| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army | | | | | | | | | | | Date: May 2017 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)* | | | | | R-1 Program Element (Number/Name)<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | | | | | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2016** | **FY 2017** | **FY 2018 Base** | **FY 2018 OCO** | **FY 2018 Total** | **FY 2019** | **FY 2020** | **FY 2021** | **FY 2022** | **Cost To Complete** | **Total Cost** |
| Total Program Element | - | 15.694 | 12.393 | 16.127 | - | 16.127 | 12.199 | 6.833 | 3.927 | 2.285 | Continuing | Continuing |
| DX7: *TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM* | - | 0.901 | 0.751 | 0.879 | - | 0.879 | 0.500 | 0.500 | 0.500 | 0.668 | Continuing | Continuing |
| EY2: *Integrated Soldier Power Data System - Core* | - | 0.000 | 0.000 | 6.949 | - | 6.949 | 2.894 | 1.456 | 1.258 | 0.000 | 0.000 | 12.557 |
| EY3: *Soldier Power Generator* | - | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.321 | 0.327 | 0.334 | 0.341 | 0.000 | 1.323 |
| EY4: *Universal Battery Charger* | - | 0.000 | 0.000 | 1.731 | - | 1.731 | 1.764 | 1.799 | 1.835 | 1.276 | 0.000 | 8.405 |
| S65: *Soldier Power* | - | 2.830 | 11.642 | 6.568 | - | 6.568 | 6.720 | 2.751 | 0.000 | 0.000 | 0.000 | 30.511 |
| S75: *Ground Soldier Ensemble* | - | 11.963 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.963 |

**A. Mission Description and Budget Item Justification**

This program element contains five projects:

Project 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 Generator - PM E2S2: This project supports the demonstration and development of a Platoon Power Generation (PPG). The 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.

Project EY2 - Integrated Soldier Power Data System - Core: Integrated Soldier Power and Data System-Core, Conformal Wearable Battery, Squad Power Manager (SPI) 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 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 sole charging solution capable of providing power to handheld communication devices and a suite of military batteries.

Project S75 - Nett Warrior (NW), [named in honor of Medal of Honor recipient COL Robert Nett], previously known as Ground Soldier System (GSS): NW provides unparalleled situational awareness and understanding to the dismounted leader allowing for faster and more accurate decisions in the tactical fight. This translates into Soldiers being at the right place, at the right time, with the right equipment making them more effective, more lethal, and more survivable in the execution of their combat mission.

| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army | Date: May 2017 |
|---|---|
| **Appropriation/Budget Activity**<br>2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)* | **R-1 Program Element (Number/Name)**<br>PE 0604827A *I Soldier Systems - Warrior Dem/Val* |

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.

| B. Program Change Summary ($ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 18.776 | 12.393 | 9.460 | - | 9.460 |
| Current President's Budget | 15.694 | 12.393 | 16.127 | - | 16.127 |
| Total Adjustments | -3.082 | 0.000 | 6.667 | - | 6.667 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | -0.214 | - | | | |
| • Adjustments to Budget Years | 0.000 | 0.000 | 6.667 | - | 6.667 |
| • Other Adjustments | -2.868 | 0.000 | 0.000 | - | 0.000 |

**Change Summary Explanation**

FY 2018 program increase is mainly attributable to increases in the following project efforts:

Project EY2 - Integrated Soldier Power Data System - Core: Integrated Soldier Power and Data System-Core, Conformal Wearable Battery, Squad Power Manager (SPI) 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 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 sole charging solution capable of providing power to handheld communication devices and a suite of military batteries.

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.

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | | Date: May 2017 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 5 | R-1 Program Element (Number/Name)<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | Project (Number/Name)<br>DX7 / *TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM* | |

| COST ($ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DX7: *TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM* | - | 0.901 | 0.751 | 0.879 | - | 0.879 | 0.500 | 0.500 | 0.500 | 0.668 | Continuing | Continuing |
| 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 characteristic of 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 selectively amplify faint sounds that would not be otherwise audible or intelligible. TCAPS and TCAPS-Lite reduces Soldiers' noise induced hearing damage. 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: FY18 RDTE funding supports continued testing and evaluation of enhanced protective hearing devices for soldiers in combat environments. Funding also supports annual efforts to relook technology for improved future capabilities.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| ***Title:*** TCAPS testing and evaluation. | 0.639 | 0.625 | 0.654 |
| ***Description:*** Test articles procurement and testing & evaluation. | | | |
| ***FY 2016 Accomplishments:***<br>Completed Headset X5 Generation 2 (Gen 2) testing and evaluation of TCAPS technology relook that supports the GEN 2. Received approval to proceed with phased-in production. | | | |
| ***FY 2017 Plans:***<br>Funding supports test articles and evaluation for a limited relook of commercial technology for improved capabilities to existing fielded systems or similar capabilities at lower costs. | | | |
| ***FY 2018 Plans:*** | | | |

