ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE
2 - Applied Research	**0602786A - LOGISTICS TECHNOLOGY**

	COST (In Thousands)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
	Total Program Element (PE) Cost	47214	44044	23083	21988	22291	22532	23075	23628
283	AIRDROP ADV TECH	2159	2326	2330	2366	2391	2408	2461	2515
C60	AC60	1586	3658						
E01	Warfighter Technology Initiatives (CA)	26693	18889						
H98	CLOTHING & EQUIPM TECH	12404	14176	15526	14305	14530	14713	15084	15461
H99	JOINT SERVICE COMBAT FEEDING TECHNOLOGY	4372	4995	5227	5317	5370	5411	5530	5652

A. Mission Description and Budget Item Justification: This applied research program element (PE) investigates technologies to improve Soldier survivability and performance for use in the Future Force and, where feasible, exploits opportunities to enhance Current Force capabilities. The PE addresses technologies for: the air delivery of personnel and cargo; combat clothing and personal equipment; and combat rations and combat feeding equipment. The Airdrop Advanced Technology Program (project 283) supports all Services' requirements for air dropping increasingly heavier combat and logistics loads while improving delivery accuracy, minimizing vulnerability of aircraft, and reducing life cycle costs. Investigation of technologies for safer, more combat efficient personnel parachutes addresses a critical capability for rapid deployment force projection, particularly into hostile environments. The Clothing and Equipment Technology Program (project H98) funds cutting edge research and technologies that will enhance warfighter survivability from both combat threats (e.g., ballistics, flame, directed energy) and the field environment (e.g., cold, heat, wet); enhance signature management; provide wearable, conducting materials to augment data and power transmission; provide cooling to the Soldier to reduce risk of heat stress; and lighten the Soldiers' load. Human science is incorporated into modeling and analysis tools that will enable technologists and military users to trade-off potential warrior system capabilities and mature a human-centered warrior system design. The Joint Services Combat Feeding Technology Program (project H99) supports all Military Services, the Special Operations Command, and the Defense Logistics Agency with research conducted on high payoff technologies for performance enhancing combat rations, ration packaging, and combat feeding equipment/systems. Research will enhance nutrient composition and consumption to maximize cognitive and physical performance on the battlefield; minimize physical, chemical and nutritional degradation of combat rations during storage; meet the needs of individual Soldiers in highly mobile battlefield situations; and provide equipment and energy technologies to reduce the logistics footprint of field feeding while improving the quality of food service. The efforts in this PE adhere to Tri-Service Reliance agreements on clothing, textiles, and operational rations and field food service equipment, the last with oversight and coordination by the Department of Defense (DoD) Combat Feeding Research & Engineering Board. Project E01 funds congressional special interest items. Efforts are related to and fully coordinated with those in PE 0603001A (Warfighter Advanced Technology). The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan, the Army Modernization Plan, and the Defense Technology Area Plan. Work in this PE is performed by the US Army Natick Soldier Center, Natick, MA.

B. Program Change Summary	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	47667	25436	22078	19827
Current BES/President's Budget (FY 2008/2009)	47214	44044	23083	21988
Total Adjustments	-453	18608	1005	2161
Congressional Program Reductions		-168		
Congressional Rescissions				
Congressional Increases		19100		
Reprogrammings	-453	-324		
SBIR/STTR Transfer				
Adjustments to Budget Years			1005	2161

FY09 funds increased to support development of advanced Soldier body armor and protection techologies.

Fourteen FY07 congressional adds totaling $18306 (after adjustment for Congressional Undistributed Reductions) were added to this PE.

