Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research					R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology					
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	36.752	36.133	27.109						Continuing	Continuing
E01: Warfighter Technology Initiatives (CA)	14.146	14.257	.000						Continuing	Continuing
H98: CLOTHING & EQUIPM TECH	15.146	14.215	19.152						Continuing	Continuing
H99: JOINT SERVICE COMBAT FEEDING TECHNOLOGY	5.152	5.299	5.488						Continuing	Continuing
283: AIRDROP ADV TECH	2.308	2.362	2.469						Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) investigates and develops technologies which improve Soldier survivability, sustainability, mobility, combat effectiveness, and field quality of life. This PE supports the design, development, and improvement of components used for air delivery of personnel and cargo (project 283), combat clothing and personal equipment (including protective equipment such as personal armor, helmets and eye wear) (project H98) and combat rations and combat feeding equipment (project H99). Project E01 funds congressional special interest items. The projects in this PE adhere to Tri-Service Agreements on clothing, textiles, and food with oversight and coordination provided by the directors of Service laboratories through the Warrior Systems Technology Base Executive Steering Committee.

Work in this PE is related to, and fully coordinated with, PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0603001A (Warfighter Advanced Technology).

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

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

Exhibit R-2, PB 2010 Army RDT&E Budget Item Justification	DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology

B. Program Change Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget	36.237	21.948	22.276	
Current BES/President's Budget	36.752	36.133	27.109	
Total Adjustments	.515	14.185	4.833	
Congressional Program Reductions	.000	-.119		
Congressional Rescissions	.000	.000		
Total Congressional Increases	.000	14.304		
Total Reprogrammings	1.222	.000		
SBIR/STTR Transfer	-.707	.000		

Change Summary Explanation

FY09 funding increase is due to congressional adds.

FY10 funding increase to support Advanced Fibers/Textile Tech and Smart Materials; Optimizing Battlespace Awareness in the Dismounted Soldier; and Next Generation Body Armor.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology					PROJECT NUMBER E01	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
E01: Warfighter Technology Initiatives (CA)	14.146	14.257	.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Warfighter Technology Applied Research.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Advanced Fabric Treatment for Flame Resistant Uniforms	.966	.000	.000	
Biosecurity Research for Food Safety	3.131	1.550	.000	
Chemical and Biological-Protective Hangars (CAB-PH)	1.545	2.170	.000	
Active and Smart Packaging for Combat Feeding	.967	1.628	.000	
Injection Molded Ceramic Body Armor	.387	.775	.000	
Modular Ballistic System for Force Protection	3.864	.775	.000	
Carbon Nanotube Armor Protection System	1.546	.000	.000	
Protective Textile Fabric	.774	.775	.000	
Nano-Enabled Ultra High Storage Non-Volatile Memory for Next Generation Commander's Digital Assistan	.966	.000	.000	
Wearable Personal Area Network Technology	.000	2.325	.000	
Solid State Shelter Lighting System	.000	.372	.000	
Photovoltaic Tent Fabric	.000	2.713	.000	
Lightweight 1-2 Person Low-Pressure Inflatable Tents	.000	.775	.000	
SBIR/STTR	.000	.399	.000	
Total	14.146	14.257	.000	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology	PROJECT NUMBER E01

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology					PROJECT NUMBER H98	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
H98: CLOTHING & EQUIPM TECH	15.146	14.215	19.152						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project investigates and evaluates components and materials that have potential to enhance Soldier survivability from combat threats and the field environment (e.g., cold, heat, wet) -- increasing operational effectiveness while decreasing the Soldier's burden. Included are personnel armor, helmets, eyewear and protective inserts for shelters - efforts that focus on incorporating novel materials into designs that protect Soldiers against flame and thermal threats, blast and ballistic threats, as well as certain directed energy threats. In addition, this project supports the development and refinement of essential analytic tools needed to assess the combat effectiveness of next generation Soldier systems, with a focus on network centric warfare technologies.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