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>DX7 / *TACTICAL COMMUNICATIONS AND PROTECTIVE SYSTEM* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| Initiation of TCAPS-Lite Generation 2 test efforts. Vehicle Platform integration test and evaluation efforts for TCAPS interface with VIC-3 vehicle intercommunication systems. | | | |
| ***Title:*** System Engineering and Program Management (SEPM)<br>***Description:*** TCAPS system engineering and program management support.<br><br>***FY 2016 Accomplishments:***<br>Developed TCAPS Generation 2 performance parameters. Supported combat developer on modification of TCAPS CPD in order to include TCAPS-Lite materiel solution.<br>***FY 2017 Plans:***<br>Funds system engineering and program management for TCAPS; the development of electronic training materials for improved leader training; and ensuring integration and interoperability with other Soldier equipment.<br>***FY 2018 Plans:***<br>Development of test scope of work and identification of vehicle platforms to support TCAPS VIC-3 interface efforts. Develop peformance parameters for construction of a TCAPS-Lite Generation 2. | 0.262 | 0.126 | 0.225 |
| **Accomplishments/Planned Programs Subtotals** | 0.901 | 0.751 | 0.879 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • B55510: *Tactical Communications and Protective System* | 25.597 | 3.607 | 4.411 | - | 4.411 | 1.000 | 1.000 | 1.000 | 1.000 | Continuing | Continuing |

**Remarks**

**D. Acquisition Strategy**

TCAPS is an ACAT III program that leverages commercial-off-the-shelf (COTS) technology. TCAPS conducts periodic relook of commercial technology to seek improved capabilities, reduce costs, conducts test and evaluation that allows transition to production.

**E. Performance Metrics**

N/A

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | | Date: May 2017 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 5 | R-1 Program Element (Number/Name)<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | Project (Number/Name)<br>EY2 / *Integrated Soldier Power Data System - Core* | |

| COST ($ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EY2: *Integrated Soldier Power Data System - Core* | - | 0.000 | 0.000 | 6.949 | - | 6.949 | 2.894 | 1.456 | 1.258 | 0.000 | 0.000 | 12.557 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**A. Mission Description and Budget Item Justification**

Soldier Power Integrated Soldier Power and Data System-Core, Conformal Wearable Battery, Squad Power Manager (SPI) 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. Specific systems of SPI are the Integrated Soldier Power and Data System-Core (ISPDS-C), the Conformal Wearable Battery (CWB) and the Squad Power Manager (SPM). This RDT&E line develops power sources and solutions suited for not only the individual Soldier, but for the team and squad. These power solutions are intended for use in the most austere operating environments and include, but are not limited to, individual Soldier worn systems, integrated power management, and renewable energy. SPI systems will enable dismounted Soldiers to execute their missions more efficiently, for longer durations and with fewer battery resupplies. SPI systems will also reduce the logistical burden associated with moving fuel and primary (disposable) batteries, and allow dismounted Soldiers to operate independently for longer missions without being tethered to a large generator, vehicle, or supply train. This effort is consistent with the Soldier Protection Capability Development Document (CDD) (March 2011), Operational Energy Initial Capabilities Document (ICD) (26 April 2012), the Sep 2013 Small Unit Power CDD (26 September 2013), and the draft SPM, ISPDS-C with Conformal Central Power Source (CCPS) Capability Production Document (CPD).

