions, fuel cell based solutions and improved batteries.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Test and Evaluation	0.443	0.209	0.762
Description: Test and validate new battery chemistries and interfaces with the ISPDS-C and Squad Power Manager.			
FY 2020 Plans: Continued to evaluate intra-Soldier wireless technologies and test and validate new battery chemistries.			
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 2020 to FY 2021 Increase/Decrease Statement: Fact of life scope increase for ISPDS-C and CWB testing requirements.			
Title: Test and Evaluation of E-textile integrated vest	0.061	0.120	0.454
Description: Test and validate E-Textile cables solutions and interface with the Nett Warrior System.			
FY 2020 Plans: Integrate launderable E-textile connectors into existing E-textile vest designs for testing and evaluations.			
FY 2021 Plans:			

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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY2 / <i>Integrated Soldier Power Data System - Core</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
Integrate and evaluate E-Textile Cables within the Nett Warrior and Soldier worn power architecture.				
FY 2020 to FY 2021 Increase/Decrease Statement: Procurement of additional test items based on better understanding of system characteristics (e.g., connectors for E-textiles).				
Title: System Engineering & Program Management		0.787	0.162	0.400
Description: Conduct system engineering and project management for ISDPS-C efforts and power characterization efforts.				
FY 2020 Plans: Continue to conduct system engineering and project management for ISDPS-C efforts and Intra-soldier wireless technologies.				
FY 2021 Plans: Continue to conduct system engineering and project management for ISDPS-C efforts and power characterization studies.				
FY 2020 to FY 2021 Increase/Decrease Statement: Management of new configurations, and creation of technical drawing packages and materiel release documents.				
Title: ISDPS-C/CWB Capability Improvements Integration		0.662	0.384	2.133
Description: Evaluate higher energy density power solutions.				
FY 2020 Plans: Conduct integration of intra-Soldier wireless and fuel cells capable of supporting the variety of power devices used in tactical formations.				
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 2020 to FY 2021 Increase/Decrease Statement: Transition to Silicon Anode or other improved battery chemistries.				
Title: Develop alternative CWB sources.		0.719	0.262	0.310
Description: Develop alternative CWB sources.				
FY 2020 Plans: Conducted Critical Design Review (CDR) and first article testing. Delivery of CWBs.				
FY 2021 Plans:				

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
Test and evaluate alternative battery technologies.			
FY 2020 to FY 2021 Increase/Decrease Statement: Fact of life scope increase for the CWB second source qualification effort.			
Title: FY 2019 Rescission	0.995	-	-
Title: FY 2020 SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC 638	-	0.054	-
FY 2020 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2020 to FY 2021 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	3.667	1.191	4.059

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• S65: <i>Platoon Power Generator</i>	4.373	1.174	0.000	-	0.000	-	-	-	-	0.000	5.547
• EY4: <i>Universal Battery Charger</i>	1.361	1.186	0.999	-	0.999	0.999	0.999	0.999	0.999	Continuing	Continuing
• EY3: <i>Soldier Power Generator</i>	0.318	-	0.000	-	0.000	-	-	-	-	0.000	0.318
• R09103: <i>Universal Battery Charger</i>	8.456	7.865	10.066	-	10.066	-	-	-	-	0.000	26.387
• R08090: <i>Integrated Soldier Power Data System - Core</i>	22.318	17.495	17.818	-	17.818	-	-	-	-	0.000	57.631

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

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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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604827A / Soldier Systems - Warrior Dem/Val				EY2 / Integrated Soldier Power Data System - Core							
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering & Program Management Support	MIPR	Various : Various	1.889	0.786		0.155		0.473		-		0.473	0.000	3.303	-
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.054		-		-		-	0.000	0.054	-
Subtotal			1.889	0.786		0.209		0.473		-		0.473	0.000	3.357	N/A
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ISPDS-C, CWB Capability Improvements Integration	MIPR	Various : Various	3.572	1.382		0.649		2.371		-		2.371	0.000	7.974	-
Squad Power Manager ECP	MIPR	Various : Various	0.993	0.993		-		-		-		-	0.000	1.986	-
Subtotal			4.565	2.375		0.649		2.371		-		2.371	0.000	9.960	N/A
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	MIPR	Various : Various	1.210	0.506		0.333		1.215		-		1.215	0.000	3.264	-
Subtotal			1.210	0.506		0.333		1.215		-		1.215	0.000	3.264	N/A
Project Cost Totals			7.664	3.667		1.191		4.059		-		4.059	0.000	16.581	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY2 / <i>Integrated Soldier Power Data System - Core</i>

