ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2004

BUDGET ACTIVITY
3 - Advanced technology development

PE NUMBER AND TITLE
0603001A - Warfighter Advanced Technology

	COST (In Thousands)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
	Total Program Element (PE) Cost	55618	66855	68034	70609	55982	83038	83631
242	AIRDROP EQUIPMENT	3339	9550	7357	3995	4072	4153	4246
543	AMMUNITION LOGISTICS	761	937	1558	1507	1441	1472	1505
545	FORCE PROJECTION LOGISTICS	6809	0	0	0	0	0	0
557	BIOSYSTEMS TECHNOLOGY	4097	0	0	0	0	0	0
594	METROLOGY & CALIB	936	0	0	0	0	0	0
C07	JOINT SERVICE COMBAT FEEDING TECH DEMO	2177	2211	2443	2528	2589	2607	2660
J50	FUTURE WARRIOR TECHNOLOGY INTEGRATION	37499	44476	56676	62579	47880	74806	75220
J52	WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)	0	9681	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 several 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 Objective Force Warrior (OFW), an integrated Soldier system of systems providing the next generation of capabilities beyond Land Warrior Stryker for Future Force Unit of Action (UA) Soldiers. OFW will provide a lightweight, head-to-toe full spectrum protective combat ensemble, integrated with multi-functional sensors, weapons and medical monitoring capabilities. The OFW will have connectivity to other dismounted personnel, Future Combat Systems (FCS), and robotic air/ground platforms for improved situational understanding and effects. The intent of OFW is to provide the dismounted Soldier and small unit with combat overmatch capabilities for the full spectrum of Future Force missions. 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 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 Force Projection Logistics project (545) demonstrates embedded training simulations to support vehicle crews and mature logistics simulations that relate combat performance to logistics requirements. The funding for project 545 is realigned to the newly established PE 0603015A in FY 2004. The Airdrop Equipment project (242) provides enhancements to rapid deployment and force projection capability by maturing and demonstrating technology required for dropping increasingly heavier cargo to

precise locations from high altitudes and greater offset distances. The objective is increased survivability of aircraft and crews, and increased probability that materials delivered will land in a usable condition. The Joint Precision Airdrop System, a new Advanced Concept Technology Demonstration (ACTD) beginning in FY04, will demonstrate a 5-ton payload, high altitude precision airdrop with an on-board mission planning system, in partnership with the Air Force. and 545) and rapid deployment (project 242). The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan , the Army Modernization Plan, the Defense Technology Area Plan, and the Training and Doctrine Command's Soldier as a System family of emerging Capability Development Documents. This program adheres to Tri-Service Reliance Agreements on clothing, textiles, food, and explosive ordnance disposal 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). This PE contains no duplication with any effort within the military departments. Work is performed by the Natick Soldier Center, Natick, MA; the Armament Research, Development, and Engineering Center, Picatinny, NJ; the Aviation and Missile Research, Development, and Engineering Center, Huntsville, AL; and the Research, Development, and Engineering Command, Fairfax, VA.

B. Program Change Summary	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004)	57014	63882	68763
Current Budget (FY 2005 PB)	55618	66855	68034
Total Adjustments	-1396	2973	-729
Congressional program reductions		-7576	
Congressional rescissions			
Congressional increases		10800	
Reprogrammings	-1396	-251	
SBIR/STTR Transfer			
Adjustments to Budget Years			-729

FY04 Congressional Adds with no R-2A:
($959) Protection against Toxic Industrial Chemicals, Project J52: The purpose of this one year Congressional add is to research protective technol

ogy against toxic industrial chemicals for possible application to soldier clothing and equipment. No additional funding is required to complete this project.

($5755) Ration Packaging Material and Systems for MREs (Meals Ready to Eat), Project J52: The purpose of this one year Congressional add is to research packaging systems with potential to increase shelf life, safety, and nutrition of food products. No additional funding is required to complete this project.

($2685) ATIRCM/CMWS, Project J52: This Congressional add is being reprogrammed to PE 0604270A (Electronic Warfare Development). The purpose of this one year Congressional add is to develop common missile warning system technologies for the Advanced Threat Infrared Countermeasures system. No additional funding is required to complete this project.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2004

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

COST (In Thousands)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
242	AIRDROP EQUIPMENT	3339	9550	7357	3995	4072	4153	4246

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 decelerator, guidance and sensing (e.g., Global Positioning System (GPS)), and wind sensing technologies, precision airdrop systems have the ability to be deployed from high altitudes (up to 25,000 ft) and to deliver payloads with better accuracy, i.e. a 100 meter Circular-Error-Probable (CEP). The resulting capability is envisioned to be the delivery of up to 10,000 lbs. from up to 20 miles offset with 100 meter CEP accuracy. The 10,000 lb. precision capability will be demonstrated as part of the Joint Precision Airdrop System ACTD. An effort to increase the payload weight to 30,000 lbs will begin in FY04. Delivery from high altitudes and large offset distances improves cargo, personnel, and aircraft survivability. The efforts in this project support the Army Transformation 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 US Army Natick Soldier Center, Natick, MA.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2004

