ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY
3 - Advanced technology development

PE NUMBER AND TITLE
0603001A - Warfighter Advanced Technology

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
Total Program Element (PE) Cost		65169	77022	63754	48143	53144	53297	50897	52407
242	AIRDROP EQUIPMENT	9293	7010	3841	3949	4131	4189	4225	4256
543	AMMUNITION LOGISTICS	910	1487	1449	1397	1464	1485	1498	1508
C07	JOINT SERVICE COMBAT FEEDING TECH DEMO	2189	2366	2430	2511	2593	2625	2648	2667
J50	FUTURE WARRIOR TECHNOLOGY INTEGRATION	43242	49143	56034	40286	44956	44998	42526	43976
J52	WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)	9535	17016	0	0	0	0	0	0

A. Mission Description and Budget Item Justification: This Program Element (PE) matures and demonstrates technologies to enhance dismounted Soldier system capabilities while reducing the logistics burden on the battlefield; decreasing operation and sustainment costs; and improving ammunition logistics system performance. This PE contains projects that address technologies for use in the Future Force and, where feasible, exploit opportunities to enhance Current Force capabilities. The major effort in the Future Warrior Technology Integration project (J50) is the Future Force Warrior (FFW) program that utilizes technology integration and multi-functionality to provide combat overmatch capabilities for the individual Soldier and small combat unit while reducing Soldier load. Per FY05 congressional direction, the FFW program is being consolidated with the Land Warrior (LW) program (managed by Program Executive Office (PEO) Soldier) to focus on Future Combat Systems (FCS) compatibility and realize benefits from the combined effort. The FFW Science and Technology program will demonstrate technologies to provide a lightweight, head-to-toe full spectrum protective combat ensemble, modularly integrated with multi-functional sensors, weapons and medical monitoring capabilities. The program will also mature and integrate technologies for connectivity to other dismounted personnel, FCS, and robotic air/ground platforms for improved situational understanding and effects. The Joint Service Combat Feeding Technology project (C07) demonstrates technologies for military combat feeding systems and combat rations to include processing, preservation, packaging and equipment and energy technologies to reduce the logistics footprint while enhancing warrior mental and physical agility. The DoD Combat Feeding Research and Engineering Board and Nutrition Committee provides oversight for this project. The Ammunition Logistics project (543) demonstrates technology that optimizes weapon system rearm, ammunition packaging/palletization, explosives safety, material handling equipment, and ammunition throughput/management for improved munitions availability and survivability. The Airdrop Equipment project (242) provides enhancements to rapid deployment and force projection capabilities by maturing and demonstrating technology required for dropping increasingly heavier cargo to precise locations from high altitudes and greater offset distances. The objective is to increase both the survivability of aircraft and crews, and the probability that payloads delivered will land in a usable condition. The Joint Precision Airdrop System, an Advanced Concept Technology Demonstration (ACTD) begun in FY04 in partnership with the US Air Force, will demonstrate a 5-ton payload, high

altitude precision airdrop system with an on-board mission planning capability. 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. The projects in this PE adhere to Tri-Service Reliance 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 efforts in PE 0602786A (Warfighter Technology), PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE0602624A (Weapons and Munitions Technology); PE 0602705A (Electronics and Electronic Devices), PE0603004 (Weapons and Munitions Advanced Technology); PE 0603008A (Command, Control, Communications Advanced Technology), and PEs 0602623A and 0603607A (Joint Service Small Arms Program). Work is performed by the Natick Soldier Center, Natick, MA; the Armament Research, Development, and Engineering Center, Picatinny, NJ; and the Research, Development, and Engineering Command, Edgewood MD.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	68034	70609	55982
Current Budget (FY 2006/2007 PB)	77022	63754	48143
Total Adjustments	8988	-6855	-7839
Net of Program/Database Changes			
Congressional Program Reductions	-6661		
Congressional Rescissions			
Congressional Increases	17750		
Reprogrammings			
SBIR/STTR Transfer	-2101		
Adjustments to Budget Years		-6855	-7839

Change Summary Explanation:
FY06 - Funds realigned ($6855K) to higher priority requirements.
FY07 - Funds realigned ($7839K) to higher priority requirements.

Nine FY05 Congressional adds totaling $17750 were added to this PE.

