Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army											Date: March 2019	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 2: *Applied Research*					R-1 Program Element (Number/Name) PE 0602786A / *Warfighter Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	-	58.476	56.532	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	115.008
283: *Airdrop Adv Tech*	-	3.702	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.702
E01: *Warfighter Technology Initiatives (CA)*	-	20.000	16.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.000
H98: *Clothing & Equipm Tech*	-	26.610	30.364	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	56.974
H99: *Joint Service Combat Feeding Technology*	-	4.966	4.894	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.860
VT4: *Expeditionary Mobile Base Camp Technology*	-	3.198	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.198
XW5: *Small Unit Expeditionary Maneuver Technology*	-	0.000	5.274	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.274

Note

In Fiscal Year (FY) 2020, this Program Element (PE) is realigned with continuity of effort to the following:
* Program Element (PE) 0602143A Soldier Lethality Technology

A. Mission Description and Budget Item Justification

This PE investigates and develops integrated technologies which improve Soldier and Small Combat Unit survivability, sustainability, mobility, combat effectiveness, and field quality of life and assess the impact of each on Soldier performance. This PE supports the design, development, and improvement of components used for aerial delivery of personnel and cargo (Project 283 Airdrop Adv Tech), combat clothing and personal equipment including protective equipment such as personal armor, helmets, and eyewear (Project H98 Clothing & Equipm Tech), combat rations and combat feeding equipment (Project H99 Joint Service Combat Feeding Technology), expeditionary base camps (Project VT4 Expeditionary Mobile Base Camp Technology), small unit expeditionary maneuver technologies (Project XW5 Small Unit Expeditionary Maneuver Technology). This PE supports the investigation and advancement of critical knowledge and understanding of Soldier physical and cognitive performance. Project E01 Warfighter Technology Initiatives funds Congressional special interest items. 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 and Squad Integrated Concepts Development Team, and the Department of Defense (DoD) Combat Feeding Research and Engineering Board.

Work in this PE is related to, and fully coordinated with, PE 0603001A (Warfighter Advanced Technology), PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0602787A (Medical Technology Initiatives), PE 0602716A (Human Factors Engineering Technology), 0603004A (Weapons and Munitions Advanced Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology), PE 0602784A (Military Engineering Technology), PE 0603125A (Combating Terrorism Technology Development), and PE 0603772A (Advanced Tactical Computer Science and Sensor Technology).

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army	Date: March 2019
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602786A *I Warfighter Technology*

The work cited is consistent with the Under Secretary of Defense for Research and Engineering priorities and the Army Modernization Strategy.

Work in this Project is performed by the United States Army Futures Command (AFC).

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	39.559	40.566	44.085	-	44.085
Current President's Budget	58.476	56.532	0.000	-	0.000
Total Adjustments	18.917	15.966	-44.085	-	-44.085
• Congressional General Reductions	-0.022	-0.034			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	20.000	16.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.061	-			
• Adjustments to Budget Years	-	-	-44.085	-	-44.085

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2018	FY 2019
Project: E01: *Warfighter Technology Initiatives (CA)*		
Congressional Add: *H98 Clothing and Equipment*	5.000	5.000
Congressional Add: *Thermal Signature Management Technologies*	5.000	2.000
Congressional Add: *Expeditionary Mobile Base Camp Technology*	5.000	9.000
Congressional Add: *Multifunctional advanced lightweight transparent armors*	5.000	-
Congressional Add Subtotals for Project: E01	20.000	16.000
Congressional Add Totals for all Projects	20.000	16.000

Change Summary Explanation

FY18 increase related to congressional increases totaling $20 Million.
FY19 increase related to congressional increases totaling $16 Million.
FY20 decrease related to science and technology financial restructuring.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army											Date: March 2019	
Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602786A / *Warfighter Technology*				Project (Number/Name) 283 / *Airdrop Adv Tech*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
283: *Airdrop Adv Tech*	-	3.702	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.702

Note

In Fiscal Year (FY) 2019 this Project was realigned to
Program Element (PE) 0602786A Warfighter Technology:
* Project XW5 Small Unit Expeditionary Maneuver Technology

A. Mission Description and Budget Item Justification

This Project funds the research and investigation of component technologies to enhance cargo and personnel airdrop capabilities for global precision delivery, rapid deployment, and insertion for force projection into hostile regions. Areas of emphasis include parachute technologies, parachutist injury reduction, precision offset aerial delivery, soft landing technologies, and airdrop simulation.