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

Accomplishments/Planned Program	FY 2003	FY 2004	FY 2005
Aerial delivery of cargo - In FY03, demonstrated the system for a roll on/roll-off capability for 15,000-20,000 lb payload providing a 60% decrease in labor intensive rigging; transitioned the technology to PM Force Sustainment Systems for System Development and Demonstration. Designed full-size prototype and tested (autonomous controlled) a 1/4 scaled prototype high-altitude parachute control system. Designed and planned test of 10,000 lb. autonomous offset "just-in-time" resupply airdrop system prototype. In FY04, perform prototype design and fabrication; and start system integration with USAF high-altitude airdrop mission planning system known as Precision Aerial Delivery System (PADS) and the 10,000 lbs Army Precision Extended Glide Airdrop System (PEGASYS) for the Joint Precision Airdrop System (JPADS) ACTD. In FY05, will complete system integration; will conduct technical testing and user training; and will 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.	3339	3789	2175
Medium Precision Airdrop - In FY04, mature preferred concepts for Precision Airdrop - Medium (30,000 lbs) system and mature guidance navigation and control for the selected concept. In FY05, will conduct full-scale component prototyping for Precision Airdrop - Medium system.	0	4533	4682
Personnel Parachute Technology – In FY05, will demonstrate technology for a static line reserve parachute automatic opening capability providing 100% detection of total malfunctions and transition technology to PM–Clothing and Individual Equipment for System Development & Demonstration (SDD).	0	0	500
Affordable Guided Airdrop System – The purpose of this one year Congressional add is to advance the conversion and use of military inventory round cargo parachutes for autonomous control of 500-2200 lb payloads for use in high altitude deployments, reduce the systems airborne guidance unit weights and complexities and explore new concepts to increase the glide ratio of round canopies. No additional funding is required to complete this project.	0	964	0
Small Business Innovative Research/Small Business Technology Transfer Programs	0	264	0
Totals	3339	9550	7357

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2004

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

COST (In Thousands)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
543 AMMUNITION LOGISTICS	761	937	1558	1507	1441	1472	1505

A. Mission Description and Budget Item Justification: This project develops technology that provides rapid munitions deployability, resupply, and rearm 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 demonstrates an automated rearm and resupply capability for the Future Combat System (FCS) 120mm Line of Sight/Beyond Line of Sight System. The rearm/resupply concept contains "plug-in" ammunition modules or clips and an automated upload mechanism that will enable faster rearm. A second major effort is a lightweight, high strength cargo platform system, the Modular Intermodal Platform (MIP), that facilitates logistics through its compatibility with the Theater 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 2003	FY 2004	FY 2005
Automated Rearm and Resupply Capability for the FCS 120mm Line of Sight/Beyond Line of Sight System - In FY03, evaluated resupply concepts and integrated with autoloader design.	761	0	0
Smart Distribution-Modular Intermodal Platform (MIP). In FY04, model performance characteristics and develop design for lightweight MIP. In FY05, will fabricate prototypes and conduct hardware and interface evaluations.	0	910	1558
Small Business Innovative Research/Small Business Technology Transfer Programs	0	27	0
Totals	761	937	1558

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2004

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

COST (In Thousands)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
C07	JOINT SERVICE COMBAT FEEDING TECH DEMO	2177	2211	2443	2528	2589	2607	2660

A. Mission Description and Budget Item Justification: The Joint Service Combat Feeding Technology Demonstration 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 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 that will reduce logistics by over 75% (in component parts, weight, cube, fuel and water) and labor requirements by 50%, while improving the quality of food service. This project is a Department of Defense program for which the Army has Executive Agent responsibility and is performed and managed by the U.S. Army Natick Soldier Center, Natick, MA. 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 2003	FY 2004	FY 2005
Equipment and Energy Technologies – In FY03, conducted initial technology demonstration of integrated Field-feeding and Advanced Sustainment Technology (FAST) Food Service system during Quartermaster Regimental Week. Completed technology demonstrations of Remote Unit Self Heated Meal (RUSHM) showing logistical reductions (90% reduction in manpower, weight and cost) and new capability to sustain the warfighter in remote locations and transitioned to 6.4. Demonstrated a co-generator technology for legacy kitchens that reduces kitchen fuel consumption by 50% and noise by at least 10dB. In FY04, conduct multi-service demonstrations of FAST Food Service (cogeneration, integrated appliances, heat-driven refrigeration, and grey water recycling), validate metrics and transition to 6.4 for field kitchen modernization (PM Force Sustainment Systems). Demonstrate lightweight, compact insulated food container technology and transition to 6.4. Complete demonstration of shipboard food service technology for future Navy ships and subs and transition to 6.4. In FY05, will demonstrate heat-driven refrigeration for current kitchens and transition to 6.4. Will fabricate and conduct in-house testing on a prototype crew ration and beverage sustainment system for the FCS.	570	960	613
Technologies for Novel Ration Preservation & Stabilization, Revolutionary Packaging and Food Safety – In FY03, matured novel preservation/stabilization technologies (such as, compressed meal components to reduce size/weight) that were validated in FY02. Conducted hardware and software testing in preparation for DoD's first limited field demonstration of a commercial off-the-shelf technology for a Radio Frequency Identification (RFID) Total Asset Visibility (TAV) System for integrated ration monitoring, inventory and tracking. In FY04, conduct field demos of Compressed Meal technology prototypes in support of individual and/or future combat vehicle feeding platforms, optimize package/menu designs for specific user applications, and transition to 6.4. Complete field demonstration of TAV System technology, evaluate field data and transition demonstrated system to Defense Logistics Agency. In FY05, will conduct producibility tests for novel shelf-stable breakfast items to expand menu variety, while enhancing ration acceptance/consumption. Will validate/optimize diagnostic techniques to detect chemical/biological agents and/or naturally occurring food pathogens in food matrices and incorporate into biosensor detection systems. Will conduct technical demonstration of a surface scanning biosensor. Will evaluate advanced prototype film produced using nanocomposites and enhanced barrier coating technology in ration packaging.	1027	575	1441