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

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
Biomechanical Tools for Individual Soldier Extremity Protection and Performance Enhancement: This effort focuses on human science, anthropometric, and psychophysical methods used to assess human responses to sensory, cognitive and affective stimuli to enable better prediction of the performance and effectiveness of items. In FY08, integrated fatigue prediction into biomechanical model; verified and validated integrated model; exercised the model to design a representative set of extremity body armor; defined cognitive performance metrics sensitive to the impact of physical stressors (such as extended load carriage); conducted human experiments to evaluate decrements in performance (i.e. fatigue) related to physical demands of warfighting, and established a model for predicting awareness decrements. In FY09, define additional complex Soldier output measures (energy expended and muscle force exercised) for incorporation into biomechanical model, scale biomechanical tools to address range of human male anthropometry (5 to 95% size and shape); conduct human experiments to refine fatigue prediction into short term and long term components; refine awareness model with additional human experimental data and begin investigating strategies for mitigating decrements in awareness documented by preceding experiments.	1.307	.588	.000	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology	PROJECT NUMBER H98

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Ballistic and Blast Protection for the Individual Warrior: This effort focuses on technologies incorporating novel materials into component designs that protect Soldiers against ballistic and blast threats. In FY08, continued development of technology components for future body armor applications to include advanced fiber technology (e.g., carbon nanotube-based) for lightweight armor applications, investigated conformable material configurations to reduce weight, minimized performance vulnerability associated with complex shapes in smaller ceramics sizes and different surface patterns, and explored performance thresholds for increased protection levels for personal armor technology; defined and developed material system concepts for integrated ballistic and blast thorax protection. In FY09, validate performance of selected materials configurations for enhanced helmet performance; downselect materials and begin construction of helmet technology components into a breadboard system for next generation armor systems and evaluate breadboard in various environments; refine and validate material system components for integrated ballistic and blast protection for use in improved body armor for thorax protection.	4.712	6.732	.000	
Electrotextiles-Self Powered, Conductive, and Smart Materials: This effort focuses on technologies which aid in the design and evaluation of clothing and equipment for signature management and conducting materials. In FY08, matured technologies for first active photovoltaic fabric, for unmanned photovoltaic ground sensors, and camo-patterned photovoltaic devices; matured flexible conductive networks and connector technologies for shelters and wearable electronics; investigated current polymer-based optical conductors for secure, non-emissive, high-speed data transmission for optical networks. In FY09, integrate sensing devices into photovoltaic fabrics to demonstrate a new class of self-powered, smart electrotextile applications; explore various textile integration methods to provide additional strength and protection to electronic and optical fibers; investigate eco-friendly fibers and materials and develop evaluation methods for laboratory testing of novel fibers and materials that provide future Soldier flame and thermal protection without the use of hazardous materials.	2.279	2.516	.000	
Soldier Integrated Tunable (Frequency Agile) Laser/Ballistic Eye Protection: This effort focuses on technologies which will provide eye protection from laser/ballistic threats. In FY08, assessed potential of new ballistic materials achieved through leveraged efforts; prepared and analyzed hybrid lighter weight ballistic materials while maintaining the improved level of performance; integrated multi-layered laminates to provide multifunctional transparent armor materials with scratch resistance, and validated optical limiting concepts that do not require a lens system and that meet response time requirements over the visual spectrum.	3.388	.976	2.173	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology			PROJECT NUMBER H98	
B. Accomplishments/Planned Program ($ in Millions)		**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
In FY09, combine laser eye protection (optical limiting concepts), compatible ballistic materials, and abrasion resistance coatings into a new composite eye wear material; assemble components on breadboard and perform system evaluation in a simulated environment. In FY10, will develop a plastic eyewear lens scaffold (pixilated lens with a battery operated sensor) that can sense and respond (lighten/darken) to visible and infrared (IR) irradiation sources at precise lens locations to protect Soldiers' eyes, maximize overall visual acuity, and determine directionality of threats. Will mature lens technology to serve as the platform for subsequent vision protection and enhancement technologies; will consider producibility issues to combine vision protection and enhancement technologies with a ballistic lens; and will examine Soldier acceptance issues by testing the ability to differentiate color or objects in both day and night scenarios.					
Soldier Borne Microclimate Cooling: This effort focuses on technologies which provide cooling to the Soldier to reduce risk of heat stress. In FY08, continued the testing and integration of components (smaller engines and compressors) into a breadboard system. In FY09, complete testing the FY08 breadboard system, and use the test results to downselect cooling technologies for Soldier applications and establish a baseline technology capability. Transition downselected technologies to PE 0603001A/project J50 for further maturation.		1.159	.885	.000	
Small Business Innovative Research/Small Business Technology Transfer Programs		.000	.232	.000	
Biomechanical Tools for Individual Soldier Extremity Protection and Performance Enhancement (cont'd): This effort focuses on human science, anthropometric, and psychophysical methods used to assess human responses to sensory, cognitive and affective stimuli to enable better prediction of the performance and effectiveness of items. In FY10, will identify neurocognitive mechanisms, such as regions, networks and type of brain activity, underlying dismounted Soldier performance relative to battlespace awareness using human experimental studies and cognitive task analysis of squad-level operations under stressed and non stressed task situations. Work will be collaborative with the Army Research Laboratory and the Medical Research and Materiel Command.		.000	.000	2.236	
Electrotextiles-Self Powered, Conductive, and Smart Materials (cont'd): This effort focuses on technologies which aid in the design and evaluation of clothing and equipment for signature management and conducting materials. In FY10, will investigate alternative textile and film-based approach to wearable Soldier power; will investigate advanced analytical methods for predicting protection levels provided by flame-protective materials; will examine new fibers and		.000	.000	5.835	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology	PROJECT NUMBER H98