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Testing of Product Improvements			■																									
Annual Relook of Technology (Fuel Cells, ISW, batteries)								■																				
Testing of Product Improvements (Fuel Cells, ISW, batteries)												■																
Power Scavenger Performance Improvements		■	■	■	■	■	■	■																				
Second Source FAT		■	■	■	■	■	■	■																				
E-Textile Development		■	■	■	■	■	■	■																				
Develop, test and evaluate upgraded CWB.				■	■	■	■	■	■	■	■	■	■	■	■	■												
Squad Power Manager product improvement																■												
Evaluate Next Gen CWB Technology													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
E-Textile cable test and evaluation												■	■	■	■	■												
Product improvemen testing																■	■	■	■	■								
Annual relook of technology (Fuel cells, ISW, batteries)																■	■	■	■	■								
Squad Power Manager ECP																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Testing of Product Improvements	3	2019	4	2019
Annual Relook of Technology (Fuel Cells, ISW, batteries)	3	2020	4	2020
Testing of Product Improvements (Fuel Cells, ISW, batteries)	3	2021	4	2021
Power Scavenger Performance Improvements	2	2019	4	2020
Second Source FAT	2	2019	2	2020
E-Textile Development	2	2019	4	2019
Develop, test and evaluate upgraded CWB.	4	2019	3	2022
Squad Power Manager product improvement	4	2022	4	2022
Evaluate Next Gen CWB Technology	1	2021	2	2025
E-Textile cable test and evaluation	1	2021	3	2021
Product improvemen testing	2	2021	4	2022
Annual relook of technology (Fuel cells, ISW, batteries)	2	2021	4	2022
Squad Power Manager ECP	4	2020	4	2020

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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
EY3: <i>Soldier Power Generator</i>	-	0.318	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.318
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2019, funding for Soldier Power Generator was realigned from Program Element: 0604827A (Soldier Systems - Warrior Dem/Val)/Project: S65 (Soldier Power).

A. Mission Description and Budget Item Justification

Soldier Power Generation (SPG) fills the power and energy gap created by the increase in mission essential and power consuming devices, by providing charging solutions capable of providing power to handheld communication devices and a suite of military batteries. SPG is intended for use in the most austere operating environments providing the Soldier with energy independency for extended mission duration. The system will provide the Soldier with a lightweight, worn or carried power generation capability, integrated within the warfighters combat load.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Test and Evaluation	0.315	-	-
Description: Test emerging technologies.			
Title: FY 2019 Rescission	0.003	-	-
Accomplishments/Planned Programs Subtotals	0.318	-	-

C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• S65: <i>Platoon Power Generator</i>	4.373	1.174	0.000	-	0.000	-	-	-	-	0.000	5.547
• EY2: <i>Integrated Soldier Power Data System - Core</i>	3.667	1.191	4.059	-	4.059	4.375	4.472	4.571	4.671	Continuing	Continuing
• EY4: <i>Universal Battery Charger</i>	1.361	1.186	0.999	-	0.999	0.999	0.999	0.999	0.999	Continuing	Continuing
• R09103: <i>Universal Battery Charger</i>	8.456	7.865	10.066	-	10.066	-	-	-	-	0.000	26.387

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY3 / <i>Soldier Power Generator</i>

D. Acquisition Strategy

Develop a range of Soldier Power Generation technologies, based on technical tests and Soldier feedback, to determine the best material solution and then award a competitive contract to pursue test articles. Any follow on production for successful test articles will be through competitively awarded contracts.