FY05 Congressional adds in Project J52 with no R2-A:
($960) Antimicrobial/Medical Base Layer Garment Technology: The purpose of this one-year Congressional add is to evaluate antimicrobial/medical technologies for clothing that may provide increased protection against infection. No additional funding is required to complete this project.

($2493) Common Navigation Interface Unit for Joint Precision Aerial Delivery System (JPADS): The purpose of this one-year Congressional add is to develop a JPADS-compatible low-cost Common Navigation Interface Unit for payload delivery pallets and parafoils. No additional funding is required to complete this project.

($479) Electro-textiles: The purpose of this one-year Congressional add is to research electro-textile technology with potential to advance "cableless" power and data transfer capabilities with reduced weight and bulk over onventional "wired" systems. No additional funding is required to complete this project.

($959) Integrated Headgear: The purpose of this one-year Congressional add is to research lightweight ballistic face protection. No additional funding is required to complete this project.

($1438) Joint Precision Aerial Delivery System (JPADS) - Rapid Refueling of 2K lb Resupply Requirements: The purpose of this one-year Congressional add is to develop common interface technology to improve the logistics of 2,000 lb payload resupply airdrop systems. No additional funding is required to complete this project.

($2446) Multifunctional Protective Packaging Technology: The purpose of this one-year Congressional add is to develop smart packaging prototype materials/films/coatings having potential to increase security of packaged foods. No additional funding is required to complete this project.

($4891) Ration Packaging Materials and Systems for Meals-Ready-to-Eat: The purpose of this one-year Congressional add is to evaluate oxygen-scavenging packaging materials to determine their potential to improve food shelf life. No additional funding is required to complete this project.

($2397) Small Business Development and Transition: The purpose of this one-year Congressional add is to advance small business research having potential for military utility. No additional funding is required to complete this project.

($959) Technology for Human Systems Integration: This one-year Congressional add is to research human factors engineering technology for Soldier systems. No additional funding is required to complete this project.

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February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603001A - Warfighter Advanced Technology**	**242**

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
242 AIRDROP EQUIPMENT	9293	7010	3841	3949	4131	4189	4225	4256

A. Mission Description and Budget Item Justification: This project focuses on the maturation and demonstration of equipment and innovative techniques for aerial delivery of cargo and personnel. This is a key capability for rapid force projection and global precision delivery envisioned for the Future Force. Precision airdrop can provide a long-range, autonomous airdrop capability, with the option to deliver separate and distinctive payloads to multiple locations. Capitalizing on advances in decelerators, guidance and sensing (e.g., Global Positioning System), and wind sensing technologies, precision airdrop systems have the ability to be deployed from high altitudes (up to 25,000 ft) with large offset distances and to deliver payloads with improved accuracy, which enhances cargo, crew, and aircraft survivability. The Joint Precision Airdrop System Advanced Concept Technology Demonstration (ACTD) will demonstrate a 10,000 lb precision capability from up to 20 miles offset with 100 meter Circular Error Probable (CEP) accuracy. A second major effort to increase the payload weight to 30,000 lb began in FY04. The efforts in this project support the Army Transformation goals in the area of rapid deployment. 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 project is performed and managed by the Natick Soldier Center, Natick, MA.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Aerial Delivery of Cargo - In FY04, performed prototype design and fabrication, and started system integration with USAF high-altitude airdrop mission planning system known as Precision Aerial Delivery System and the 10,000 lbs Army Joint Precision Airdrop System (formerly PEGASYS) for the Joint Precision Airdrop System ACTD; successfully demonstrated autonomous flight of two decelerator concepts. In FY05, complete system integration; conduct technical testing and user training; and demonstrate a high altitude (25,000 ft. Mean Sea Level) deployable, autonomous, offset airdrop capability (goal 10-20 miles offset) with the option to deliver separate and distinct payloads (up to 10,000 lbs total) to multiple locations.	3816	2090	0	0