Justification: Beginning in FY18, funding for ISPDS-C was realigned from Program Element: 0604827A (Soldier Systems – Warrior Dem/Val)/Project: S65 (Soldier Power). FY18 RDTE funding develops power sources and solutions suited for not only the individual Soldier, but for the team and squad. These power solutions are intended for use in the most austere operating environments and include, but are not limited to, individual Soldier worn systems, integrated power management, and renewable energy.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| ***Title:*** Test and Evaluation<br>***FY 2018 Plans:***<br>Will conduct required testing to support a new contract award for the ISPDS-C. Will conduct required testing to support a new contract award for the CWB. Will test and validate new battery chemistries and interfaces with the IPSDS-C and SPM. | - | - | 1.210 |
| ***Title:*** System Engineering & Program Management<br>***FY 2018 Plans:***<br>Will develop and evaluate a power and data management hub that contains host control capability. Will continue to evaluate intra-Soldier wireless technologies. | - | - | 1.889 |
| ***Title:*** ISPDS-C/CWB Capability Improvements Integration | - | - | 3.850 |

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>EY2 / *Integrated Soldier Power Data System - Core* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| ***FY 2018 Plans:***<br>Conduct evaluation of new equipment for suitability and the ability to interface within the Soldier Power and Data Architecture. Will conduct integration of new lightweight, Soldier Power Generation, chargers / harvesters, and generators capable of supporting the variety of power devices used in tactical formations. | | | |
| **Accomplishments/Planned Programs Subtotals** | - | - | 6.949 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • PE 0604827A S65: *Soldier Systems - Warrior Dem/Val (Soldier Power)* | 2.830 | 11.642 | 6.568 | - | 6.568 | 6.720 | 2.751 | - | - | 0.000 | 30.511 |
| • PE 0604827A EY4: *Universal Battery Charger* | - | - | 1.731 | - | 1.731 | 1.764 | 1.799 | 1.835 | 1.276 | 0.000 | 8.405 |
| • R800100: *Small Unit Power Increment 1* | 25.306 | 30.014 | - | - | - | - | - | - | - | 0.000 | 55.320 |
| • R091030: *Universal Battery Charger* | - | - | 3.086 | - | 3.086 | 6.469 | 9.987 | 10.201 | 10.243 | Continuing | Continuing |
| • PE 0604827A EY3: *Soldier Power Generator* | - | - | - | - | - | 0.321 | 0.327 | 0.334 | 0.341 | Continuing | Continuing |
| • R08090: *Integrated Soldier Power Data System - Core* | - | - | - | - | - | 25.134 | 30.016 | 33.046 | 35.364 | Continuing | Continuing |

**Remarks**

**D. Acquisition Strategy**

Pursue a variety of Soldier power initiatives under full and open competition. These 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 SPM acquisition strategy will consist 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). Phase two includes the procurement of additional test articles through Indefinite Delivery Indefinite Quantity (IDIQ) contracts established through the Army Contracting Command (ACC). The Project Manager office will establish IDIQ contracts to support the SPI requirements over time. Each SPI system will be procured under purchase orders for production quantities that will be awarded on a Firm Fixed Price (FFP) contract.

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>EY2 / *Integrated Soldier Power Data System - Core* |

**E. Performance Metrics**

N/A

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | | Date: May 2017 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 5 | R-1 Program Element (Number/Name)<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | Project (Number/Name)<br>EY3 / *Soldier Power Generator* | |

| COST ($ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EY3: *Soldier Power Generator* | - | 0.000 | 0.000 | 0.000 | - | 0.000 | 0.321 | 0.327 | 0.334 | 0.341 | 0.000 | 1.323 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**A. Mission Description and Budget Item Justification**

There is no justification at this time as funding begins in FY 2019.

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

N/A

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | | Date: May 2017 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 5 | R-1 Program Element (Number/Name)<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | Project (Number/Name)<br>EY4 / *Universal Battery Charger* | |

| COST ($ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EY4: *Universal Battery Charger* | - | 0.000 | 0.000 | 1.731 | - | 1.731 | 1.764 | 1.799 | 1.835 | 1.276 | 0.000 | 8.405 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**A. Mission Description and Budget Item Justification**

The Universal Battery Charger (UBC) fills the power and energy gap created by the increase in mission essential, Soldier portable power consumers, by providing a single charging solution capable of providing power to handheld communication devices and a suite of military batteries. The UBC charging solution is suited for the squad and platoon and intended for use in the most austere operating environments and 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 primary (disposable) batteries. Develops the vehicle integration kits that allow for the UBC to be mounted on vehicle platforms. The UBC capability also allows dismounted Soldiers to operate independently for longer missions without being tethered to a large generator, vehicle, or supply train. This effort is consistent with the Operational Energy ICD (26 April 2012) and the Universal Battery Charger CPD (27 May 2015).