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY3 / <i>Soldier Power Generator</i>	

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Test and Evaluation of Emerging Technologies	[REDACTED]				[REDACTED]																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY3 / <i>Soldier Power Generator</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Test and Evaluation of Emerging Technologies	1	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) EY4 / <i>Universal Battery Charger</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
EY4: <i>Universal Battery Charger</i>	-	1.361	1.186	0.999	-	0.999	0.999	0.999	0.999	0.999	Continuing	Continuing
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, 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 also fills the power and energy gap associated with bulk charging. Develop and integrate vehicular on-the-move charging systems.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Test & Evaluation	1.100	0.997	0.849
FY 2020 Plans: Continue to evaluate reduction of UBC and weight as well as increase the battery recharging performance.			
FY 2021 Plans: Continue 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 2020 to FY 2021 Increase/Decrease Statement: Reduced FY 2021 funding eliminates scheduled T&E efforts.			
Title: System Engineering & Program Management	0.243	0.135	0.150
FY 2020 Plans: Conduct design and development of next generation UBC.			
FY 2021 Plans: Conduct design and development of improved UBC and bulk charging capabilities.			
FY 2020 to FY 2021 Increase/Decrease Statement: Decreased FY 2021 funding results in reduced system engineering efforts.			
Title: FY 2019 Rescission	0.018	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY4 / <i>Universal Battery Charger</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
Title: FY 2020 SBIR/STTR Transfer	-	0.054	-
Description: Funding transferred in accordance with Title 15 USC 638			
FY 2020 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2020 to FY 2021 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	1.361	1.186	0.999

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• R09103: <i>Universal Battery Charger</i>	8.456	7.865	10.066	-	10.066	-	-	-	-	0.000	26.387
• S65: <i>Platoon Power Generator</i>	4.373	1.174	0.000	-	0.000	-	-	-	-	0.000	5.547
• EY2: <i>Integrated Soldier Power Data System - Core</i>	3.667	1.191	4.059	-	4.059	4.375	4.472	4.571	4.671	Continuing	Continuing
• EY3: <i>Soldier Power Generator</i>	0.318	-	0.000	-	0.000	-	-	-	-	0.000	0.318
• R08090: <i>Integrated Soldier Power Data System - Core</i>	22.318	17.495	17.818	-	17.818	-	-	-	-	0.000	57.631

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. FY 2020 efforts establish a new Indefinite Delivery Indefinite Quantity (IDIQ) contract with Firm Fixed Price (FFP) delivery orders through the Army Contracting Command (ACC) which qualifies a minimum of two vendors to take into production. UBC systems will be procured under purchase orders for production quantities.

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) EY4 / <i>Universal Battery Charger</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
UBC-Lite Development and Evaluation	1	2019	3	2020
Evaluation of modernized battery chargers	2	2019	4	2021
Battery charger performance improvements	2	2019	4	2025
UBC kit configuration re-evaluation	2	2020	4	2021
Test and evaluate new CWB charging cup	1	2020	3	2022
Evaluation of modernized battery chargers Phase 2	1	2021	3	2025
Battery charger performance improvements Phase 2	1	2021	3	2025
Develop and evaluate "Charging on the Move" capabilities	1	2021	4	2025

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.

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) FK4 / <i>Soldier Borne Sensor (SBS)</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
FK4: <i>Soldier Borne Sensor (SBS)</i>	-	0.000	1.252	1.476	-	1.476	2.237	3.545	5.001	4.474	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2019, this project was funded in PE: 0605053A / Grounds Robotics project, FB8.

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 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.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Soldier Borne Sensor (SBS)	-	1.195	1.476
Description: The SBS provides the squad a "quick look" capability providing Situational Awareness (SA).			
FY 2020 Plans: The program will utilize Other Transaction Authority (OTA) prototype projects to rapidly incorporate new technologies including GPS-denied operation and integration with the Adaptive Soldier Architecture (ASA) into prototypes for evaluation. The OTA scope of work (technologies integrated) will be determined based on affordability. OTAs will be established with multiple manufacturers, if affordable.			
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 2020 to FY 2021 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) FK4 / <i>Soldier Borne Sensor (SBS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
FY 2020 to FY 2021 SBS increase funds the integration of advanced technology into prototypes and testing of those prototypes. The test results will be used to determine the best value materiel solution available for Tranche 2.			
Title: FY 2020 SBIR/STTR Transfer	-	0.057	-
Description: Funding transferred in accordance with Title 15 USC 638			
FY 2020 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2020 to FY 2021 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	-	1.252	1.476