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

Work in this Project is fully coordinated with PE 0603001A (Warfighter Advanced Technology).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Airdrop/Aerial Delivery Research and Technology	3.702	-	-
Description: This effort investigates technologies that enhance payload extraction, increase parachute gliding capabilities, and mature delivery accuracy of cargo aerial delivery systems that support varying payload weights. Research in the area of novel parachute materials will provide increased capabilities for cargo and personnel aerial delivery systems. This effort will support an investigation of new Modeling and Simulation (M&S) tools in order to develop validation methods for airdrop concepts. This effort also investigates technologies that advance airborne personnel insertion safety and security. This work is coordinated with PE 0603001A (Warfighter Advanced Technology) / Project 242 (Airdrop Equipment) and Project XW6 (Small Unit Expeditionary Maneuver).			
Accomplishments/Planned Programs Subtotals	3.702	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602786A / *Warfighter Technology*	**Project (Number/Name)** 283 / *Airdrop Adv Tech*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army												Date: March 2019
Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602786A / *Warfighter Technology*				Project (Number/Name) E01 / *Warfighter Technology Initiatives (CA)*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
E01: *Warfighter Technology Initiatives (CA)*	-	20.000	16.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.000

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Warfighter Technology Applied Research.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019
Congressional Add: H98 Clothing and Equipment ***FY 2018 Accomplishments:*** H98 Clothing and Equipment ***FY 2019 Plans:*** H98 Clothing and Equipment	5.000	5.000
Congressional Add: Thermal Signature Management Technologies ***FY 2018 Accomplishments:*** Thermal Signature Management Technologies ***FY 2019 Plans:*** Thermal Signature Management Technologies	5.000	2.000
Congressional Add: Expeditionary Mobile Base Camp Technology ***FY 2018 Accomplishments:*** Expeditionary Mobile Base Camp Technology ***FY 2019 Plans:*** Expeditionary Mobile Base Camp Technology	5.000	9.000
Congressional Add: Multifunctional advanced lightweight transparent armors ***FY 2018 Accomplishments:*** Multifunctional advanced lightweight transparent armors	5.000	-
Congressional Adds Subtotals	20.000	16.000

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 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602786A / *Warfighter Technology*	Project (Number/Name) H98 / *Clothing & Equipm Tech*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
H98: *Clothing & Equipm Tech*	-	26.610	30.364	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	56.974

Note

In Fiscal Year (FY) 2020 this Project is being realigned to:
Program Element (PE) 0602143A Soldier Lethality Technology
* Project AZ2 Body Armor & Integrated Headborne Technology
* Project AZ9 Soldier Protection Advanced Tech - Detectability
* Project BB4 Dismounted Soldier Survivability Materials
* Project BB5 Physical Augmentation: Tech for Human Interactions
* Project BC2 Next Gen Mobility & Lethality Tech for Warfighters
* Project BB9 Human Performance Tech for Mobility & Lethality
* Project BC6 Human Perf - Tech for Warfighter Enhancement
* Project BD6 Soldier Sys Interfaces/Integration- Sensor Tech