Justification: Beginning in FY18, funding for Integrated Soldier Power Data System-Core (ISPDS-C) was realigned from Program Element: 0604827A (Soldier Systems - Warrior Dem/Val)/Project S65 (Soldier Power). FY18 RDTE funding develops battery power solutions suited for not only the individual Soldier and the team and squad.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| ***Title:*** Test & Evaluation<br>***FY 2018 Plans:***<br>Conduct vehicle integration testing of the UBC Vehicle Integration Kit (VIK) on vehicle platforms. Test and evaluate new battery chemistries and interfaces with the UBC. | - | - | 1.413 |
| ***Title:*** System Engineering & Program Management<br>***FY 2018 Plans:***<br>Design and develop the UBC Vehicle Integration Kit (VIK) for vehicle platforms. Develop alternate dismounted charging solutions to reduce Soldier bulk and load. | - | - | 0.318 |
| **Accomplishments/Planned Programs Subtotals** | - | - | 1.731 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • R80010000: *Small Unit Power Increment 1* | 25.306 | 30.014 | - | - | - | - | - | - | - | 0.000 | 55.320 |

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>EY4 / *Universal Battery Charger* |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • R09103000: *Universal Battery Charger* | - | - | 3.086 | - | 3.086 | 6.469 | 9.987 | 10.201 | 10.243 | Continuing | Continuing |
| • 0604827A / Project S65: *Soldier Systems - Warrior Dem/Val (Soldier Power)* | 2.008 | - | 9.352 | - | 9.352 | - | - | - | - | 0.000 | 11.360 |

**Remarks**

**D. Acquisition Strategy**

Using full and open competition, an Indefinite Delivery Indefinite Quantity (IDIQ) production contract was awarded 27 January 2016, in order to procure the UBC. The IDIQ contract contains First Article Testing (FAT) Contract Line Item Numbers (CLINs) to support initial testing activities. Additionally, the contracts will contain production CLINs to ensure the Project Management office can carry out production buys. The system will be procured under purchase orders for production quantities that will be awarded on a Firm Fixed Price (FFP) contract. Primary development activities for Fiscal Year 2018 (FY18) are the development of the UBC Vehicle Integration Kit (VIK). The UBC VIKs will be designed, developed, and tested in partnership with the Product Manager for AMPV (PM AMPV).

**E. Performance Metrics**

N/A

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | | | | | | | | | Date: May 2017 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 5 | | | | | R-1 Program Element (Number/Name)<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | | | | Project (Number/Name)<br>S65 / *Soldier Power* | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2016** | **FY 2017** | **FY 2018 Base** | **FY 2018 OCO** | **FY 2018 Total** | **FY 2019** | **FY 2020** | **FY 2021** | **FY 2022** | **Cost To Complete** | **Total Cost** |
| S65: *Soldier Power* | - | 2.830 | 11.642 | 6.568 | - | 6.568 | 6.720 | 2.751 | 0.000 | 0.000 | 0.000 | 30.511 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**Note**

Not applicable for this item.

**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, while also providing dismounted Soldiers the ability to execute their missions more efficiently, for longer durations and with fewer battery resupplies. An integrated Soldier power system will provide the Soldier with a wearable power supply that will be significantly more efficient than carrying separate batteries for each device. Soldier power systems will also reduce the logistical burden associated with moving fuel and primary (disposable) batteries, and allow dismounted Soldiers to operate independently for longer missions without being tethered to a large generator, vehicle, or supply train. SUP develops systems that consist of the Integrated Soldier Power and Data System-Core (ISPDS-C), Conformal Wearable Battery (CWB), Squad Power Manager (SPM), Universal Battery Charger (UBC), and Soldier Power Generation (SPG) Technologies. 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).

Justification: Beginning in FY18, funding for SUP was realigned to Program Element: 0604827A (Soldier Systems - Warrior Dem/Val)/Projects: EY2 (Integrated Soldier Power Data System - Core) and EY3 (Soldier Power Generator) and EY4 (Universal Battery Charger). Under this realignment Soldier and Small Unit Power will continue to develop and test power solutions for the ISPDS, UBC, CWB, SPM and SPG technologies.

Platoon Power Generator - PM E2S2: This project supports the demonstration and development of a Platoon Power Generation (PPG). The Small Unit Power 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. 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 Stryker Brigade Combat Teams (SBCT), Armor Brigade Combat Team (ABCT) and as a power source for Infantry Brigade Combat Teams (IBCT) in austere environments. FY17 funds will be used for the preparation of MS "B" and allow for the award and management of R&D contracts to two manufacturers to develop and demonstrate a 1kW PPG in FY18.