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
materials created for potential application to Soldier flame and thermal protection; will complete laboratory testing of novel materials against thermal threats; will fabricate and characterize novel extruded multi-component fibers for potential application to Soldier protective materials.				
Ballistic and Blast Protection for the Individual Warrior (cont'd): This effort focuses on technologies incorporating novel materials into component designs that protect Soldiers against ballistic and blast threats. In FY10, will validate survivability modeling tool enhancements (including the Integrated Casualty Estimation Methods model) for personnel ballistic and blast protection systems development and will complete validation of selected configuration performance enhancements. To improve ballistic plate coverage areas and geometry with emerging technology components, will develop improved armor coverage map utilizing medical community data, and will extract geometric data from 3-D body scans for use in initial soft armor and ballistic plate designs.	.000	.000	6.631	
Infantry Warrior Simulation (IWARS): This effort focuses on incorporating data into modeling and analysis tools that enable technologists and military users to trade-off potential Soldier system capabilities and mature a human-centered Soldier system design. In FY08, extended advanced Soldier representations within IWARS to include effects of unmanned ground sensor systems and the User Defined Operating Picture (UDOP) to improve the ability to provide actionable information to small units. In FY09, enhance IWARS to include effects of netted communications and collaborative situational awareness to assess enhancements to Soldier capabilities. In FY10, will provide credible Soldier physiological representations within IWARS to include biomechanic effects of equipment load on Soldier movement and the effect of hearing protection and helmets on sound detection and direction; will expand analysis capabilities to determine impact to small unit effectiveness by using combined arms scenarios to identify a number of interactions that occur between ground Soldiers and vehicle platforms.	2.301	2.286	2.277	
Total	15.146	14.215	19.152	

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology	PROJECT NUMBER H98

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology					PROJECT NUMBER H99	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
H99: JOINT SERVICE COMBAT FEEDING TECHNOLOGY	5.152	5.299	5.488						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project researchs, investigates and evaluates combat ration and field food service equipment component technologies. In addition, this project investigates novel ration packaging and combat feeding equipment/systems. 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/project C07 for maturation.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the US Army Natick Soldier Research, Development and Engineering Center (NSRDEC), Natick, MA, and this project has collaborative efforts with the US Army Research Institute for Environmental Medicine.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.033	.000	
Combat Feeding Equipment Technologies: This effort investigates equipment and energy technologies to reduce logistics footprint of field feeding. In FY08, completed concept development of an inline water heater as an initial application of flameless combustion; completed concept development of an air-activated, self-contained, exothermic, chemical heater for Meals Ready to Eat (MRE) including all safety/health/environmental regulatory compliance; and investigated novel co-generators for potential to operate on a range of fuel types from the Waste to Energy (WEC) produced gas to battlefield fuel (JP8). In FY09, complete concept evaluations of inline water heater; complete concept development of an ethylene control system (prolongs freshness and extends shelf life) for fresh fruits and vegetables. In FY10, will investigate and develop technology concepts for a standard size container that will extend the shelf life of semi-perishable rations in hot environments and an off-grid pallet chiller with self-containing power supply for bottled water; and will complete concept development of a flameless individual water heater.	2.319	2.160	2.276	