($1870) Flexible Monolithically Integrated Solar Panels
($1582) Improved Shelf-Life in Fresh Fruits and Vegetables
($1917) Adv. Warfighter Sustainment Sys. for 21st Century
($959) Combat Uniform Adv Fabric Treatment Technology
($1246) Biosecurity Research for Food Safety
($958) CoE for High Perform Fibers at Natick Soldier CTR
($958) Chemical & Biological-Protective Hangers (CAB-PH)
($958) Combat Effective Facial Armor
($958) Development of Protective Textile Fabric
($1246) Inorganic Metallic Barriers f/Chem-Bio Structures
($958) Next Generation Chem-Bio Protection Suit
($2780) Precision Guided Air-Dropped Equipment
($958) Solar Powered Refridgerated Container f/Food & Med
($958) Electrochemical Field-Deploy Sys f/Pot Water Gen

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
2 - Applied Research	**0602786A - LOGISTICS TECHNOLOGY**	**283**

COST (In Thousands)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
283 AIRDROP ADV TECH	2159	2326	2330	2366	2391	2408	2461	2515

A. Mission Description and Budget Item Justification: This project researches technologies to enhance cargo and personnel airdrop capabilities. These enabling technologies support the goals of Army Transformation for global precision delivery, rapid deployment, and insertion capabilities for force projection, particularly into hostile regions. Areas of emphasis include parachute technologies, parachutist injury reduction, precision offset aerial delivery, soft landing technologies, and airdrop simulation. Efforts will result in increased personnel safety; more survivable and more accurate cargo delivery; and reduced aircraft, crew, and cargo vulnerability. The goal for personnel parachute technology is to reduce injuries and to improve performance and combat effectiveness of the Advanced Tactical Parachute System (ATPS). The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan, and the Army Modernization Plan. Work in this project is performed and managed by the US Army Natick Soldier Center, Natick, MA.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Precision Airdrop Enhancements: In FY06, explored technology (when no commercial solution existed) for advanced pressure, stress/strain, and shape measurement prototype devices suitable as instruments in providing the dynamic response of flexible aerodynamic decelerator systems. In FY07, apply sensor technology to realistic flowfields related to airdrop applications. Investigate state-of-the-art autonomous Guidance, Navigation and Control (GN&C) of precision airdrop systems to improve aerodynamic performance and landings. In FY08, will experiment with favorable GN&C technologies to mature sensing, guidance, navigation, and control algorithms for precision airdrop. In FY09, will downselect and implement the most mature and favorable GN&C technologies into prototypical precision airdrop systems and transition technology to 6.3.	700	835	841	869
Modeling and Simulation for Tactical Parachute System Performance Enhancement: In FY06, developed experimental methodologies providing high level of detail of parachute physics for use with both personnel and cargo parachutes and used an in-house parallel computer cluster to model and simulate parachute control and rate of descent. Developed computer tools to model inflation and to calculate opening shock. In FY07, refine and evaluate computer tools developed to model inflation and to calculate opening shock and use High Performance Computing (HPC) modeling and simulation to investigate fully open parachutist control and rate of descent aspects of ATPS. In FY08, will utilize experimental methodologies to develop detailed knowledge of baseline parachute physics; will complete investigation of fully open parachutist control and rate of descent issues; and will investigate parachute opening phenomena. In FY09, will complete investigation of ATPS parachuting opening and validate full fidelity model against baseline physics from experiments; will provide detailed ATPS performance enhancement assessment to PM-Clothing and Individual Equipment (CIE); and will transition results to PM-CIE ATPS P3I program.	1459	1479	1489	1497
Small Business Innovative Research/Small Business Technology Transfer Programs		12		
Total	2159	2326	2330	2366

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
2 - Applied Research	**0602786A - LOGISTICS TECHNOLOGY**	**E01**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
E01	Warfighter Technology Initiatives (CA)	26693	18889						

A. Mission Description and Budget Item Justification: Not applicable for this item.

Accomplishments/Planned Program: Not applicable for this item.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
2 - Applied Research	**0602786A - LOGISTICS TECHNOLOGY**	**H98**

COST (In Thousands)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
H98 CLOTHING & EQUIPM TECH	12404	14176	15526	14305	14530	14713	15084	15461

