Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army											Date: February 2015	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603001A / *Warfighter Advanced Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	-	64.337	78.109	46.973	-	46.973	38.831	40.937	43.523	44.355	-	-
242: *Airdrop Equipment*	-	3.664	3.208	2.696	-	2.696	3.669	3.778	3.858	3.935	-	-
543: *Ammunition Logistics*	-	2.429	2.818	2.738	-	2.738	2.284	2.325	2.341	2.387	-	-
C07: *Joint Service Combat Feeding Tech Demo*	-	3.681	3.012	2.155	-	2.155	2.083	2.091	2.105	2.145	-	-
J50: *Future Warrior Technology Integration*	-	36.996	48.369	32.621	-	32.621	26.550	29.310	31.764	32.364	-	-
J52: *WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)*	-	10.000	13.000	-	-	-	-	-	-	-	-	-
VT5: *Expeditionary Mobile Base Camp Demonstration*	-	7.567	7.702	6.763	-	6.763	4.245	3.433	3.455	3.524	-	-

Note

FY16 funds decreased to support the strategic S&T shift from 6.3 to 6.2 human performance efforts.

A. Mission Description and Budget Item Justification

This program element (PE) provides Soldiers and Small Combat Units with the most effective personal clothing, equipment, combat rations, shelters, and logistical support items with the least weight and sustainment burden. This PE supports the maturation and demonstration of technologies associated with aerial delivery of personnel and cargo (Project 242), rapid ammunition/munitions deployability and resupply (Project 543), combat rations and combat feeding equipment (Project C07), combat clothing and personal equipment (including protective equipment such as personal armor, helmets, and eyewear) (Project J50), and expeditionary base camps (Project VT5). The projects in this PE adhere to Tri-Service Agreements on clothing, textiles, and food with coordination provided through the Cross-Service Warfighter Equipment Board, the Soldier as a System Integrated Concepts Development Team, and the DoD Combat Feeding Research and Engineering Board.

Efforts in this program element support the Army science and technology Soldier/Squad portfolio.

Work in this PE is related to, and fully coordinated with, PE 0602786A (Warfighter Technology), PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0602624A (Weapons and Munitions Technology), PE 0602705A (Electronics and Electronic Devices), PE 0622787A (Medical Technology), PE 0602716A (Human Factors Engineering Technology), PE 0622308A (Advanced Concepts and Simulation), PE 0633015A (Next Generation Training and Simulation Systems), PE 0602705A (Electronics and Electronic Devices), PE 0603004A (Weapons and Munitions Advanced Technology), PE 0603005A (Combat Vehicle and

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army	Date: February 2015
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603001A *I Warfighter Advanced Technology*

Automotive Advanced Technology), PE 0603008A (Electronic Warfare Advanced Technology), PEs 0602623A and 0603607A (Joint Service Small Arms Program), PE 0603710A (Night Vision Advanced Technology), PE 0602784A (Military Engineering Technology), and PE 0603734A (Military Engineering Advanced Technology).

The cited work is consistent with the Assistant Secretary of Defense, Research and Engineering Science and Technology focus areas and the Army Modernization Strategy.

Work is led, performed and/or managed by the Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA and the Armament Research, Development, and Engineering Center (ARDEC), Picatinny, NJ.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	66.025	65.139	52.083	-	52.083
Current President's Budget	64.337	78.109	46.973	-	46.973
Total Adjustments	-1.688	12.970	-5.110	-	-5.110
• Congressional General Reductions	-	-0.030			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	13.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.688	-			
• Adjustments to Budget Years	-	-	-5.110	-	-5.110

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2014	FY 2015
Project: J52: *WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)*		
Congressional Add: *Program Increase*	10.000	1.000
Congressional Add: *Environmental Control Systems*	-	12.000
Congressional Add Subtotals for Project: J52	10.000	13.000
Congressional Add Totals for all Projects	10.000	13.000

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603001A / *Warfighter Advanced Technology*	Project (Number/Name) 242 / *Airdrop Equipment*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
242: *Airdrop Equipment*	-	3.664	3.208	2.696	-	2.696	3.669	3.778	3.858	3.935	-	-

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures and demonstrates equipment and innovative techniques for precision aerial delivery of cargo and personnel. Aerial delivery is a key capability for rapid force projection and global precision delivery. These efforts are designed to advance state of the art precision delivery technologies such as parachutes, guidance, navigation, and control (GNC) components and subsystems, tracking sensors, software algorithms, and safety rigging which integrate with currently equipped aircraft, unmanned aerial systems (UAS), and advanced rotary wing aircraft. These efforts provide the Warfighter with highly accurate, timely cargo/payload delivery and resupply in all terrain and weather conditions. Precision delivery/resupply reduces vulnerability of ground Soldiers, aircraft, and aircrew. Precision aerial delivery supports remote warfare with activities such as placement of battlefield sensors, reduction of Soldier load, and initial delivery of key expeditionary base camp assets. Demonstrated technologies transition to Product Manager (PM)-Force Sustainment Systems (PM FSS), PM-Soldier Clothing and Individual Equipment (PM SCIE) as well as other Army PMs.

Efforts in this program element support the Army science and technology Soldier/Squad portfolio.

Work in this project is fully coordinated with PE 0602786A (Warfighter Technology).