A. Mission Description and Budget Item Justification

This Project investigates fibers, textiles, components, and materials focused on enhancing Soldier survivability from combat threats (flame and thermal, blast and ballistic, multispectral sensor, and laser threats) and environmental threats (e.g., cold, heat, wet, vector, antimicrobial, etc.) to increase operational effectiveness while decreasing the Soldier's physical and cognitive burden. Included are investigations of technologies, novel materials, and test methods related to personnel armor, helmets, hearing protection, eyewear, uniforms, handwear, footwear, and other clothing and individual equipment items. This Project also supports the investigation and development of novel combat identification technologies, electro-textiles for power generation and distribution, the study and exploration of algorithms for autonomous micro and nano robotics and sensors, and human-machine teaming technologies to enhance the dismounted Soldier's Situational Awareness (SA) and Manned-Unmanned Teaming (MUMT) with autonomous systems. In addition, this Project supports the development and refinement of essential analytic tools needed to predict and/or assess the combat effectiveness of next generation Soldier systems to identify and develop methods to assess human responses to sensory, physical, cognitive, and affective stimuli and stressors.

Efforts in this Project support the Under Secretary of Defense for Research and Engineering Science and Technology priorities and the Army Modernization Strategy.

Work in this Project is coordinated with PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0603001A (Warfighter Advanced Technology), PE 0602787A (Medical Technology Initiatives), and PE 0602716A (Human Factors Engineering Technology).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Soldier Blast, Ballistic, and Sensory Protection	12.710	11.272	-
Description: This effort supports the investigation of novel materials, component design, and material modeling to design and develop technologies that protect Soldiers against ballistic, blast, and directed energy threats. This effort utilizes a cross-			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602786A / *Warfighter Technology*	**Project (Number/Name)** H98 / *Clothing & Equipm Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
disciplinary, human-focused approach to develop technologies which optimize tradeoffs in ballistic and blast protective component design. This effort is fully coordinated with PE 0602787A (Medical Technology) / Project VB4 (System Biology And Network Science Technology), Project 874 (Cbt Casualty Care Tech), PE 0602618A (Ballistics Technology) / Project H80 (Survivability And Lethality Technology), PE0602105A (Materials Technology) / Project H84 (Materials), PE0602716A (Human Factors Engineering Technology) / Project H70 (Human Fact Eng Sys Dev), PE 0603001A (Warfighter Advanced Technology) / Project J50 (Future Warrior Technology Integration), and Project FF6 (Individual Protection). This effort supports the Force Protection Soldier & Small Unit capability research and addresses the Army top challenge of easing overburdened Soldiers in small units. ***FY 2019 Plans:*** Research new technologies for an integrated, single lens that incorporates multiple capabilities into the Soldier vision protection system, including variable transmission lenses with flash protection, laser dazzle and frequency agile pulsed/continuous wave laser protection, and an environmentally- hardened, ballistic fragmentation platform lens with high visual transmission; design and develop cost effective and repeatable laboratory test method that is capable of evaluating the performance of head-borne equipment in a simulated free-field blast overpressure environment; develop research tools to assist the development of a transfer function enabling the scaling of head injury criteria from animal testing to humans to inform future helmet performance requirements based on injury biomechanics; investigate pre-stress and temperature conditioning methods to preserve and/or increase ballistic material mechanical properties during composite laminate processing to enhance ballistic performance; research fundamental understanding of the role of processing-structure-property relationships in ballistic composites, in particular, the role of microstructure on ballistic performance; investigate the penetration mechanics and effectiveness of sphere projectiles against woven armor packages via deconstruction and analysis of individual fabric plies. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned to PE 0602143A (Soldier Lethality Technology) / Project AZ2 (Body Armor & Integrated Headborne Technology), and Project AZ9 (Soldier Protection Advanced Tech - Detectability) in FY20 as part of the financial restructuring.			
Title: Measurement, Prediction, and Improvement of Soldier Performance ***Description:*** This effort provides a comprehensive investigation of human science methods (psychological, anthropometric, and psychophysical) and biomechanical models to assess human responses to sensory, physical, cognitive, and affective stimuli and stressors. This investigation supports the development of human systems design concepts for Soldier equipment and enhances Soldier and small unit physical and cognitive performance. This work is collaborative with PE 0602716A (Human Factors Engineering Technology) / Project H70 (Human Fact Eng Sys Dev)and PE 0602787A (Medical Technology) / Project VB4 (System Biology And Network Science Technology), and Project 874 (Cbt Casualty Care Tech). This effort supports the Force Protection Soldier & Small Unit capability research and addresses the Army top challenge of easing overburdened Soldiers in small units.	7.800	8.400	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602786A / *Warfighter Technology*	**Project (Number/Name)** H98 / *Clothing & Equipm Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