A. Mission Description and Budget Item Justification: This project researches and investigates technologies to improve Soldier survivability and performance. Research focuses on lightweight materials for personal protection and survivability from both combat threats (e.g., improved ballistic, flame, and directed energy) and the field environment (e.g., cold, heat, wet); enhanced signature management; modeling and analysis tools for optimizing Soldier system clothing and equipment; and advances in emerging technology (e.g. nanotechnology, electrotextiles) to improve the performance, multi-functionality, and fightability of Soldier clothing and equipment. The goal of the ballistic protection work is to research and apply advances in materials and materials processing technology to improve the protection and performance of warrior armor systems against conventional and emerging ballistic threats. The supporting biomechanical tools effort will provide a capability to identify promising candidate configurations of extremity armor to provide individual Soldiers with extremity ballistic protection affording flexibility, agility and mobility, while minimizing the energy expended during dismounted operations. The objective of the novel blast protection effort is to characterize blast profiles, determine the hazard, and demonstrate improved protection concepts. The goal of Infantry Warrior Simulation is to build essential analytic tools needed to assess the combat worth of next generation warrior systems, with a focus on network centric warfare technologies. Nanotechnology is being applied to several soldier clothing and equipment areas, and potentially could revolutionize the performance of various Soldier-worn components. The major nanotechnology effort focuses research on conducting, flexible, wearable materials for lightweight power generating and storage devices to augment power sources for Soldier-worn computers and equipment. The purpose of the microclimate cooling effort is to provide a capability that mitigates the effects of heat stress encountered by dismounted infantry exposed to hot environments and encumbered in protective clothing. The goal of the directed energy protection effort is to apply recent developments in nano-materials research to provide the dismounted Soldier with eye protection against tunable-laser threats occurring on the battlefield and to provide improved ballistic fragmentation protection for the eyes, face and neck, and scratch resistance for the lenses. The effort to provide eye protection from tunable-laser threats involves collaboration with ARL on work they are conducting in program element(PE) 0602120 (Sensors and Electronic Devices). This project leverages work performed by the Institute for Soldier Nanotechnologies supported by PE 0601104A (University and Industry Research Centers) and PE 602105A (Materials Technology). The cited work is consistent with the Strategic Planning Guidance, the Army Science and Technology Master Plan, the Army Modernization Plan, and the Defense Technology Area Plan. Work in this project is performed by the US Army Natick Soldier Center, Natick, MA.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Ballistic Protection for the Individual Warrior: In FY06, matured material(s) system(s) architecture for both flexible and composite technology to include resins system, adhesion modifiers, and fiber architecture. In FY07, validate, through testing, technology to enable a 30 percent reduction over current weight (over the FY03 fielded weight level) with equivalent fragmentation protection in flexible and composite configurations; and transition composite technologies for small arms protection to reduce weight and/or increase multiple-hit capability. This technology will transition to PE 0603001A Warfighter Advanced Technology. In FY08, will continue maturation of advanced fiber technology (e.g., carbon nanotube-based) for lightweight armor applications, will investigate conformable material configurations to reduce weight, and minimize performance vulnerability associated with complex shapes in personnel armor applications, and will explore performance thresholds for increased protection levels for personal armor technology. In FY09, will validate performance of selected materials configurations for enhanced helmet performance; will downselect materials and begin integration of technological elements and components into a breadboard system for next generation armor systems and evaluate in various environments.	2420	1928	3273	3700