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
Medium Precision Airdrop - In FY04, evaluated competing concepts for a 30,000 lb payload system; matured two promising concepts through scale-size prototypes; developed and integrated sensor suites for guidance navigation and control (GN&C) subsystems; and evaluated tools to model large parafoils. In FY05, conduct full-scale component prototyping; continue scale-model evaluations of two competing concepts; complete GN&C systems design integration and bench testing; begin component level modeling; and evaluate advanced textile materials to improve performance and reduce cost. In FY06, will perform component and GN&C evaluations; will begin full-scale system design; will complete component level modeling and begin system modeling; will complete evaluation of advanced textile materials; and will integrate intermodal platform. In FY07, will complete all component-level evaluations, system design, and system modeling; and will begin system evaluation and system control logic validation.	4521	4420	3841	3949
Personnel Parachute Technology – In FY05, pursue parachute safety enhancements for the Advanced TActical Parachute System (ATAPS) Preplanned Product Improvement program to improve aerodynamics, reduce drag, and enhance parachute opening control.	0	500	0	0
Affordable Guided Airdrop System – This one-year Congressional add advanced the conversion and use of military inventory round cargo parachutes for autonomous control of 500-2200 lb payloads for use in high altitude deployments, reduced the system's airborne guidance unit weights and complexities, and explored new concepts to increase the glide ratio of round canopies. No additional funding is required to complete this project.	956	0	0	0
Totals	9293	7010	3841	3949

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603001A - Warfighter Advanced Technology**	**543**

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
543 AMMUNITION LOGISTICS	910	1487	1449	1397	1464	1485	1498	1508

A. Mission Description and Budget Item Justification: This project develops technology that provides rapid munitions deployability, resupply, and return from deployment for the Army's Future Force. It enhances force readiness and reduces the logistics footprint through improvements in explosive safety, Materials Handling Equipment (MHE), ammunition and missile packaging/palletization, and asset throughput/management. It also improves weapon system rearm for artillery, armor, air defense, aviation, and infantry. A major effort is a lightweight, high strength cargo platform system, the Modular Intermodal Platform (MIP), which facilitates logistics through it's compatibility with the Theatre Support Vessel; C-17 and C-130 aircraft; current and future trucks; and aerial delivery systems. The MIP's modularity and compatibility will reduce aircraft load/unload time by up to 75%, and allow more efficient loading of aircraft (reducing number of aircraft missions required). Technology will transition to weapons and munitions development programs for weapons, munitions, MHE, and tactical vehicles. 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. This project is managed by the U.S. Army Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Smart Distribution- Modular Inter-modal Platform (MIP) - In FY 04, modeled performance characteristics and matured design for lightweight MIP. In FY 05, fabricate prototypes and conduct hardware and interface evaluations. In FY06, will complete design modifications and conduct inter-modal operational tests.	910	1487	1449	0
Ammunition Embedded Condition Monitoring and Identification System - In FY 07, will incorporate low power, miniaturized sensor technology into an embedded system to provide remote condition monitoring of key components for Future Combat Systems such as the Medium Range Munition, and item identification for asset management. This work leverages applied research in prognostics and diagnostics performed by the Army Research Laboratory.	0	0	0	1397
Totals	910	1487	1449	1397

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February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603001A - Warfighter Advanced Technology**	**C07**

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
C07	JOINT SERVICE COMBAT FEEDING TECH DEMO	2189	2366	2430	2511	2593	2625	2648	2667