FY 2019 Plans: Design tools to predict Soldier comprehension of information in a dense urban and technology laden terrain by conducting experiments of cognitive function in immersed/simulated environments and then will develop predictive algorithms for decision making at platoon-level operations; investigate and validate human performance metrics for system design in support of emerging situational awareness efficacy of cuing techniques in augmented and mixed reality as well as the intervention of neuro-stimulation to optimize cognitive performance; investigate and validate human performance metrics for system design in support of emerging mobility enhancement to determine the most efficient control scheme and joint augmentation needs of the lower extremity; investigate and validate human performance metrics in support of emerging expeditionary maneuver support by maturing an in vitro gut microbiome model that could deter gastrointestinal distress; design digital humans to inform space claims and human factors engineering considerations for all platforms inhabited or utilized by a Soldier. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned to PE 0602143A (Soldier Lethality Technology) / Project BC2 (Next Gen Mobility & Lethality Tech for Warfighters), Project BB9 (Human Performance Tech for Mobility & Lethality), Project BC6 (Human Perf - Tech for Warfighter Enhancement), and Project BB5 (Physical Augmentation: Tech for Human Interactions) in FY20 as part of the financial restructuring.			
Title: Advancements in Fibers, Textiles, and Materials for Soldier Protection	6.100	7.400	-
Description: This effort focuses on the investigation of technologies and test methods that aid in the design and development of multifunctional protective materials for Soldier clothing and individual equipment. This effort includes the development and maturation of flame, thermal, environmental, and multispectral concealment capabilities, as well as novel desalinization and purification technologies for individual Soldier hydration, combat identification technologies, and electro-textiles for power generation and distribution. This effort supports the Force Protection Soldier and Small Unit capability research. This effort is fully coordinated with PE 0602105A (Materials Technology) / Project H84 (Materials), PE 0602716A (Human Factors Engineering Technology) /Project H70 (Human Fact Eng Sys Dev), and PE 0603001A Warfighter Advanced Technology /Project J50 Future Warrior Technology Integration. ***FY 2019 Plans:*** Investigate and develop optical film (VOF) technology for standoff-based signature concealment in a variety of spectral ranges to achieve concealment performance for Soldier uniforms; investigate multifunctional materials suitable for signature management/ decoy and high mobility mission command applications to enable on-demand resupply capabilities; develop novel textile architectures and weaves to provide protection against microwave frequency hazards through reflection and scattering of directed energy threats; investigate the principles of motion versus conspicuity effects on observer perception and apply these principles to simulated real-world operational scenes to evaluate Soldier camouflage; investigate and develop novel sensor systems for measuring heat flux during system and sub-system flame resistance testing to capture the most susceptible burn injury body			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602786A / *Warfighter Technology*	**Project (Number/Name)** H98 / *Clothing & Equipm Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
regions; mature infrared microrectenna arrays to demonstrate wireless power transfer and data communications embedded in the Soldier clothing and individual equipment. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned to PE 0602143A (Soldier Lethality Technology) / Project BB4 (Dismounted Soldier Survivability Materials) in FY20 as part of the financial restructuring.			
Title: Soldier Situational Awareness Technologies ***Description:*** This effort investigates novel technologies that enhance the dismounted Soldier and Small Unit?s SA during missions. Research in the area of advanced algorithms for Soldier deployed sensors and robotics will provide advanced autonomy to enable MUM-T capabilities for the dismounted Small Unit. This effort also investigates advanced human-machine teaming technologies to minimize warfighter dedicated control of robotic assets. Work in this Project is coordinated with PE 0603001A (Warfighter Advanced Technology). ***FY 2019 Plans:*** Investigate and mature advanced algorithms and sensors for micro and nano robotic systems to enhance autonomy and provide collision avoidance, environmental sensing, and global positioning system (GPS) denied navigation capabilities; investigate novel Soldier-robotic interfaces and interaction modalities to enhance human-machine teaming; investigate micro and nano sensors and robotic platforms, payloads, and architectures to enable Manned-Unmanned Teaming of autonomous systems with dismounted Soldiers. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned PE 0602143A (Soldier Lethality Technology) / Project BD6 (Soldier Sys Interfaces/Integration-Sensor Tech) in FY20 as part of the financial restructuring.	-	2.400	-
Title: FY 2019 SBIR / STTR Transfer ***Description:*** FY 2019 SBIR / STTR Transfer ***FY 2019 Plans:*** FY 2019 SBIR / STTR Transfer ***FY 2019 to FY 2020 Increase/Decrease Statement:*** FY 2019 SBIR / STTR Transfer	-	0.892	-
Accomplishments/Planned Programs Subtotals	26.610	30.364	-