Novel Blast Protection: In FY06, evaluated Future Force Warrior (FFW) body armor materials against overpressure, continued development of test device for blast protective concepts, refined concept for new Interceptor Vest and began transfer to PEO Soldier of blast protective materials technology concept (materials and application configuration) for use with Interceptor Vest. In FY07, develop an integrated concept for blast protection and validate performance and transition to PEO Soldier development program. In FY08, will define and develop material system concepts for integrated ballistic/blast protection for use in next generation body armor, will investigate alternative surrogate devices for torso injury (other than lung injury) for evaluation of protective concepts. In FY09, will refine and validate material system concepts for integrated ballistic/blast protection for use in next generation body armor, and will validate alternative surrogate devices for torso injury (other than lung injury, e.g., liver, kidney, gut, and spine) for evaluation of protective concepts.	2420	1685	1197	2000
Infantry Warrior Simulation (IWARS): In FY06, completed information centric capability for intra-platoon operations and included it in IWARS version 2.0. This information centric capability was derived from functionalities that included dismounted infantry pertinent data and knowledge elements and the ability to transfer these elements from one Soldier to another through the underlying architecture. In FY07, develop initial small unit battle command module to support small unit information transfer impacts, and release the High Level Architecture compliant version 3.0 IWARS. In FY08, will include Advanced Soldier representations within IWARS, to include effects of sensor systems and the User Defined Operating Picture (UDOP) on the ability to provide actionable information to small units. In FY09, will enhance IWARS to include effects of Netted Communications and Collaborative Situational Awareness (NC/CSA). Will release IWARS version 4.0.	1820	2161	2135	2034
Electrotextiles: Self Powered, Conductive, and Smart - In FY06, developed prototype AA battery photovoltaic (PV) rechargers and PV modules for shelters; began field evaluations of leading PV technologies at Tydall's Renewable Shelter City in collaboration with the Air Force; fabricated 70 feet of novel, live PC fiber and demonstrated the first two-color PV device. Investigated several concepts for highly flexible, stretchable conductors, for Soldier-borne networks. In FY07, mature novel weave and interconnect technologies for PV fibers and explore power generation and electrical conductivity in unique fiber-based compositions; investigate several lightweight, wearable, low profile, connectors, and demonstrate interconnections for current Future Force Warrior electronic systems; investigate new power generating, and electrically conductive textile-based compositions compatible with warrior systems. In FY08, will mature technologies for first active PV fabric and for unmanned PV ground sensors and camo-patterned PVs; will transition flexible conductive networks and connector technologies to shelters and wearable electronics; will investigate current polymer-based optical conductors for secure, non-emissive, high-speed data transmission for optical networks; and will mature new optical materials with high flexibility. In FY09, will integrate a variety of electronic, optical and sensing devices into PV fabrics to demonstrate a new class of self-powered, smart electrotextile applications; will develop wearable connectors and interconnection methods for optical fibers; will explore various textile integration methods to provide additional strength and protection to the optical fibers.	1452	1952	2180	1990
Soldier Borne Microclimate Cooling: In FY06, investigated alternate material and design approaches for reducing the weight and power consumption of cooling technologies by focusing on the maturation of desiccant-assisted evaporative cooling technology and on new technologies for vapor compression cooling (e.g., carbon foam and micro-channel heat exchangers, optimized fan designs, soft packing, and biofeedback for power management). In FY07, downselect material and design approaches, and begin the integration of technological elements and components into a breadboard system. In FY08, will complete the integration of the technological elements and components, and test the breadboard systems. Using the test results, will downselect cooling technologies for Soldier applications and establish a baseline. In FY09, will transition downselected technologies to 6.3 for advanced technology development. Will size, design, and select components for the next generation microclimate cooling device.	721	1444	1222	1190
Soldier Integrated Tunable (Frequency Agile) Laser/Ballistic Eye Protection: This effort addresses the emerging threat of frequency agile	2652	3173	3480	1500