A. Mission Description and Budget Item Justification: This project matures and demonstrates nutritionally advanced rations; biosensor technologies for ration contamination/wholesomeness assessment; and logistically streamlined combat feeding systems with enhanced fuel efficiencies to decrease the combat feeding logistics tail. The project is a Department of Defense (DoD) program for which the Army has Executive Agent responsibility. The project demonstrates advances in combat ration technology, materials, energy utilization, and heating technologies to provide efficient and effective field feeding with reduced resupply burden. It exploits advances in ration formulation and quality, packaging, preservation, and nutritional content to improve morale, extend endurance, and sharpen mental acuity. It also demonstrates predictive modeling and simulation to assist in ration design, mission planning, and Class I (subsistence) distribution and tracking. This project supports the Army Transformation with a goal to demonstrate combat feeding technology with potential to reduce logistics by 75% (in component parts, weight, cube, fuel and water) and labor requirements by 50%, while improving the quality of food service. The work in this project is performed and managed by the U.S. Army Natick Soldier Center, Natick, MA with oversight from the DoD Combat Feeding Research and Engineering Board and Nutrition Committee. This project has collaborative efforts with the U.S. Army Research Institute for Environmental Medicine. 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.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Equipment and Energy Technologies – In FY04, conducted multi-service Field Feeding and Advanced Sustainment Technology demonstrations reducing logistics (75% reduction in weight, cube, fuel and water; 50% reduction in labor). In FY05, complete design and fabrication of a thermoelectric water heater chiller for Future Combat Systems (FCS) crew sustainment that weighs less than half of the current Mounted Water Ration Heater and provides chilled water to vehicle crews. In FY06, will demonstrate and transition thermoelectric water heater chiller for FCS crew sustainment; will demonstrate Capillary Force Vaporizer (solid state vaporizer with no moving parts and constructed of layered ceramics) stove and associated equipment, and transition for fielding through the Soldier Enhancement Program and the Marine Enhancement Program. In FY07, will demonstrate and transition thermoelectric self-powered tray ration heater for Army, US Marine Corps and Air Force kitchens; and will conduct initial demonstrations of waste to energy conversion technologies.	958	613	624	640
Technologies for Novel Ration Preservation & Stabilization, Revolutionary Packaging and Food Safety – In FY04, completed and transitioned Compressed Meal technology prototypes offering menu items with up to 38% reduced weight and 33% less cube over the Meal Ready to Eat (MRE). Demonstrated in a field environment Radio Frequency Identification (RFID) System technology (vendor to foxhole), evaluated field data and transitioned system to Defense Logistics Agency (DLA) in accordance with Under Secretary of Defense for Acquisition Technology & Logistics signed DoD policy for the use of RFID within DoD. In FY05, validate/optimize diagnostic techniques to detect chemical/biological agents and/or naturally occurring food pathogens in food matrices and incorporate into biosensor detection systems; demonstrate and transition a surface scanning biosensor; and evaluate advanced prototype film produced using nanocomposites and enhanced barrier coating technology in ration packaging. In FY06, will identify and obtain commercial or prototype array diagnostic systems and validate for four food pathogens from different complex food matrices; will investigate technologies to achieve increased coating adherence during/after thermostabilization of ration components; and will modify and optimize tamper evident devices, and transition pending DLA concurrence. In FY07, will continue to validate array diagnostic technologies with complex food matrices; and will optimize and conduct technical demonstration of increased coating adherence that will enhance appearance and consumption of thermally processed foods.	575	1364	1306	1360

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
Technologies for Nutrients and Novel Delivery Systems – In FY04, demonstrated production scale-up capability and incorporated shelf stable meat/vegetable bars and gels, breakfast bagel and French toast components, and shelf stable tuna fish and tortillas in prototype First Strike Ration (FSR); conducted field demonstration of FSR technology in various operational scenarios (Army Special Operations Forces /Marines) with incorporated packaging and component modifications providing a 50% reduction in cube/weight, as compared to the MRE. In FY05, determine stability of encapsulated proteins appropriate for thermally processed components; develop tests for supplements and conduct limited field evaluation; and finalize and transition FSR component/menu/packaging. In FY06, will demonstrate effectiveness of protein encapsulation in thermally and non-thermally processed FSR components. In FY07, will complete optimization and final product evaluation of FSR supplements.	656	389	500	511
Totals	2189	2366	2430	2511

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February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603001A - Warfighter Advanced Technology**	**J50**

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
J50	FUTURE WARRIOR TECHNOLOGY INTEGRATION	43242	49143	56034	40286	44956	44998	42526	43976