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

Work in this project is performed by the Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Airdrop/Aerial Delivery	3.664	3.208	2.696
Description: This effort matures and demonstrates parachute materials and designs, precision guidance and navigation software and hardware, and tracking sensors and safety devices to increase the accuracy in the delivery of cargo to remote locations and/or complex terrains, as well as increase safety of personnel insertions into theaters of operations. This work further evolves breakthroughs from PE 0602786A/Project 283 and is coordinated with PE0602786A/Project VT4. This effort supports capability demonstrations for the Army Top Challenge of easing overburdened Soldiers in small units through the use of tactical aerial resupply technologies.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** 242 / *Airdrop Equipment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
FY 2014 Accomplishments: Integrated and demonstrated net-centric in-flight collision avoidance and wind sharing technologies into the precision aerial delivery system for the Ultra Light Weight (<500 pounds) payload weight class to prevent midair collisions of payloads and to optimize aerial resupply to Soldiers as a means of reducing carried weight; matured and demonstrated technologies to create the capability for multiple airdrops from a single helicopter via sling load release that increases effectiveness and efficiency for logistic delivery of personnel and equipment; matured and demonstrated sensor technologies and software algorithms for real-time monitoring and systems communication between payloads and ground stations to support tactical aerial resupply; demonstrated accuracy of parafoil to increase accuracy of payload resupply; reduced cost as well as equipment retrograde/retrieval weight and volume to decrease the burden of Soldiers engaged in airborne operations. ***FY 2015 Plans:*** Matures and demonstrates in-flight Joint Precision Aerial Delivery System (JPADS) collision avoidance capability to reduce collision/catastrophic damage and loss of vital supplies; matures precision delivery and landing accuracy for lifecycle cost reduction efficiencies and lower retrograde; begins demonstration of next generation high altitude Parachutist Oxygen Breathing System technology to provide parachutists with sufficient oxygen at higher altitudes and with slower descent rates; optimizes large scale helicopter auto hookup prototypes for multiple airdrops to increase ground operator safety; demonstrates both half- and full-scale technologies for passively stabilizing the flight characteristics with helicopter sling load payloads; demonstrates low-cost, low-weight skidboard to reduce materials and decrease manufacturing and transportation costs; matures and demonstrates a tactical aerial resupply capability to resupply/unburden the small unit/squad. ***FY 2016 Plans:*** Will demonstrate precision airdrop functionality and reliability while intentionally interjecting faults into the system in order to gather statistical data in an operationally relevant environment; focus on accuracy and survivability improvements: guidance, navigation, and control improvements in heavy/variable winds, cost reductions and minimization of retrograde weight/volume; demonstrate and transition the high altitude low opening parachute capability for 100-500 lb. payloads utilizing main parachutes currently in the Army inventory; demonstrate auto hook up and improvement in payload stability for helicopter sling loads.			
Accomplishments/Planned Programs Subtotals	3.664	3.208	2.696

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** 242 / *Airdrop Equipment*

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603001A / *Warfighter Advanced Technology*	Project (Number/Name) 543 / *Ammunition Logistics*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
543: *Ammunition Logistics*	-	2.429	2.818	2.738	-	2.738	2.284	2.325	2.341	2.387	-	-

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures and demonstrates technologies for rapidly deploying and resupplying munitions while also improving the return of unused ammunition from deployment. This effort contributes to force readiness and reduction in the logistics footprint through improvements in Materials Handling Equipment (MHE), ammunition, and lethality packaging/palletization, explosives safety, weapons re-arm, and asset throughput/management.

Efforts in this project support the Army science and technology Lethality and Ground Maneuver portfolio. Work in this project is related to, and fully coordinated with PE0603005 and 0602601.

The cited work is consistent with the Assistant Secretary of Defense, Research and Engineering Science and Technology focus areas and the Army Modernization Strategy.

Work in this project is performed and managed by the US Army Armament Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, NJ in collaboration with the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Automated Material Handling Technology	0.391	2.418	1.583
Description: This effort demonstrates smart sensors and robotic load handling equipment as add-on kits for side loading forklifts used in ammunition storage igloos and tactical forklifts to provide quick, safe, and cost effective transfer of munitions pallets between storage areas and transportation assets.			
FY 2014 Accomplishments: Provided preliminary design architecture of an autonomous material handling applique kit for the 5,000 lb capacity tactical forklift.			
FY 2015 Plans: Complete tactical navigation development and adapt robotic add-on kits to rough terrain environment for 5,000 lb forklift; demonstrate the integrated system.			
FY 2016 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** 543 / *Ammunition Logistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Will complete development of the robotic add-on kit for rough terrain 5,000 lb forklift and conduct the final demonstration.			
Title: Adaptive Packaging ***Description:*** This effort demonstrates a lightweight multi-modal pallet with embedded container restraint systems. The system automatically locks down onto the top surface of a redesigned advanced cargo platform to form a multimodal distribution capability for rapid, more efficient deployment and sustainment operations. ***FY 2014 Accomplishments:*** Completed material market survey; initiated and evaluated the prototype pallet and platform designs.	1.648	-	-
Title: Explosive Safety for Automated Base Camp Planning ***Description:*** This effort integrates explosives safety site planning software with the automated base camp planning tool to reduce the time to plan base camps and improve soldier safety. ***FY 2014 Accomplishments:*** Completed preliminary system integration and engineering tests of automated base camp planning software that incorporates explosives safety. ***FY 2015 Plans:*** Complete database and ammunition planning/management software module integration; validate the module compatibility with base camp planning. ***FY 2016 Plans:*** Will complete validation testing of ammunition planning/management software module with ammunition management system; conduct integrated demonstration with the Virtual Forward Operating Base (VFOB) planning tool.	0.390	0.400	0.400
Title: Total Ammunition Logistics Knowledge (TALK) ***Description:*** This effort will develop state of the art embedded micro sensors and Automated Identification Technologies that provide the capability for ammunition to communicate key characteristics, or information about itself to various interrogators throughout the logistics life-cycle from the ammunition load plant to the weapon in the field to improve ammunition management, reliability, and performance. ***FY 2016 Plans:*** Will conduct preliminary design of environmental monitoring and data delivery mechanisms for artillery ammunition.	-	-	0.755
Accomplishments/Planned Programs Subtotals	2.429	2.818	2.738