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602786A / *Warfighter Technology*	**Project (Number/Name)** H98 / *Clothing & Equipm Tech*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602786A / *Warfighter Technology*	Project (Number/Name) H99 / *Joint Service Combat Feeding Technology*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
H99: *Joint Service Combat Feeding Technology*	-	4.966	4.894	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.860

Note

In Fiscal Year (FY) 2020 this Project is realigned to:
Program Element (PE) 0602143A Soldier Lethality Technology:
* Project BE3 Joint Service Combat Feeding Technology

A. Mission Description and Budget Item Justification

This Project investigates and develops novel ration packaging, combat feeding equipment/systems, and advanced food processing technologies to prolong shelf-life. This Project also investigates technologies that detect food safety hazards on the battlefield and enhance quality, nutritional content, and the variety of food items in military rations. Efforts funded in this project support all Military Services, the Special Operations Command, and the Defense Logistics Agency. The Army serves as Executive Agent for this Department of Defense (DoD) program, with oversight and coordination provided by the DoD Combat Feeding Research and Engineering Board. Technologies developed within this effort transition to PE 0603001A (Warfighter Advanced Technology) / Project C07 (Joint Service Combat Feeding Tech Demo) for maturation.

Efforts in this Project support the Under Secretary of Defense for Research and Engineering Science and Technology priorities and Army Modernization Strategy.

Work in this Project is fully coordinated with PE 0602787A (Medical Technology) and PE 0603001A (Warfighter Advanced Technology).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Joint Combat Feeding Technologies	4.966	4.814	-
Description: This effort designs and develops stabilization techniques and nutrient compositions to maximize the Warfighter's cognitive and physical performance while minimizing nutritional degradation to optimize the Warfighter's health on the battlefield. This effort investigates technologies in support of the Defense Health Agency Veterinary Services (DHA VS) to enhance field detection and identification capabilities of chemical and biological threats in foods. This effort supports the design and development of new threat detection tools and sensors for food inspectors. This effort additionally investigates equipment and energy technologies to expand the capability and reduce the logistics footprint of Joint Service field feeding operations in a wide range of environmental and operational contexts. This work is coordinated with PE 0602787A (Medical Technology) / Project 869 (Warfighter Health Prot & Perf Stnds) and PE 0603001A (Warfighter Advanced Technology) / Project C07 (Joint Service Combat Feeding Tech Demo).			
FY 2019 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602786A / *Warfighter Technology*	**Project (Number/Name)** H99 / *Joint Service Combat Feeding Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Study, design, and conduct experiments investigating technologies capable of rapidly detecting adulterated food items prior to consumption, particularly in limited re-supply and austere environments; conduct clinical studies to determine the effect of targeted nutritional strategies on gut and immune health; investigate food processing technologies that increase nutrient retention while meeting shelf life requirements. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned to PE 0602143A (Soldier Lethality Technology) / BE3 (Joint Service Combat Feeding Technology) in FY20 as part of the financial restructuring.			
Title: FY 2019 SBIR / STTR Transfer ***Description:*** FY 2019 SBIR / STTR Transfer ***FY 2019 Plans:*** FY 2019 SBIR / STTR Transfer ***FY 2019 to FY 2020 Increase/Decrease Statement:*** FY 2019 SBIR / STTR Transfer	-	0.080	-
Accomplishments/Planned Programs Subtotals	4.966	4.894	-