A. Mission Description and Budget Item Justification: This project matures high-payoff technologies and systems for the Future Force Soldier with primary emphasis on the Future Force Warrior (FFW) System of Systems (SoS). The FFW program utilizes technology integration and multi-functionality to enhance warfighting capability for the individual Soldier and small combat unit while reducing Soldier load. Per FY05 congressional direction, the FFW program is being consolidated with the Land Warrior (LW) program (managed by Program Executive Office (PEO) Soldier) to focus on Future Combat Systems (FCS) compatibility and realize benefits from the combined effort. Consolidation activities with PEO Soldier include migration of FFW technology development to the same contractor as LW and the establishment of a combined organizational structure. The project develops architectures, and develops/leverages and integrates key technologies in Soldier Systems that transition to PEO Soldier for fielding to the Future Force Unit of Action (UA). As part of the consolidated Soldier modernization strategy, this project is providing technology aligned with the FCS spiral development strategy that will result in fielding of an integrated modular Ground Soldier System (GSS) that is fully compatible with FCS. This project develops technology to provide dismounted warfighters in the UA with significant overmatch capability in the areas of survivability, networked communications, individual Soldier and small team lethality, and agility while enabling them to operate for extended periods under arduous combat conditions, with minimal loss in physical capabilities from fatigue, stress, and hardship. The FFW SoS will employ open system architectures and moderate-high risk/high payoff technologies to yield a lightweight system-engineered protective combat ensemble, employing modular plug and play components such as multi-function sensors, networked communications/collaborative situational awareness, enhanced positioning navigation, networked fires, collaborative embedded training, medical status monitoring capabilities, and manportable ("micro") air and ground robot/sensor platforms organic to the squad. This Soldier SoS will have connectivity to other dismounted personnel, Future Force platforms including FCS, and robotic air/ground vehicles to form adaptive, distributed sensor networks for better situational understanding of local environments and threats. The project will also leverage squad-relevant FCS unmanned systems (e.g., Mule) and demonstrate mission packages tailored to the squad. The FFW Concept and Technology Development (CTD) program began in FY02 with two competing industry teams developing and maturing initial FFW concepts for all Future Force UA Soldiers; then downselected to a single contractor team to conduct technology design and maturation of a "common core" SoS configuration and dismounted variant; and will culminate with a comprehensive SoS capstone demonstration in FY07. Key performance goals are to demonstrate: a Soldier borne system with fighting load of no more than 50 lbs per warfighter (rifleman); the ability to operate for 24 hrs autonomously at the individual level and 72 hrs at the Unit of Action level; interoperability with Warfighter Information Network-Tactical/Joint Tactical Radio System (JTRS) Cluster 5 through integration of the Soldier Radio Waveform (SRW); and compatibility with FCS. The project will mature and integrate Soldier SoS technologies transitioned from 0602786A, 0602105A, 0602308A, 0602623A, 0602705A, 0602782A, 0602785A, 0602787A, 0603002A, 0603008A, and 0603607A. The FFW program works closely with the Army's FCS and JTRS/ Squad Level Communications programs, as well as other Army Science & Technology (S&T) and DoD programs, in order to ensure interoperability, prevent possible duplication of efforts, and maximize return on investment to the Army. To address early component insertion that enhances current Soldier capabilities, the FFW program has established a Transition Working Group to identify and transition early

maturing technologies/capabilities to PEO Soldier acquisition programs. 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. The Natick Soldier Center, Natick, MA manages this project.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
FFW Technology Integration Cycle I - In FY04, completed FFW Technology Integration Cycle I which included the following efforts. Refined operational concepts and architecture, including distribution of capabilities across small combat units. Developed technical performance measures for each design cycle; allocated subsystem weight and power budgets, and developed initial high level specifications (e.g. Interface Control Documents). Developed initial Soldier Borne System (SBS) prototype architecture to include load carriage and signature management. Conducted Modeling and Simulation (M&S) to assess utility. Established System Integration Lab (SIL) to assess functionality. Began development of FFW subsystems that include the following: Headgear systems - evaluated headgear component technology candidates including ballistic materials, hearing and vision augmentation/protection, and chemical/biological protection. Communications - defined hardware/software interfaces and integration requirements for Joint Tactical Radio System (JTRS) Cluster 5 and the Soldier Radio Waveform. Power - initiated requirements definition (including trade-off analyses) and developed power sources/power management tools to meet needs for operational mission scenarios. Lethality - defined initial distribution of capabilities, and began development of interfaces for individual weapons and networked fires. FFW SoS platforms - developed initial surrogate architecture to represent objective architecture for integration with FCS platforms. Software - defined software architecture and interfaces for information management and battlefield applications; began software development. Warfighter Physiological Status Monitoring - assessed monitoring technology developed by Army Medical Research and Materiel Command, and defined requirements for integration into Personal Area Network. Embedded training - developed concepts for embedded training, and evaluated display device options.	19224	0	0	0