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** 543 / *Ammunition Logistics*

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: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603001A / *Warfighter Advanced Technology*	Project (Number/Name) C07 / *Joint Service Combat Feeding Tech Demo*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
C07: *Joint Service Combat Feeding Tech Demo*	-	3.681	3.012	2.155	-	2.155	2.083	2.091	2.105	2.145	-	-

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures and demonstrates technologies for military combat feeding systems and combat rations. Areas of emphasis include: enhanced nutrient composition to maximize cognitive and physical performance on the battlefield; cutting edge food stabilization and preservation techniques that increase the variety and quality of rations used by the Joint Services; novel ration packaging solutions to minimize degradation of combat rations during storage; field portable biosensors for food-borne pathogen detection and identification as well as predictive modeling tools to protect the Warfighter from food-borne illnesses. This project demonstrates combat feeding equipment with reduced logistics (in component parts, weight, volume, fuel and water) and labor requirements, while improving the quality of food service. The project, a Department of Defense (DoD) program for which the Army has Executive Agent responsibility, provides technology development for Joint Service Combat Feeding. The DoD Combat Feeding Research and Engineering Board provides oversight for this project. Demonstrated field feeding equipment is transitioned to Product Manager (PM)-Force Sustainment Systems (PM FSS).

Efforts in this program element support the Army science and technology Soldier/Squad portfolio.

Work in this project complements and is fully coordinated with PE 0602787A (Medical Technology).

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

Work in this project is performed by the US Army Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Joint Combat Feeding Equipment Technology	2.454	-	-
Description: Beginning in FY15, this effort is renamed from Joint Combat Feeding Equipment Technology to Joint Combat Feeding Equipment and Food Protection Technology Demonstration. This effort demonstrates technologies in support of DoD Veterinary Service Activity (VSA) to improve field detection and identification capabilities for the presence of chemical and biological threats in foods and provide new techniques and sensors for food inspectors in support of field feeding operations. This			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** C07 / *Joint Service Combat Feeding Tech Demo*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
effort demonstrates equipment and energy technologies to expand capability and reduce the logistics footprint of field feeding systems. ***FY 2014 Accomplishments:*** Conducted technical demonstrations of new refrigeration technologies to improve fuel efficiency, increase operation in hot environments, and reduce failure rates as well as procurement and maintenance costs; integrated new power technologies to demonstrate self-sustaining appliances that reduce reliance on field generators in field kitchens as well as to reduce fuel costs and resupply demands.			
Title: Joint Combat Feeding Equipment and Food Protection Technology Demonstration ***Description:*** Beginning in FY15, this effort is renamed from Joint Combat Feeding Equipment Technology to Joint Combat Feeding Equipment and Food Protection Technology Demonstration. This effort demonstrates technologies in support of DoD VSA to improve field detection and identification capabilities for the presence of chemical and biological threats in foods and provide new techniques and sensors for food inspectors in support of field feeding operations. This effort demonstrates equipment and energy technologies to expand capability and reduce the logistics footprint of field feeding systems. ***FY 2015 Plans:*** Demonstrates novel field sensor technologies to detect and identify toxic chemicals in food; evaluates and demonstrates commercial off the shelf technologies in support of DoD VSA mission; continues demonstration of novel technologies to improve fuel efficiency, increases operation in harsh environments and improves mean time between failure for field feeding equipment; demonstrates reduced reliance on field generators in field kitchens, thus decreasing fuel costs, resupply demands, and risk to logistics/resupply personnel.	-	1.747	-
Title: Ration Stabilization, Packaging, Nutrient Delivery, and Food Safety Technology ***Description:*** Beginning in FY15, this effort is renamed from Ration Stabilization, Packaging, Nutrient Delivery, and Food Safety to Ration Stabilization and Nutrient Delivery Technology Demonstration. This effort matures and demonstrates novel nutritional biochemistry, food processing, and packaging technologies to enhance nutrition and improve food stabilization and ration packaging to support Warfighter physical and cognitive performance on the battlefield. ***FY 2014 Accomplishments:*** Demonstrated reduction of secondary packaging by utilizing emerging polymer materials and manufacturing methods to reduce packaging bulk/weight and eliminate field waste; validated increased availability and stability of anti-oxidants within ration	1.227	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** C07 / *Joint Service Combat Feeding Tech Demo*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
components to improve Warfighter performance and recovery time; verified safety, acceptability, cost, and shelf-life of meat/ seafood processed in novel drying processes for application to group rations options and expanded shelf-life.			
Title: Ration Stabilization and Nutrient Delivery Technology Demonstration ***Description:*** Beginning in FY15, this effort is renamed from Ration Stabilization, Packaging, Nutrient Delivery, and Food Safety to Ration Stabilization and Nutrient Delivery Technology Demonstration. This effort matures and demonstrates novel nutritional biochemistry, food processing, and packaging technologies to enhance nutrition and improve food stabilization and ration packaging to support Warfighter physical and cognitive performance on the battlefield. ***FY 2015 Plans:*** Demonstrates increased bio-availability and stability of phytonutrients within ration components to improve Warfighter performance and recovery time; validates safety, acceptability, cost, and shelf-life of rations processed in novel stabilization technologies for application to operational rations and extended shelf-life; demonstrates increased availability of nutrition components for Soldier post-mission physical recovery.	-	1.265	-
Title: Joint Service Combat Feeding Technical Demonstration ***Description:*** Beginning in FY16, Joint Combat Feeding Equipment and Food Protection Technology Demonstration and Ration Stabilization and Nutrient Delivery Technology Demonstration will be combined and renamed to Joint Service Combat Feeding Technical Demonstration. This effort matures and demonstrates novel nutritional biochemistry, food processing, and packaging technologies to enhance nutrition and improve food stabilization and ration packaging to support Warfighter physical and cognitive performance on the battlefield. This effort will demonstrate technologies in support of DoD VSA to improve field detection and identification capabilities for the presence of chemical and biological threats in foods and provide new techniques and sensors for food inspectors in support of field feeding operations. This effort demonstrates equipment and energy technologies to expand capability and reduce the logistics footprint of field feeding systems. ***FY 2016 Plans:*** Will exploit and demonstrate novel field feeding technologies to promote Joint field feeding operations and reduce field feeding costs/logistical footprint through increased commonality across Services, in support of DoD operational energy goals; demonstrate novel food pathogen extraction methods and commercial-of-the-shelf (COTS) diagnostic technologies; develop and demonstrate technologies to stabilize amino acids to improve protein quality and functionality; demonstrate novel ration processing techniques for significant cost reductions while expanding nutrient retention within shelf stable components; demonstrate technology for next generation of ration components with increased nutrient density to decrease sustainment burden, improve performance and	-	-	2.155