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 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602786A / *Warfighter Technology*	Project (Number/Name) VT4 / *Expeditionary Mobile Base Camp Technology*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
VT4: *Expeditionary Mobile Base Camp Technology*	-	3.198	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.198

Note

In Fiscal Year (FY) 2019 this Project was realigned to:
Program Element (PE) 0602786A Soldier Lethality Technology
* Project XW5 Small Unit Expeditionary Maneuver Technology

A. Mission Description and Budget Item Justification

This Project matures and validates fully integrated holistic expeditionary base camp (EBC) capabilities with mission-specific plug and play components, subsystems, and modules designed to optimize manpower requirements, enhance situational awareness, increase Soldier readiness and survivability, optimize habitation, reduce logistics footprint, enhance supportability, and reduce cost. EBC systems provide an operational capability for small combat units (battalion and below) and Soldiers in varying environments, which are rapidly deployable and re-locatable, require no Military Construction, and need limited materiel handing support. This Project matures technologies that can be combined to create mission specific lab demonstrators and develops metrics and methodologies to measure performance characteristics.

Efforts in this Project support the Under Secretary of Defense for Research and Engineering Science and & Technology priorities and the Army Modernization Strategy.

Work in this Project is fully coordinated with Program Element (PE) 0602784A (Military Engineering Technology) and 0603734A (Military Engineering Advanced Technology), PE 0603001A (Warfighter Advanced Technology), 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 2018	FY 2019	FY 2020
Title: Expeditionary Base Camp Component Technologies	3.198	-	-
Description: This effort investigates base camp component interoperability and matures and scales component technologies for an integrated holistic base camp concept. This effort supports the basing sustainment and logistics capability investigation. This work is coordinated with PE 0603001A (Warfighter Advanced Technology) / Project VT5 (Expeditionary Mobile Base Camp Demonstration), Project XW6 (Small Unit Expeditionary Maneuver), PE 0602786A (Warfighter Technology) / Project H99 (Joint Service Combat Feeding Technology) and is coordinated with PE 0602784A (Military Engineering Technology) / Project T40 (Mob/Wpns Eff Tech), PE 0603734A (Military Engineering Advanced Technology) / Project T08 (Combat Eng Systems), PE 0603004A (Weapons and Munitions Advanced Technology) / Project L97 (Smoke And Obscurants Advanced Technology0, PE 0603005A (Combat Vehicle and Automotive Advanced Technology) / Project 497 (Combat Vehicle Electro), PE 0603125A (Combating Terrorism - Technology Development) / Project DF5 (Agile Integration & Demonstration), and PE 0603772A			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602786A / *Warfighter Technology*	**Project (Number/Name)** VT4 / *Expeditionary Mobile Base Camp Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
(Advanced Tactical Computer Science and Sensor Technology) / Project 101 (Tactical Command and Control). In FY19, work in this Project realigns into Project XW5 Small Unit Expeditionary Maneuver Tech, along with Project 283 Airdrop Adv Tech and Project H99 Joint Service Combat Feeding Technology.			
Accomplishments/Planned Programs Subtotals	3.198	-	-