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>S65 / *Soldier Power* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| ***Title:*** Soldier Power Generation (SPG)<br>***Description:*** Soldier portable, renewable energy solutions for Soldier Power Generation.<br>***FY 2016 Accomplishments:***<br>Continued development and optimization of lightweight, Soldier Power Generation, chargers / harvesters, and generators capable of supporting the variety of power devices used in tactical formations. Developed Phase II of the Knee-Worn Kinetic Energy Harvester. Developed and evaluated alternative kinetic energy harvesting rucksack frames. Analyzed the feasibility, suitability, and acceptability of technologies under evaluation as potential material solutions.<br>***FY 2017 Plans:***<br>Will support EMD activities leading to Milestone C/ Full Rate Production in 1QFY19 for Soldier Power generation. Will continue development and optimization of lightweight, Soldier-portable chargers/harvesters and generators capable of supporting the variety of power devices used in tactical formations. Will support integration of the Universal Battery Charger on HMMWV platforms. | 1.399 | 7.984 | - |
| ***Title:*** Soldier Power Test and Evaluation<br>***Description:*** Integration testing and annual testing and evaluation events<br>***FY 2016 Accomplishments:***<br>Completed test requirements necessary to satisfy Milestone C / Full Rate production requirements for the Integrated Soldier Power and Data System-Core (ISPDS-C), the Squad Power Manager (SPM), the Conformal Wearable Battery (CWB). Developed a power management application for the Nett Warrior End User Device. Investigated lightweight power generation capability at the squad level. Tested and Evaluated an alternative dismounted solution to the UBC.<br>***FY 2017 Plans:***<br>Will conduct developmental testing to support Milestone C/Full Rate production requirements for Soldier Power Generation and user evaluations at the Joint Infantry Company Prototype (JIC-P) event hosted by the Navy in 2QFY17. Will test and validate new battery chemistries and interfaces with the existing power charging solutions within Small Unit Power. Will test the integration of the Universal Battery charger on HMMWV platforms. | 0.609 | 1.404 | - |
| ***Title:*** Platoon Power Generation (PPG) - PM E2S2<br>***Description:*** Prepare for award and manage an EMD phase R&D contract for the PPG.<br>***FY 2016 Accomplishments:*** | 0.822 | 2.254 | 6.568 |

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>S65 / *Soldier Power* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| Award EMD contract and fund applicable functional support agreements.<br>***FY 2017 Plans:***<br>Continue EMD contract: fund applicable functional support agreements and MIPRs; prepare documentation and vendor for Milestone C and production, respectively.<br>***FY 2018 Plans:***<br>Continue EMD contract: fund applicable functional support agreements and MIPRs; prepare documentation and vendor for Milestone C and production, respectively. | | | |
| **Accomplishments/Planned Programs Subtotals** | 2.830 | 11.642 | 6.568 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • R80010000: *Small Unit Power Increment 1* | 25.306 | 30.014 | - | - | - | - | - | - | - | 0.000 | 55.320 |
| • R08090000: *Integrated Soldier Power Data System - Core* | - | - | 7.370 | - | 7.370 | 25.134 | 30.016 | 33.046 | 35.364 | Continuing | Continuing |
| • R09103000: *Universal Battery Charger* | - | - | 3.086 | - | 3.086 | 6.469 | 9.987 | 10.201 | 10.243 | Continuing | Continuing |
| • 0604827A / Project EY2: *Integrated Soldier Power Data System - Core* | - | - | 6.949 | - | 6.949 | 2.894 | 1.456 | 1.258 | - | 0.000 | 12.557 |
| • 0604827A / Project EY4: *Universal Battery Charger* | - | - | 1.731 | - | 1.731 | 1.764 | 1.799 | 1.835 | 1.276 | Continuing | Continuing |
| • 0604827A / Project EY3: *Soldie Power Generator* | - | - | - | - | - | 0.321 | 0.327 | 0.334 | 0.341 | Continuing | Continuing |

**Remarks**

**D. Acquisition Strategy**

Soldier and Small Unit Power

Pursue a variety of Soldier power initiatives under full and open competition. These 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

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>S65 / *Soldier Power* |

successful, selected for procurement and subsequent fielding and sustainment. The acquisition strategy varies by product. For example, the SPM acquisition strategy will consist 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). Phase two includes the procurement of additional test articles through Indefinite Delivery Indefinite Quantity (IDIQ) contracts established through the Army Contracting Command (ACC). The Project Manager office will establish IDIQ contracts to support the SUP requirements over time. Each SUP system will be procured under purchase orders for production quantities that will be awarded on a Firm Fixed Price (FFP) contract.