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** C07 / *Joint Service Combat Feeding Tech Demo*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
reduce Soldier load; demonstrate novel ration packaging material technologies (e.g., bio-based hybrid materials) to reduce ration packaging waste.			
Accomplishments/Planned Programs Subtotals	3.681	3.012	2.155

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: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603001A / *Warfighter Advanced Technology*	Project (Number/Name) J50 / *Future Warrior Technology Integration*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
J50: *Future Warrior Technology Integration*	-	36.996	48.369	32.621	-	32.621	26.550	29.310	31.764	32.364	-	-

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures, demonstrates, and integrates lightweight and multifunctional materials and components to provide the Soldier and small units with the most effective personal protection, electronics connectivity, and mission specific equipment while evaluating the potential to reduce physical weight, cognitive burden, and sustainment needs within the required protection and functional capabilities for the small unit. This project develops, matures, and maintains a Soldier Systems Engineering Architecture (SSEA) framework commensurate with other major Army platforms. Efforts in this project focus on maturing, integrating, and demonstrating personal protection (such as armor, headgear, eyewear, and hearing protection), durable clothing for all weather conditions, and power management solutions. In addition, special focus is on understanding and demonstrating the impacts of physical and cognitive load on Soldier mission performance and quality of life by implementing strategies to reduce load and/or optimize loads to reduce injuries. These efforts integrate geographically dispersed laboratory environments to conduct comprehensive assessments and report the technical viability of Soldier system solutions and conducts field demonstrations to obtain relevant feedback for user acceptance and performance validation.

Efforts in this program element support the Army science and technology Soldier/Squad portfolio.

Work in this project complements and is fully coordinated with PEs 0602786A (Warfighter Technology), PE 0602618A (Ballistics Technology), PE 0602105A (Materials Technology), PE 0622787A (Medical Technology), PE 0602716A (Human Factors Engineering Technology), PE 0622308A (Advanced Concepts and Simulation), PE 0633015A (Next Generation Training and Simulation Systems), PE 0602705A (Electronics and Electronic Devices), PE 0603710A (Night Vision Advanced Technology), PE 0602624A (Weapons and Munitions Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology), PE 0603004A (Weapons and Munitions Advanced Technology), and PE 0603008A (Electronic Warfare Advanced Technology).