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• W63798: <i>Soldier Borne Sensor (SBS)</i>	24.437	23.362	18.907	-	18.907	18.141	19.081	19.273	19.168	0.000	142.369
• FB8: <i>Soldier Borne Sensor (SBS)</i>	3.354	-	0.000	-	0.000	-	-	-	-	0.000	3.354
• K36400: <i>Helmet Mounted Enhanced Vision Devices</i>	112.251	50.632	207.626	-	207.626	245.012	6.436	318.684	-	Continuing	Continuing
• K36402: <i>IVAS/Heads Up Display</i>	-	-	906.045	-	906.045	1,045.688	319.670	-	148.426	Continuing	Continuing
• 0604710A: <i>Night Vision Systems - Eng Dev</i>	139.337	143.696	61.445	-	61.445	38.094	31.349	37.520	95.108	Continuing	Continuing
• 0603774A: <i>Night Vision Systems Advanced Development</i>	7.072	200.791	24.316	-	24.316	22.282	16.958	72.311	34.349	Continuing	Continuing
• R80501: <i>Ground Soldier System</i>	36.506	116.265	154.937	-	154.937	182.025	185.295	188.627	190.514	Continuing	Continuing
• 0604818A: <i>Army Tactical Command & Control Hardware & Software</i>	163.229	129.974	162.513	-	162.513	156.333	106.957	90.035	81.010	Continuing	Continuing

Remarks
In FY 2019, this project was funded in PE: 0605053A / Grounds Robotics project, FB8.

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) FK4 / <i>Soldier Borne Sensor (SBS)</i>

D. Acquisition Strategy

The program office is utilizing Defense Logistics Agency - Tailored Logistics Support contracts to procure Tranche 1 systems in FY 2020 through FY 2021.

SBS will initiate one, or more, OTA prototype project(s) in FY 2020. These prototypes will be evaluated in an open fly-off to determine the best solution for Tranche 2. The fly-off is planned for late FY 2021. Production of Tranche 2 is planned to start in FY 2022.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604827A / Soldier Systems - Warrior Dem/Val				FK4 / Soldier Borne Sensor (SBS)								
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.057		-		-		-	0.000	0.057	-	
Subtotal			-	-		0.057		-		-		-	0.000	0.057	N/A	
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Improved Imaging	MIPR	Night Vision Electronic Sensors Directorate (NVESD) : Fort Belvoir, Virginia 22060	-	-		0.010	Feb 2020	-		-		-	Continuing	Continuing	-	
Tranche 2 Prototype	TBD	TBD : TBD	-	-		0.665	Feb 2020	0.615	Feb 2021	-		0.615	Continuing	Continuing	-	
Subtotal			-	-		0.675		0.615		-		0.615	Continuing	Continuing	N/A	
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Matrix Support	Various	Various : Multiple	-	-		0.520	Jan 2020	0.265	Dec 2020	-		0.265	Continuing	Continuing	-	
Subtotal			-	-		0.520		0.265		-		0.265	Continuing	Continuing	N/A	
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Tranche 2- Technology Integration and Testing	TBD	Various : Various	-	-		-		0.596	Apr 2021	-		0.596	Continuing	Continuing	-	
Subtotal			-	-		-		0.596		-		0.596	Continuing	Continuing	N/A	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army							Date: February 2020				
Appropriation/Budget Activity 2040 / 5			R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) FK4 / <i>Soldier Borne Sensor (SBS)</i>				
	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	-	1.252	1.476	-	1.476	Continuing	Continuing	N/A		

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) FK4 / <i>Soldier Borne Sensor (SBS)</i>

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Tranche 1 - Full Rate Production (FRP) Decision	1 <small>Tranche 1 - FRP</small>																											
Tranche 1 - Soldier Touch Points (STP)		2 <small>Tranche 1 - STP</small>																										
Tranche 1 - First Unit Equiped (FUE)							3 <small>Tranche 1 - FUE</small>																					
Tranche 2 - Technology Development																												
Tranche 2 - System Technology Improvements and Integration																												
Tranche 2 - Technology Integration and Testing																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) FK4 / <i>Soldier Borne Sensor (SBS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Tranche 1 - Full Rate Production (FRP) Decision	1	2019	1	2019
Tranche 1 - Soldier Touch Points (STP)	2	2019	2	2019
Tranche 1 - First Unit Equiped (FUE)	2	2020	2	2020
Tranche 2 - Technology Development	4	2018	4	2020
Tranche 2 - System Technology Improvements and Integration	2	2020	4	2025
Tranche 2 - Technology Integration and Testing	2	2020	3	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) S65 / <i>Platoon Power Generator</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
S65: <i>Platoon Power Generator</i>	-	4.373	1.174	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.547
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Soldier and Small Unit Power (SUP) 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). The Small Unit Power 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 2019	FY 2020	FY 2021
Title: Platoon Power Generation (PPG) - PM E2S2	2.532	1.120	-
Description: Manage an EMD phase R&D contract for the PPG.			
FY 2020 Plans: Complete EMD Phase and Developmental Testing, which culminates in a user test.			
FY 2020 to FY 2021 Increase/Decrease Statement: Funding was decreased as program ended development work and enters full production phase.			
Title: FY 2019 Rescission	1.841	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S65 / <i>Platoon Power Generator</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
Title: FY 2020 SBIR/STTR Transfer	-	0.054	-
Description: Funding transferred in accordance with Title 15 USC 638			
FY 2020 Plans: Funding transferred in accordance with Title 15 USC 638			
FY 2020 to FY 2021 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638			
Accomplishments/Planned Programs Subtotals	4.373	1.174	-