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

Full and open competitive acquisition will be conducted culminating in an award of up to two (2) Cost Plus Incentive Fee (CPIF) contracts supporting a 24 month Engineering and Manufacturing Development (EMD) phase. Two selected contractors will be awarded EMD contracts and will separately perform a 15 month effort (Phase I) to fabricate and produce the minimum order of 10 Small Unit Power Platoon Power Generation (1kW Generator) systems (5 per vendor). Phase I will be followed by a down-select evaluation to choose the manufacturer that could produce the best value system. During Phase II, selected vendor will produce 5 additional systems to undergo developmental test (DT), a logistics demonstration (LD), pre-production qualification test, and limited user / operational test (LUT/OT). 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).

**E. Performance Metrics**

NA

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | | Date: May 2017 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 5 | R-1 Program Element (Number/Name)<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | Project (Number/Name)<br>S75 / *Ground Soldier Ensemble* | |

| COST ($ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S75: *Ground Soldier Ensemble* | - | 11.963 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.963 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**A. Mission Description and Budget Item Justification**

The Nett Warrior (NW) Program (named in honor of Medal of Honor recipient Colonel Robert C. Nett), also known as the Ground Soldier System (GSS) Program, leverages commercial smart devices and secure Army tactical radios to provide the dismounted leader an integrated mission command and situational awareness system for use during combat operations. The NW system provides leaders electronic real-time information on friendly positions; information about enemy activity and movement; navigational data and map imagery; a collaborative planning tool; and other mission related graphics which effectively puts the power of the entire Army tactical network in the hands of the dismounted leader. The NW system also provides the same integrated mission command capability to the tactical vehicle-mounted leaders so that when dismounted, the leader still maintains the common operating picture (COP) and has continuous situational awareness. This capability provides unparalleled situational awareness and enhanced communications to the dismounted leader allowing for faster, more accurate decisions and reduced fratricide in the tactical fight. Includes integration and interface of products on Soldiers.

The continued development and integration of the NW program also integrates applications from other programs aimed at considerably reducing the weight and bulk of the dismounted Soldier's load by using a single End User Device. The NW program harnesses Soldiers' experience in combat operations and employs combat veterans for Soldier feedback enhancing human factors design and fightability of the system. This project funds the following: 1) Incorporation of additional new hardware applications and capabilities into Nett Warrior, 2) Yearly developmental and operational tests of the NW with continually advancing commercial smart device technology inserted, 3) Software development for planned updates, 4) Integration of new End User Devices with the existing and re-competed Army Tactical Radios, including vehicle power integration, 5) Government led integration and system engineering and program management, and 6) Conduct NW Operational Test and Evaluation with Mechanized and Infantry units in FY16/17.

NOTE: Beginning in FY17, funding for Nett Warrior was realigned to 0604818A (Army Tactical Command & Control Hardware & Software)/Project EQ8 (Mobile/ Handheld Computing Environment). Under this realignment Nett Warrior will continue to integrate, conduct developmental and operational test, etc. as stated above.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| ***Title:*** Test and Evaluation including twice a year Network Integration Evaluation (NIE) to gain Soldier feedback | 2.596 | - | - |
| ***Description:*** Funding is provided for the following efforts. | | | |
| ***FY 2016 Accomplishments:***<br>Conducted NW test and evaluation, along with 3rd party applications, for technical verification at developmental events and user verification to include new dismounted Soldier hardware and new Full and Open Competition (FOC) Rifleman Radios from PEO C3T. Supported NW as a baseline NIE and Army Warfighting Assessment (AWA) system including: Brigade level support, | | | |