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

Work in this project is performed by the US Army Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Soldier/Small Unit Integrated Protection	10.291	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** J50 / *Future Warrior Technology Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Description: This effort matures and demonstrates proven components and material advancements which are integrated into experimental ensembles or prototypes that have potential to significantly increase protection of individual Soldiers and/or reduce physical load at equal or better capability. This work is fully coordinated with PE 060786A/Project H98, PE 0602716A/Project H70, and PE 0602705A/Project H94. Demonstrated technologies transition to various PEO-Soldier Product Managers. This effort supports Force Protection capability demonstrations for Soldiers and Small Units. Beginning in FY15, efforts for Soldier/Small Unit Integrated Protection will be captured within two paragraphs titled "Soldier/Small Unit Ballistic and Blast Protection" and "Soldier/ Small Unit Multi-threat Protection". ***FY 2014 Accomplishments:*** Matured and demonstrated lightweight multifunctional materials for protective clothing and individual equipment to increase protection to vital areas such as pelvis, torso, extremity, head, and face; validated protective area of coverage and weight balance for shoulders and hips to optimize Soldier protective armor design; matured hearing protection that mitigates impulse noise exposure without diminishing auditory situational awareness; conducted field assessments and modeling and simulation to optimize the design of multi threat protective components incorporating capabilities such as signature management, environmental protection (flame/thermal, cold/wet, insect), and hygiene management; transitioned technologies, metrics, and tools matured in this effort to PEO Soldier Product Managers, to TRADOC for future requirements development, and into the Soldier Systems Engineering Architecture.			
Title: Soldier/Small Unit Ballistic and Blast Protection	-	4.108	4.275
Description: Beginning in FY15, ballistic and blast efforts previously performed under Soldier/Small Unit Integrated Protection will be captured within this effort. Soldier/Small Unit Ballistic and Blast Protection utilizes a cross-disciplinary, human-centric approach to mature and demonstrate technologies which optimize tradeoffs in ballistic and blast protective component design. This effort focuses on maturing and demonstrating proven components, which are integrated into experimental ensembles or prototypes that have potential to significantly increase protection for individual Soldiers and/or reduce physical load at equal or better capability. This work is fully coordinated with PE 0602786A/Project H98, PE 0602716A/Project H70, and PE 0602705A/ Project H94. Demonstrated technologies will transition to various PEO-Soldier Product Managers. This effort supports Force Protection capability demonstrations for Soldiers and Small Units. ***FY 2015 Plans:*** Demonstrates combat eye protection technologies that provide 15% improved ballistic performance without degradation in optical quality and scratch resistance; provides weight versus threat-standoff trade space analysis to inform reduced weight small arms protective insert development; demonstrates relevant technologies and validated methods to enable assessment and verification of service life requirements for body armor components; develops knowledge products from successfully demonstrated protection			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** J50 / *Future Warrior Technology Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
technologies to allow for transition of test methodologies and human centric design parameters to inform current and future requirements, programs, and framework of Soldier Systems Engineering Architecture. ***FY 2016 Plans:*** Will optimize non-destructive inspection technologies for evaluation of effects of environmental aging and mechanical damage on helmet and armor system performance; integrate ballistic and blast protection capabilities into extremity protection equipment; exploit organ allometry data set to improve biofidelity of casualty reduction models and account for individual Soldier variability in design of optimized vital torso coverage area; verify and validate improved casualty reduction model with the ability to fully pose digitally scanned Soldier and equipment models in operationally relevant scenarios; demonstrate prototype of self-powering single lens protective eyewear system with sun, ballistic, and laser protective capabilities; demonstrate integration of active auditory protection with ballistic protection eyewear.			
Title: Soldier/Small Unit Multi-threat Protection ***Description:*** Beginning in FY15, integrated multi-threat protection efforts (such as environmental protection, flame protection, and camouflage) previously performed under Soldier/Small Unit Integrated Protection will be captured within this effort. Soldier/Small Unit Multi-threat Protection focuses maturing and demonstrating multifunctional protective component materials, sub-systems, and hearing protection technologies that have potential to significantly increase protection of individual Soldiers. This work is fully coordinated with PE 0602786A/Project H98, PE 0602716A/Project H70, and PE 0602705A/Project H94. Demonstrated technologies transition to various PEO-Soldier Product Managers. This effort supports Force Protection capability demonstrations for Soldiers and Small Units. ***FY 2015 Plans:*** Matures and demonstrates improved multifunctional protective textile technologies with enhanced durability, signature management performance, insect resistance, and flame resistance; matures and integrates hearing protection technology that mitigates noise exposure while maintaining auditory situational awareness; demonstrates the viability of using environmental/ biological hazard and injury analyses, along with materials performance data and uniform design features, as a means of designing uniforms that provide capability sets tailored to specific geographical regions; develops knowledge products from successfully demonstrated technologies to allow for transition of test methodologies and human centric design parameters to inform current and future requirements, programs, and framework of Soldier Systems Engineering Architecture. ***FY 2016 Plans:*** Will exploit the multi-threat protective technologies for clothing and individual equipment for various environmental conditions (e.g. tropical, arctic/cold weather) to identify technology gaps and inform future requirements; demonstrate prototype uniforms with thermal signature management technologies in a wide range of environmental conditions; complete trade analysis of relative	-	9.131	7.560