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• R08090: <i>Integrated Soldier Power Data System - Core</i>	22.318	17.495	17.818	-	17.818	-	-	-	-	0.000	57.631
• R09103: <i>Universal Battery Charger</i>	8.456	7.865	10.066	-	10.066	-	-	-	-	0.000	26.387
• EY2: <i>Integrated Soldier Power Data System - Core</i>	3.667	1.191	4.059	-	4.059	4.375	4.472	4.571	4.671	Continuing	Continuing
• EY4: <i>Universal Battery Charger</i>	1.361	1.186	0.999	-	0.999	0.999	0.999	0.999	0.999	Continuing	Continuing
• EY3: <i>Soldier Power Generator</i>	0.318	-	0.000	-	0.000	-	-	-	-	0.000	0.318

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) 4th Qtr FY20.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 5				PE 0604827A / Soldier Systems - Warrior Dem/Val				S65 / Platoon Power Generator								
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Platoon Power Generation	Various	PM E2S2 : Fort Belvoir, VA	0.225	0.242		0.056		-		-		-	0.000	0.523	-	
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.054		-		-		-	0.000	0.054	-	
Subtotal			0.225	0.242		0.110		-		-		-	0.000	0.577	N/A	
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Platoon Power Generation	C/FFP	Picatinny : Contractor Sites	6.118	3.240		0.242		-		-		-	1.500	11.100	-	
Subtotal			6.118	3.240		0.242		-		-		-	1.500	11.100	N/A	
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Platoon Power Generation	MIPR	APG : APG	2.819	0.600		0.435		-		-		-	0.600	4.454	-	
Subtotal			2.819	0.600		0.435		-		-		-	0.600	4.454	N/A	
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Platoon Power Generation	MIPR	Ft. Benning : Ft. Benning	0.220	0.291		0.387		-		-		-	0.220	1.118	-	
Subtotal			0.220	0.291		0.387		-		-		-	0.220	1.118	N/A	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army								Date: February 2020			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>				Project (Number/Name) S65 / <i>Platoon Power Generator</i>			
	Prior Years	FY 2019		FY 2020		FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	9.382	4.373		1.174		-	-	-	2.320	17.249	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S65 / <i>Platoon Power Generator</i>

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestone B (PPG)	▲ 1																											
Milestone B Platoon Power Generation (PPG)																												
EMD Contract Award (PPG)		▲ 2																										
Contract Award (PPG)																												
EMD Contract (PPG)																												
EMD Contract (PPG)																												
Critical Design Review (CDR) (PPG)			▲ 3																									
CDR (PPG)																												
Developmental Testing (PPG)																												
DT (PPG)																												
Limited User Test (LUT) (PPG)									▲ 4																			
LUT (PPG)																												
Milestone C/LRIP (PPG)																												
Milestone C (PPG)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604827A / <i>Soldier Systems - Warrior Dem/Val</i>	Project (Number/Name) S65 / <i>Platoon Power Generator</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B (PPG)	1	2019	1	2019
EMD Contract Award (PPG)	2	2019	2	2019
EMD Contract (PPG)	2	2019	2	2020
Critical Design Review (CDR) (PPG)	2	2019	2	2019
Developmental Testing (PPG)	3	2019	1	2020
Limited User Test (LUT) (PPG)	2	2020	2	2020
Milestone C/LRIP (PPG)	3	2020	3	2020