lasers on the battlefield and provides increased ballistic fragmentation protection. In FY06, evaluated laser protection schemes, researched optical limiting concepts that do not require an intermediate focal plane, and improved the performance of ballistic protective materials within the weight limit of the currently fielded system, which is 5.1 oz for a goggle configuration and 1.7 oz for a spectacle configuration. Established experimental protocols to evaluate lens abrasion due to blown sand and defined baselines for subsequent experimental abrasion measurements. In FY07, mature lighter weight ballistic materials while maintaining the improved level of performance; identify and evaluate abrasion resistant coatings and coating application procedures; and research optical limiting concepts that meet system design response time requirements. In FY08, will validate the potential of new ballistic materials achieved through leveraged efforts, will mature hybrid lighter weight ballistic materials while maintaining the improved level of performance, will integrate multi-layered laminates to provide multifunctional transparent armor materials with scratch resistance, and validate optical limiting concepts that do not require a lens system and that meet response time requirements over the visual spectrum. In FY09, if agile laser protective material has met the metric, will combine laser eye protection concepts, compatible ballistic materials, and abrasion resistance coatings into a new composite material; will assemble components on breadboard and perform system evaluation in a simulated environment. If the laser eye protection metric is not met, will transition a lighter weight lens material that provides improved ballistic protection with an improved scratch resistant coating that resists pitting from blowing sand.				
Biomechanical Tools for Individual Soldier Extremity Protection/Optimizing Battlespace Awareness in the Dismounted Soldier: In FY06, defined Soldier performance output measures for extremity worn body armor and equipment, initiated human experiments to collect energy expenditure data and constructed an initial principles-based biomechanical model for the effect of extremity loading on the defined output measures. In FY07, will complete a principles-based biomechanical model that predicts Soldier performance when encumbered with body armor, define performance thresholds for the biomechanical variables, and develop empirically based fatigue model for integration with the principles-based biomechanical model. In FY08, will integrate fatigue prediction into biomechanical model, verify, and validate integrated model, exercise the model to design a prototype set of extremity body armor. Will define cognitive performance metrics related to battlespace awareness (BA), conduct human experiments to evaluate decrements in BA related to physical demands of warfighting, and establish a model for predicting these decrements. In FY09, will define additional complex Soldier output measures for incorporation into biomechanical model, scale biomechanical tools to range of human anthropometry, conduct human experiments to refine fatigue prediction into short term and long term components. Will refine BA model with additional human experimental data and conduct research on strategies for mitigating decrements in BA documented by preceding experiments.	919	1575	2039	1891
Small Business Innovative Research/Small Business Technology Transfer Programs		258		
Total	12404	14176	15526	14305

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February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
2 - Applied Research	**0602786A - LOGISTICS TECHNOLOGY**	**H99**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
H99	JOINT SERVICE COMBAT FEEDING TECHNOLOGY	4372	4995	5227	5317	5370	5411	5530	5652

A. Mission Description and Budget Item Justification: The Joint Services Combat Feeding Technology project researches and applies combat ration and field food service equipment technologies to revolutionize the manner in which we sustain and support the Armed Forces, ensuring optimal nutritional intake. This project supports the Army Transformation in the areas of sustainability and reduced logistics footprint, with goals to demonstrate technology to reduce field feeding logistics by over 75 percent (i.e., weight, cube, fuel, and water) and labor requirements by 50 percent, while improving the quality of food service. Thrust areas include: combat rations; ration packaging; and combat feeding equipment/systems. Near-term goals are to enhance nutrient composition and consumption to maximize cognitive and physical performance on the battlefield. Research methods to reduce ration weight/volume and food packaging waste to minimize the logistics footprint. Tailor rations to the combat situation and provide an "eat on the move" capability, thereby improving mobility. Conduct research to reduce replenishment demand by extending shelf-life, permitting more extensive prepositioning of stocks, while maintaining initial quality. Provide equipment and energy technologies to reduce the logistics footprint and to enhance operational efficiency of field feeding while improving the quality of food service. The work in this project supports all military Services, the Army's Future Force, Special Operations Command, and the Defense Logistics Agency. The Army has Executive Agency responsibility for this Department of Defense (DoD) program, with oversight and coordination provided by the DoD Combat Feeding Research & Engineering Board. The cited work is consistent with the Strategic Planning Guidance, the Army Science and Technology Master Plan, the Army Modernization Plan, and the Defense Technology Area Plan. Work in this project is performed by the U.S. Army Natick Soldier Center, Natick, MA, and this project has collaborative efforts with the US Army Research Institute for Environmental Medicine.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Equipment and Energy Technologies: In FY06, integrated and tested water chiller subsystems for Soldier hydration; completed experimental development and transitioned self-powered tray ration heater to PE 0603001A (6.3); completed experimental design for a solar powered refrigerated container; and completed chemical concept development for air activated exothermic technology for the Meals Ready to Eat (MRE). In FY07, down select four competing Mobile Integrated Sustainable Energy Recovery (MISER) systems to two (a gasifier and supercritical water depolymerization process), verify that both MISERs produce an economically viable quantity of gas from waste, integrate components, and containerize the processors. Complete experimental development, test, and evaluation of individual water chiller. Complete experimental development of two Solar Powered Refrigerated Containers. In FY08, will complete experimental development of an inline water heater as an initial application of flameless combustion; will complete experimental development of an air-activated, self-contained, exothermic, chemical heater for the MRE including all safety/health/environmental regulatory compliance; and will investigate novel cogenerators (2-60kWe and 30-120kWt) for potential to operate on a range of fuels from the MISER producer gas to JP8. In FY09, will complete test and evaluation of the inline water heater (initial application of flameless combustion); will complete experimental development of an ethylene control system for fresh fruits and vegetables. Technologies developed within this effort transition to PE 0603001A, Warfighter Advanced Technology, for further maturation.	1708	2110	2353	2392
Ration Stabilization and Novel Nutrient Delivery Technologies: In FY06, determined statistical significance of anti-inflammatory micronutrients, e.g., quercetin, to extend onset of muscle fatigue and reduce muscle recovery time in animal models. Down selected	1420	1327	1532	1559