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** J50 / *Future Warrior Technology Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
effects of pattern size and color on visual signature management; demonstrate improved flame resistant fabric with enhanced durability and reduced cost.			
Title: System Integration of Soldier and Small Unit Operated Electronics ***Description:*** This effort (previously titled Small Unit C4 Interfaces) matures and integrates hardware and software components into a robust and effective information system of systems for Soldier and small unit. The goal of this effort is to define standard electronic interfaces for select platforms and aggregate information from unattended robotic assets that support small unit operations. Effort is coordinated with PE 0602786A/Project H98, PE 0603710A/Project K70, PE 0602624A/Project H18, PE 0603005A/Project 497, PE 0603008A/TR1, and PE 0603004A/Project 232. In FY13-14, this effort supports capability demonstrations for the Army Top Challenge of easing overburdened Soldiers in small units. Beginning in FY15, efforts for integration of Soldier and Small Unit Operated Electronics will be captured within the effort titled Soldier and Small Unit Systems Integration and Demonstration. ***FY 2014 Accomplishments:*** Matured and demonstrated Soldier/Small Unit load planning tool and decision support software for reducing individual Soldier load by distributing mission specific combat loads across the unit based on mission and physical metrics (e.g., mission environment, terrain, physical condition, load as a percentage of body weight, etc.); building on work completed in FY13, demonstrated optimized information portrayal integration from handheld un-manned air and ground sensors relayed to Soldier-borne electronic devices.	4.900	-	-
Title: Soldier and Small Unit Systems Integration and Demonstration ***Description:*** This effort integrates and demonstrates a breadth of Soldier and small unit capabilities across multiple mission sets and a wide range of environmental conditions. It integrates and influences test venue architectures and analytic designs to improve demonstration and experimentation capabilities relevant for Soldier/Small Units. It also integrates and demonstrates relevant mature technologies from the Army Soldier S&T community. Conduct risk reduction demonstrations and produce validated analytical results for decision makers. Effort is coordinated with PE 0602786A/Project H98, PE 0603710A/Project K70, PE 0602624A/Project H18, PE 0603005A/Project 497, PE 0603008A/TR1, and PE 0603004A/Project 232. In FY15, this effort supports capability demonstrations for the Army Top Challenge of easing overburdened Soldiers in small units and force protection for Soldiers and small units. In FY16, demonstration efforts for force protection for Soldiers and small units will be captured within Soldier/Small Unit Multi-threat Protection. ***FY 2015 Plans:*** Conducts integrated, operationally-relevant systems-level demonstrations with the potential to increase protective equipment performance against a wide range of threats while decreasing weight; conducts system assessment and documents system	-	11.446	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
performance parameters for a dismounted route planning tool, which interfaces with three existing military mission planning platforms; matures and demonstrates tactically relevant performance of handheld unmanned sensor platform in simulated operational environments; demonstrates capabilities to offload Soldier's carried weight such as providing Soldier the ability to digitally request and track aerial resupply missions in real-time and combining various offloading technologies for Small Unit operations; participates in significant Army demonstrations, exercises, and wargames to demonstrate Soldier and Small Unit capabilities in below battalion level operations in order to inform future S&T efforts, close capability gaps, and inform S&T prioritization.			
Title: Soldier Systems Engineering Architecture (SSEA)	12.236	11.854	12.261
Description: This effort (previously titled System Integration Laboratory for Evaluation of Emerging Technological Capabilities) is renamed to Soldier Systems Engineering Architecture (SSEA) which pursues a mature and maintainable architecture for a biological (human) platform architecture that utilizes a common Soldier, Equipment, Task (SET) framework at the system level to provide a unifying performance construct that considers human dimension, equipment capability resulting in a desired tactical outcome by applying systems engineering processes, analytical tools, and models to assess the complex Soldier as a System and conduct system level trade-off . This capability is used to assess new and emerging Soldier clothing and equipment components as well as configurations against established baselines using Human-in-the-Loop principles. This effort also matures and integrates associated foundations efforts including human performance assessment measures and evaluation devices required at various testing locations, and develops standardized methodologies required for demonstrations to provide operationally relevant assessments. This effort is coordinated with PE 0602716A/Project H70, PE 0602786A/Project H98, 0633015A/Project S28, PE 0603710A/Project K70, PE 0622308A/Project C90, PE 0622787A/Project 869, and 0603004A/Project 232. In FY13-14, this effort supports capability demonstrations for the Army Top Challenges of easing overburdened Soldiers in small units and force protection for Soldiers and small units.			
FY 2014 Accomplishments: Developed and matured a Soldier Systems Engineering Architecture with an established Soldier baseline platform; applied system integration tools to conduct lab and field assessments in relevant environments to demonstrate and validate integrated load planning tools with capabilities such as equipment cross-loading options across the small unit, expedited route planning, metabolic cost estimation, and initial validation for heat strain prediction; built on FY13 body armor system integration laboratory assessment tools and assess emerging body armor systems for improved Soldier combat effectiveness and survivability relative to system sizing, weight, and configuration; provided knowledge products such as empirical component and systems performance data, TRL assessments, trade-off analyses, and standardized performance metrics for capability demonstrations and acquisition decisions and future requirements development.			