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>S75 / *Ground Soldier Ensemble* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| equipping, training, test costs, and spares for NW; yearly Army Interoperability Certification; environmental testing; electronic warfare testing; and Information Assurance penetration prevention testing for new commercial smart devices, NW software and accessories. Tested emerging secure 4G/LTE Army tactical networks. | | | |
| ***Title:*** Hardware and Software Integration and Evaluation for Capability Improvements<br>***Description:*** Funding is provided for the following efforts.<br><br>***FY 2016 Accomplishments:***<br>Integrated and evaluated emerging advanced commercial smart devices, cables, and other hardware including unmanned sensor systems for potential adoption into the NW system. Integrated new PEO C3T FOC rifleman radios with NW from the 2015 Rifleman Radio procurement contract award. Integrated 3rd party software combat applications for increased functionality to keep pace with emerging technology, lower cost and weight. Continued to integrate tactical 4G/LTE capability with NW, to include accreditation via the NSA's Commercial Solutions for Classified (CSFC) process. | 4.536 | - | - |
| ***Title:*** Software Development and Integration<br>***Description:*** Funding is provided for the following efforts.<br><br>***FY 2016 Accomplishments:***<br>Integrated NW capabilities, radio drivers, other Army required applications via the Nett Warrior software development kit to expand capabilities to meet Army, Special Forces and Army Mobile / Handheld Computer Environment (M/HHCE) requirements, retain interoperability certification for Army Capability Sets, information assurance accreditation, and complete required AIC testing for latest NW software baseline. | 2.491 | - | - |
| ***Title:*** Integration with AN/PRC-154A and Vehicle Platforms<br>***Description:*** Funding is provided for the following efforts.<br><br>***FY 2016 Accomplishments:***<br>Integrated new commercial smart devices with competitively procured FOC Rifleman Radio AN/PRC-154A Radio from PEO C3T in preparation for planned FOT&E in FY17. Conducted integration and testing of Army secure tactical 4G/LTE with NW. | 1.412 | - | - |
| ***Title:*** Conduct Systems Engineering and Program Management Support to Nett Warrior<br>***Description:*** Funding is provided for the following efforts.<br><br>***FY 2016 Accomplishments:*** | 0.928 | - | - |

| Exhibit R-2A, RDT&E Project Justification: FY 2018 Army | | Date: May 2017 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0604827A / *Soldier Systems - Warrior Dem/Val* | **Project (Number/Name)**<br>S75 / *Ground Soldier Ensemble* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---|---|---|
| Conducted government systems / software engineering and program management support for NW program. Collected input from Soldiers to improve NW size, weight, power, fightability, safety and effectiveness via surveys. Managed system configuration and testing, development and integration planning, to include investigation and analysis of emerging innovative commercial technologies to lower the size, weight, power, cost and increase Nett Warrior functionality. | | | |
| **Accomplishments/Planned Programs Subtotals** | 11.963 | - | - |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • OPA 3, R80501: *OPA 3, R80501, Ground Soldier System* | 49.798 | 32.419 | 38.219 | - | 38.219 | 38.642 | 39.171 | 37.926 | 41.739 | Continuing | Continuing |
| • RDT&E, PE 0604818A EQ8: *RDT&E, PE 0604818A EQ8 Army Tactical Command & Control Hardware & Software* | - | 10.563 | 11.850 | - | 11.850 | 11.920 | 12.089 | 12.385 | 12.577 | Continuing | Continuing |

**Remarks**

**D. Acquisition Strategy**

The Nett Warrior (NW) program provides unparalleled situational awareness and mission command to dismounted combat leaders through a secure commercial smart device, power source, cables and tactical radio. The NW is focused on Team Leader and higher echelons and provides an integrated secure information-centric Commercial-Off-The Shelf (COTS) mobile application-based computation platform with data collection, enhanced SA, mission planning, and navigational aid functions overlaid on geo-referenced maps and high resolution imagery throughout a brigade. The NW enables real-time ground tactical-level knowledge sharing and command and control (C2), directly impacting combat effectiveness and decision-making. The NW also improves lower echelon intelligence production and analysis capabilities which are central to efficient and effective counter-insurgency warfare. NW program completed LRIP/MS C in 2012 followed by two LRIP decisions in 2013-14 in preparation for IOT&E under DOT&E oversight in 4QFY14-1QFY15. This IOT&E event led to an additional NW Low Rate Initial Production (LRIP) decision in 2015 and a Full Rate Production (FRP) Decision is planned for early FY18. Upon a successful FRP Decision, NW will complete annual production and fielding events based on yearly development, integration and testing of emerging advanced smart devices to lower cost, weigh and power. To capitalize on commercial industry's investment in advanced smart device technology as well as innovation and changes within Army, NW requires annual RDT&E funding for integration and evaluation. Through this process and at low cost, the Army is able to integrate and evaluate for combat utility the hundreds of millions spent in product development by the major commercial device manufactures.

**E. Performance Metrics**

N/A