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 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602786A / *Warfighter Technology*	Project (Number/Name) XW5 / *Small Unit Expeditionary Maneuver Technology*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
XW5: *Small Unit Expeditionary Maneuver Technology*	-	0.000	5.274	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.274

Note

In FY20 this Project is being realigned to:
Program Element (PE) 0602143A Soldier Lethality Technology:
* Project BE3 Joint Service Combat Feeding Technology
* Project BE1 Support Technology to Mission Command

A. Mission Description and Budget Item Justification

The Small Unit Expeditionary Maneuver Technology Project funds the research and investigation of innovative and emerging technologies which provide maneuver capabilities such as precision aerial delivery of cargo and personnel and force projection platforms enabling mission command in all operating environments. This Project provides trusted tactical sustainment for dispersed units in highly mobile dismounted Manned-UnManned Teaming (MUM-T) operations and other complex operating environments. Efforts funded in this Project support all Military Services, the Special Operations Command, and the Defense Logistics Agency. Technologies developed within this effort transition to PE 0603001A (Warfighter Advanced Technology) / Project XW6 (Small Unit Expeditionary Maneuver) for maturation.

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

Project XW5 (Small Unit Expeditionary Maneuver Technology) combines the efforts of Project 283 (Airdrop Adv Tech) and Project VT4 (Expeditionary Mobile Base Camp Technology) in FY19 to create an integrated expeditionary maneuver research focus area.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Aerial Delivery	-	3.681	-
Description: This effort designs and develops technologies that enable Soldier and Small Unit mission readiness, survivability, and effectiveness during highly mobile, dispersed operations that may occur in the absence of conventional logistics support. This effort investigates technologies that enhance equipment, materiel, and personnel aerial delivery in an Anti-Access, Area Denial (A2/AD) environments.			
FY 2019 Plans: Study, design, and conduct experiments with precision aerial delivery software and hardware components to enhance precision aerial delivery capabilities and assure re-supply via manned and unmanned systems in A2/AD environments; conduct research			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
in the area of maneuver assistance in personnel airdrop systems to accelerate the certification of airborne jumpers from novice to master jumper. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned to PE 0602143A (Soldier Lethality Technology) / Project BE3 (Joint Service Combat Feeding Technology) and Project BE1 (Support Technology to Mission Command) in FY20 as part of the financial restructuring.			
Title: Expeditionary Maneuver ***Description:*** This effort designs and develops technologies that enable Soldier and Small Unit mission readiness, survivability, and effectiveness during highly mobile, dispersed operations that may occur in the absence of conventional logistics support. This effort investigates system designs and technologies to enable mission command through highly mobile expeditionary maneuver platforms, signature management, and production of energy/supplies at the point of consumption to provide small units with the capability to move rapidly, while providing improved protection and extended range. ***FY 2019 Plans:*** Study, design, and conduct experiments that investigate autonomous deployment methodologies, additive manufacturing of components used in expeditionary maneuver platforms that support expeditionary operations in all environments, and concepts for rapidly-deployable platforms that allows for integration of technologies that will improve protection and minimize resource consumption. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned to PE 0602143A (Soldier Lethality Technology) / Project BE3 (Joint Service Combat Feeding Technology) and Project BE1 (Support Technology to Mission Command) in FY20 as part of the financial restructuring.	-	1.500	-
Title: FY 2019 SBIR / STTR Transfer ***Description:*** FY 2019 SBIR / STTR Transfer ***FY 2019 Plans:*** FY 2019 SBIR / STTR Transfer ***FY 2019 to FY 2020 Increase/Decrease Statement:*** FY 2019 SBIR / STTR Transfer	-	0.093	-
Accomplishments/Planned Programs Subtotals	-	5.274	-

C. Other Program Funding Summary ($ in Millions)

N/A

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C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A