FY 2015 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Leads the Army development and maturation of the SSEA using the SET framework developed during FY14 for conducting assessments and decomposing identified needs into measures of performance and system requirements; identifies required improvements to modeling and simulation capabilities to perform and support quantitative analyses and evaluations; develops the Soldier biological (human) platform architecture, and Soldier and squad level metrics gaps; enhances capabilities for virtual simulation for Soldier and small units; advances data collection tools to support the integration and measurement of the effects of Soldier-worn equipment in the SSEA; exercises the architecture as it is developed to test and refine its capabilities; provides knowledge products such as verified component and systems performance data, TRL assessments, trade-off analyses, and standardized performance metrics for capability demonstrations and acquisition decisions and future requirements development. ***FY 2016 Plans:*** Will continue to build the systems engineering framework by collecting, analyzing, and cataloging equipment technical data, current training and human performance measures and metrics, dismounted modeling capabilities, test methods and measures, and the technical attributes of current human systems and subsystems interfaces to determine compatibility gaps among all capability areas for integration into the SET framework; mature the framework to create design criteria to experiment, demonstrate, verify, and validate technical maturity and military utility of future technologies; integrate logical structure and shared repository for the Soldier community; demonstrate SSEA capabilities with pilot case studies by conducting analysis of human physical, cognitive, and social characteristics to predict Soldier performance outcomes for human optimization.			
Title: Soldier and Small Unit Mission Command/Situational Awareness (SA) and Power and Energy Integration	-	-	5.819
Description: Efforts for information portrayal for situational awareness as well as lightweight Soldier power storage, generation, and power management components and subsystems previously under Soldier and Small Unit Systems Integration and Demonstration will be renamed to Soldier and Small Unit Mission Command/Situational Awareness and Power and Energy Integration. These efforts mature and demonstrate mission command and power and energy technology development for the dismounted Soldier and small unit. The goal is to fully support the situational awareness mission information tools and power needs of a dismounted mission in an electronically equipped battlefield. This effort is fully coordinated with PE 0602705A/Projects H11 and H94. ***FY 2016 Plans:*** Will begin to integrate situational awareness and power capabilities to include information portrayal software, display technology, data collection and analyzing devices, augmented reality display overlays that provide terrain and structures information in addition to entities appearing from local and remote reference sources, route planning altitude, and heat into mobility planning tools; assess cognitive load associated with all mission information systems; improve the capability of Soldier integration lab live simulation by integrating cognitive measures into operational scenario (e.g., cordon and search); integrate and demonstrate mission performance impacts using handheld information portrayal technologies for applications such as aerial resupply and factors related to Soldier readiness; mature and demonstrate kinetic power generating capabilities integrated into existing clothing			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
and individual equipment from Soldiers' movement (e.g., knee movement) to reduce power requirements and resupply needs for Soldiers.			
Title: Soldier and Small Unit Human Systems Performance	9.569	11.830	2.706
Description: This effort (previously named Soldier and Small Unit Load Management is renamed to Soldier and Small Unit Human Systems Performance) matures and validates human performance metrics (e.g., physiological, psychophysical, biomechanical, etc.) which have the potential to reduce or mitigate negative impacts of Soldier physical carried load and improve operationally relevant human performance. This work is fully coordinated with PE 060786A/Project H98, PE 0602716A/Project H70, and PE 0602705A/Project H94. In FY12-FY14, this effort supports capability demonstrations for the Army Top Challenge of easing overburdened Soldiers in small units. Technologies, metrics and tools developed in this effort will transition to PEO Product Managers and TRADOC and be integrated into the SSEA and Systems Integration Laboratory environment. ***FY 2014 Accomplishments:*** Matured and demonstrated weight reduction technologies and load management concepts identified in FY12 and FY13 that reduce the physical carried load of dismounted Soldiers at the squad level without negatively impacting Soldier performance and squad effectiveness; demonstrated reductions in Soldier carried load through integration of technologies such as materiel weight reductions (e.g., clothing and equipment, power and energy, weapons and ammo) gained from lightweight multifunctional materials and reduction of size and cube of Soldier carried items; demonstrated the impact of incorporating Soldier performance prediction capabilities into the mission planning process as a means to manage individual and squad carried loads in concert with emerging tactical aerial resupply or off-loading options; validated human performance and musculoskeletal injury reduction metrics and tools to diagnose and visualize load effects of equipment as well as measure mission effectiveness and mobility; matured and demonstrated select off-loading technologies such as augmentation and weight distribution devices and determine the applicability of these technologies in dismounted and forward operations missions. ***FY 2015 Plans:*** Validates individual Soldier mission relevant human performance metrics sensitive to equipment load and fatigue; optimizes operationally relevant physical and cognitive measures to quantify the effect associated with physically and mentally demanding workloads; provides data and modeling approaches whose outputs make explicit trade-space between human functional capability and equipment configuration that supports informed technology development; field-validates laboratory data on changes in biomechanical and cognitive performance as a function of mission-contextual factors to determine the impact of Soldier borne load on mission performance; matures personal augmentation design for opportunities such as simple mechanical augmentation; transitions mature knowledge products for human performance (e.g., thermal burden models, load-related metabolic energy			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
cost, etc); validates operationally relevant human performance metrics under current clothing and individual equipment (CIE) configurations that can be used in future testing to demonstrate the impacts of the configuration on the individual's performance. ***FY 2016 Plans:*** Will optimize biomechanic tools and metrics to quantify performance effects of Soldier and small unit load and protective clothing on Soldier effectiveness; correlate operational field relevance with laboratory research to mimic impacts of physical fatigue, load redistribution, personal augmentation, agility, and weight sensitivity on performance and injury; demonstrate algorithms on biomechanical and cognitive performance changes as a function of time, terrain, and load, which can be input to mission planning tools and other modeling efforts; establish the impact of load carriage over variable grades to inform future requirements for load carriage; identify markers of fatigue that may predict declines in cognitive performance; optimize understanding of the effects of exoskeleton designs on gait and energy.			
Accomplishments/Planned Programs Subtotals	36.996	48.369	32.621