representative model ration components for Hybrid Optimal Processing (HOP), utilizing a combination of novel thermal and non-thermal processing targeting meat/seafood and vegetable/starch areas to increase menu variety and warfighter acceptability. In FY07, validate novel delivery systems and optimize nutrient delivery/absorption to enhance First Strike and other individual rations; incorporate encapsulated protein into these rations to assess stability and optimize bioavailability; and verify/evaluate retention of performance enhancers in rations over time by focusing on enhancers requiring protection. Design multiple tray food sterilizer using radio frequencies or microwaves in combination with high pressure. In FY08, will continue incorporation and testing of probiotics, i.e., beneficial bacteria, for improved gastrointestinal health; incorporate selected performance enhancers for delivery via the mouth allowing for the immediate movement of the molecules into the blood; and transition protein encapsulation effort to PE 0603001A. Will validate HOP effectiveness and scale-up design with selected model ration components; plan scale-up HOP design and engineering to produce high quality components; and develop additional shelf-stable combat ration breakfast items and transition to PE 0603001A. In FY09, will 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.				
Packaging and Food Safety Technologies: In FY06, tailored food sampling extraction procedures using immunoassays; investigated electrospun nanofiber membranes to help reduce the sampling time from food especially when screening for unknown pathogens; validated array technologies to identify multiple pathogens from a single food sample significantly reducing the number of foods samples needed to identify pathogens; and evaluated self-hydrating pouch forward osmosis technology to reduce weight for the individual warfighter. Evaluated optimized barrier polymer packaging coating technology and producibility to improve resistance to cracking during storage and transitioned to PE 0603001A. In FY07, continue modification and evaluation of food sampling procedures used for biosensor systems to improve their accuracy and sensitivity to pathogenic organisms. Conduct study to assess rates of ration quality degradation using reaction rates (quality kinetics) correlated with sensory analysis. Long term data collected will assist in generating protocols for ration developers and US Army Veterinary Command to more effectively conduct surveillance inspections of rations. In FY08, will continue optimization of array technologies for pathogen detection; and develop database for quality kinetics ration storage study to optimize accelerated storage conditions predictors. In FY09, will investigate multiplexing of electrospun nanofibers for improved capture of pathogens and initiate incorporation into array systems; will investigate molecular beacon signal enhancement as an alternative to identifying pathogens using array-based systems and transition to PE 0603001A; will calculate quality data reaction rates and determine kinetic correlations based on storage studies conducted in FY08; will continue long-term storage study to include extensive analytical, microbiological, and sensory testing; will complete database of quality kinetics and transition to PE 0603001A.	1244	1514	1342	1366
Small Business Innovative Research/Small Business Technology Transfer Programs		44		
Total	4372	4995	5227	5317