Exhibit R-2a, PB 2010 Army RDT&E Project Justification		DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology			PROJECT NUMBER H99	
B. Accomplishments/Planned Program ($ in Millions)		**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
Ration Stabilization and Novel Nutrient Delivery Technologies: This effort focuses on enhancing nutrient composition and consumption to maximize cognitive and physical performance on the battlefield. In FY08, continued incorporation and testing of probiotics (beneficial bacteria) for improved gastrointestinal health; incorporated selected performance enhancers for delivery via the mouth allowing for the immediate movement of the molecules into the blood; and transitioned protein encapsulation effort to PE 0603001A/project C07; validated Hybrid Optimal Processing (HOP) effectiveness to reduce processing time, increase food quality and nutrient retention, and scaled-up design with selected model ration components; planned scale-up HOP design and engineering to produce high quality components; and developed additional shelf-stable combat ration breakfast items and transitioned to PE 0603001A/project C07. In FY09, evaluate shelf stability of probiotic-enhanced ration components; ensure microbiological, chemical stability analyses of advanced shelf-stable meat products; and investigate stability and functional effectiveness of encapsulated oils for ration systems. In FY10, will test acceptance of shelf stable sandwiches containing emulsion based fillings to control food water content; will down-select component food matrices for incorporation of performance optimizing and nano-sized functional ingredients.		1.505	1.650	1.663	
Packaging and Food Safety Technologies: This effort investigates novel ration packaging technologies to minimize physical, chemical and nutritional degradation of combat rations during storage. In FY08, continued optimization of array technologies for pathogen detection; developed food degradation profiles for predicting quality kinetic rates for ration storage quality to correlate accelerated storage conditions to predict combat ration shelf life. In FY09, investigate multiplexing of electrospun nanofibers for improved capture of pathogens and incorporate into array systems to enable multiple pathogen detection from one sample; investigate molecular beacon signal (method to detect of nucleic acids) enhancement as an alternative technique to identifying pathogens using array-based (matrix) systems; investigate quality data reaction rates and determine kinetic correlations based on storage studies conducted in FY08; continue long-term storage study to include extensive analytical, microbiological, and sensory testing; complete food degradation profiles for quality kinetics. In FY10, will develop an integrated sensor circuit concept diagram for printed electronic display for real-time ration condition assessment to determine remaining shelf life; will develop a bacteriophage (viruses that infect specific bacteria) cocktail to reduce bacteria in fresh fruits and vegetables; will conduct polymer processing of thermoplastic materials to		1.328	1.456	1.549	

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
optimize novel multilayer polymer films properties; will optimize conductive electrospun membranes for sensing and integrate with capture/detection assemblies to test with optical detection techniques.				
Total	5.152	5.299	5.488	

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

Exhibit R-2a, PB 2010 Army RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 2040 - Research, Development, Test & Evaluation, Army/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602786A Warfighter Technology					PROJECT NUMBER 283	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
283: AIRDROP ADV TECH	2.308	2.362	2.469						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project researchs, investigates and evaluates 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 the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

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

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Enabling Airdrop Research and Technologies: This effort investigates technologies for enhanced payload extraction and subsequent gliding capabilities. In FY10, will expand Domain Specific Software Architecture (DSSA) modeling capabilities to include low altitude opening and will design the main parachutes to allow both extracting the payload from the aircraft and decelerating the payload to a desirable descent rate (extracting by mains).	.000	.000	1.138	
Precision Airdrop Enhancements: This effort improves delivery accuracy of varying load weights and transitions technology for maturation and demonstration to PE 0603001A/project 242. In FY08, evaluated favorable Guidance, Navigation and Control (GN&C) component technologies to mature sensing, guidance, navigation, and control algorithms for precision airdrop. In FY09, downselect and implement the most mature and favorable GN&C component technologies (e.g., glide modulation) into precision airdrop designs. In FY10, will research and evaluate performance of height sensor technology to include a laser range finder sensor to augment existing Sound Detection and Ranging (SODAR) height sensor.	1.230	1.275	1.331	
Small Business Innovative Research/Small Business Technology Transfer Programs	.000	.002	.000	
Modeling and Simulation for Tactical Parachute System Performance Enhancement: This effort investigates technologies for safer, more efficient personnel parachutes.	1.078	1.085	.000	

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
In FY08, utilized experimental methodologies to develop a more detailed knowledge of fundamental parachute physics; completed investigation of a fully open parachutist control and rate of descent issues, and investigated parachute opening physical phenomena. In FY09, complete analysis of Advanced Tactical Parachute System (ATPS) parachuting opening and validate full fidelity model (physics based) against baseline physics from experiments; transition detailed ATPS performance enhancement assessment and test results to PM-Clothing and Individual Equipment (CIE) ATPS product improvement program.				
Total	2.308	2.362	2.469	

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.