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: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603001A / *Warfighter Advanced Technology*	Project (Number/Name) J52 / *WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
J52: *WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)*	-	10.000	13.000	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Warfighter Advanced Technology development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015
Congressional Add: Program Increase ***FY 2014 Accomplishments:*** Program increase for warfighter advanced technology ***FY 2015 Plans:*** Program increase for warfighter advanced technology	10.000	1.000
Congressional Add: Environmental Control Systems ***FY 2015 Plans:*** Congressional increase for Environmental Control Systems	-	12.000
Congressional Adds Subtotals	10.000	13.000

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: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603001A / *Warfighter Advanced Technology*	Project (Number/Name) VT5 / *Expeditionary Mobile Base Camp Demonstration*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
VT5: *Expeditionary Mobile Base Camp Demonstration*	-	7.567	7.702	6.763	-	6.763	4.245	3.433	3.455	3.524	-	-

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures and demonstrates mission-specific plug and play components, subsystems, and modules designed to optimize manpower requirements, improve situational awareness, increase Soldier readiness and survivability, improve habitation, reduce logistics footprint, enhance supportability, and reduce cost. Expeditionary Base Camp (EBC) systems (or remote command outposts) provide an operational capability for Small Combat Units (battalion and below) and Soldiers, which are rapidly deployable/re-locatable and require no Military Construction and limited materiel handing support. The need for this technologically enabled capability has arisen as a result of new tactics, techniques, and procedures used in austere, remote, and challenging environments in which stability operations, counterinsurgency operations, and peace keeping missions are conducted. The Army envisions continuing to conduct this full range of operations worldwide, particularly in the Asia Pacific and Middle East regions. This project integrates mature technologies to create mission specific lab demonstrators and evaluates the performance capabilities using metrics and methodologies developed under PE 0602786A/Project VT4.

Efforts in this project support the Army science and technology Soldier/Squad portfolio.

The cited work is consistent with the Assistant Secretary of Defense, Research and Engineering Science and Technology focus areas and the Army Modernization Strategy.

Work in this project is led, performed and/or managed by the US Army Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA and fully coordinated with PE 0602786A (Warfighter Technology), PE 0602784A and 0603734A (Military Engineering), PE 0603004A (Weapons and Munitions Advanced Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology), PE 0603125A (Combating Terrorism Technology Development), and PE 0603772A (Advanced Tactical Computer Science and Sensor Technology).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: Expeditionary Base Camp (EBC) Technology Demonstrations	7.567	7.702	6.763
Description: This effort assesses and integrates maturing technologies required to plan, establish, operate, protect, sustain, and redeploy a holistic small unit base camp system and manage its power, waste, and water resources. This effort supports Basing Sustainment and Logistics capability demonstrations.			
FY 2014 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603001A / *Warfighter Advanced Technology*	**Project (Number/Name)** VT5 / *Expeditionary Mobile Base Camp Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Matured self-sustaining contingency basing and system technologies that are modular and man-portable to support the needs of the Squad and Small Unit by providing a high quality of living in efficient and expeditionary systems; demonstrated technical performance parameters identified in FY13 to assess basing manpower needs, operational energy efficiency, water demand and waste remediation, and sub-system interoperability; demonstrated contingency basing technologies to assess the performance of an integrated basing system with reduced sustainment requirements that limit the delivery of water and fuel as well as the need for collecting, managing, and disposing of solid and liquid waste. ***FY 2015 Plans:*** Begins demonstrations of integrated/matured technology and non material solutions for reducing small contingency base operation sustainment requirements thru more efficient management of energy and water consumption and solid/liquid waste production; demonstrates self-sustaining living module(s); integrates technology concept(s) and systems engineering models for handling and treatment of black waste, and demonstrates technical feasibility; mature, analyze, and demonstrates water demand reduction technologies for developing a method to trade off net water savings with potential energy consumption increases; further improves photovoltaic power generating solar shade system technology for demonstration; optimizes concepts, models, components, and systems for sustainability/logistics demonstration. ***FY 2016 Plans:*** Will validate base camp technology component performance data using a model-based systems engineering approach with approved sustainability and logistics baseline; optimize technology integration to improve small contingency base camp operations and conduct integrated demonstrations; validate and determine maturity of industry based technology solutions applicable to sustainment and logistics of expeditionary basing gaps; mature and demonstrate water demand reduction technologies to reduce logistical tail to base operations; demonstrate integrated components of the black waste treatment technologies; optimize a highly mobile shelter design to enable a leaner force and a highly expeditionary force; demonstrate cooling technologies for small basing applications that will decrease logistic demands and improve Soldier readiness.			
Accomplishments/Planned Programs Subtotals	7.567	7.702	6.763

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
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E. Performance Metrics

N/A