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
FFW Technology Integration Cycle II-FY04: developed lower level specifications, designed components, conducted trade-off studies. Matured SBS integration from initial prototype, advancing ballistic protection and load carriage subsystems. Conducted initial assessment of linkage to FCS SoS Common Operating Environment. Identified 13 early insertion technology candidates for transition to Program Manager Soldier Equipment in FY06. FY05: fabricate Cycle II SBS prototypes and surrogates; perform evaluations in a SIL and relevant field environment. Conduct M&S, and field assessments with soldiers to obtain feedback for further refinement; evaluate systems requirements and preliminary design. Identify technology objectives for FCS spiral insertions. Continue Soldier SoS concept aligned with FCS Spiral 2 with subsystem development including: Headgear system-integrate video and processing/network/communication surrogate. Personal Area Network-develop proof-of-concept Soldier borne computer system and initiate integration of body borne antennae. Communications-conduct lab and limited field tests with prototype hardware and digital audio support, to evaluate SRW effectiveness for dismounted voice/data communications. Power-develop mission profiles and power duty cycles. Lethality-mature interfaces between SBS and individual weapons; demonstrate connectivity to weapon mounted fire control system. Soldier/platform interfaces-conduct demonstration of Soldier control of unmanned systems; develop interface specifications for unmanned and manned vehicles. Software-develop initial modules for interfaces and embedded training. Warfighter Physiological Status Monitoring-integrate into Personal Area Network.	24018	20555	0	0

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
FFW Technology Integration Cycle III- In FY05, begin FFW Technology Integration Cycle III that includes the following efforts that will continue into FY06. Fabricate fully functional prototypes with distribution of capabilities that are compatible and coordinated with the FCS spiral strategy including integrated position/navigation; antennas; electronics; warfighter physiological status monitoring; and headgear system. Evaluate system functionality and perform modeling and simulation analysis. Develop initial Limited Objective Experiments and Capstone Demonstration test plans for FY07. Focus subsystem development on integration that includes, but is not limited to, the areas listed here. Headgear system - integrate system including chemical/biological protection, video, and processing/network/radio technologies into the SBS. Personal Area Network - refine architecture and computer form factor. Communications- leverage, develop and integrate hardware and software modules and verify/validate dismounted Soldier battlefield applications using the JTRS compliant SRW . Power - integrate power sources into the SBS. Lethality - demonstrate integration of individual weapons with SBS. Soldier (robotic/unmanned platform) Interfaces - conduct robotic system integration tests with surrogate platforms to validate soldier control and wireless capabilities; conduct robotic systems deployment studies; develop sensor fusion architecture; and conduct FCS compatibility assessment. Conduct FFW SoS User Experiment and Critical Design Evaluation for hardware design lock. Continue to identify and transition early-maturing technologies and capabilities to PEO Soldier programs for early transition to the current force.	0	28588	18688	0
FFW Integration Cycle IV– In FY06 and FY07, will transition program management for and execution of the remainder of the FFW ATD to Project Manager Soldier Warrior (PM SWAR) the final FFW SoS prototype build, which will consist of assembly of 18 prototype combat ensembles with distributed capabilities including integrated position/navigation; antennas; electronics; warfighter physiological status monitoring; and headgear system (having ballistic, facial and chemical/biological protection, voice communications, fused thermal/Image-intensification, and laser sensors). Will continue modeling and simulation analyses. Will complete Limited Objective Experiment and Capstone Demonstration test plans. Will continue refinement of software subsystems including distributed capabilities and MOS-specific software modules as required. Will conduct robotic system integration tests with surrogate FCS platforms to validate soldier control and wireless capabilities. Will conduct FFW/FCS compatibility assessment. Will spiral out matured technology components for PEO Soldier modular insertions.	0	0	37346	7022

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
FFW Capstone Demonstration - In FY07, under PM SWAR management, will deliver 18 contractor tested prototype systems for the capstone FFW demonstration; will continue software refinement; will conduct Experimental Force training and Limited Objective Experiments, and associated analyses; will conduct final software integration; will conduct Experimental Force training for capstone demonstrations, and execute demonstrations. Will verify FFW SoS at Technology Readiness Level 6 and transition to PEO Soldier.	0	0	0	28264
Soldier Power - In FY07, will initiate maturation and demonstration of power and energy technologies to achieve better integrated, more efficient power subsystems for GSS and other Soldier systems. Will emphasize development of capabilities to dramatically improve energy density and duration of power sources for Soldier applications to reduce Soldier carried loads and improve mission performance. Will develop and evaluate technologies such as fuel-cells, fuel-cell/battery hybrids, and smart chargers as components of an overall soldier power subsystem. Will develop power management approaches, including advanced system monitors, power efficient software, and novel instant-on/sleep capabilities.	0	0	0	5000
Totals	43242	49143	56034	40286