Accomplishments/Planned Program (continued)	FY 2003	FY 2004	FY 2005
Technologies for Nutrients and Novel Delivery Systems – In FY03, transitioned to 6.4 mature ration and packaging technologies for specialized rations, such as the drink pouch and enhanced tube foods, to improve consumption, and reduce weight/volume. Conducted limited demonstration of First Strike Ration (FSR) technology during Operation Enduring Freedom. Conducted prototype scale-up of dairy bars and test bars with increased levels of omega-3 fatty acid; finalized bar design. Demonstrated a suite of models based on energy expenditure, physical fatigue, and rehydration rates to measure Soldier performance and mission accomplishments. In FY04, demonstrate production scale-up capability and incorporate shelf stable meat/vegetable bars and gels in prototype FSR. Conduct field demonstration of FSR technology in various operational scenarios (Army SOF /Marines) incorporating packaging and component modifications with a goal of 50% reduction in cube/weight, as compared to the MRE. In FY05, will determine bioavailability and conduct field tests of components with encapsulated protein used to control the release and absorption of protein into the warrior's system. Will conduct field demonstration to quantify the effects of glucose modulating components on increasing warfighter performance and demonstrate production scale up capability of these components. Will complete FSR technology demonstration and transition to 6.4.	580	655	389
Small Business Innovative Research/Small Business Technology Transfer Programs	0	21	0
Totals	2177	2211	2443

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2004

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

COST (In Thousands)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
J50	FUTURE WARRIOR TECHNOLOGY INTEGRATION	37499	44476	56676	62579	47880	74806	75220

A. Mission Description and Budget Item Justification: This project matures leap-ahead technologies and systems for the Objective Force Warrior (OFW), with emphasis on systems integration and multi-functionality to enhance and improve warfighting capability while reducing Soldier load. The project demonstrates next-generation advances over Land Warrior STRYKER for use in the Future Force Land Warrior-Advanced Capability and, where feasible, exploits opportunities to enhance Land Warrior-STRYKER capabilities. The goal is to provide dismounted warfighters in the Future Force Unit of Action 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. OFW will employ open system architectures and high-risk/high payoff technologies to yield a lightweight full spectrum integrated protective combat ensemble, integrated with 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 system-of-systems will have connectivity to other dismounted personnel, Future Force platforms including Future Combat Systems (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 OFW Concept and Technology Development (CTD) program began in FY02 with two competing industry teams developing and maturing initial OFW concepts for all Future Force Unit of Action Soldiers; then downselected to a single contractor team to conduct OFW technology design and maturation of a "common core" system of systems configuration and dismounted variant; and will culminate with a comprehensive system-of-systems capstone demonstration. Key performance goals are to demonstrate a system with fighting load of no more than 50 lbs per warfighter; the ability to operate for 24 hrs autonomously at the individual level and 72 hrs at the Unit of Action level; and integration with Warfighter Information Network-Tactical/Joint Tactical Radio System. To achieve these goals, future warrior projects and other relevant supporting Army projects have been redirected to achieve the desired capability within the decade. The project will mature and integrate Soldier technologies transitioned from 0602786A, 0602105A, 0602308A, 0602623A, 0602705A, 0602782A, 0602785A, 0602787A, 0603002A, 0603008A, and 0603607A. This project will leverage the Army's FCS and Joint Tactical Radio System/ Squad Level Communications programs, as well as other Army S&T and DoD programs to the maximum extent, in order to maximize return on investment to the Army. This project also matured and demonstrated advanced technology solutions to complex systems integration problems in the areas of multifunctional integrated head-to-toe combat ensembles during FY2003. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan, the Army Modernization Plan, the Defense Technology Area Plan, and the Training and Doctrine Command's Soldier as a System family of emerging Capability Development Documents (CDDs). The US Army Natick Soldier Center, Natick, MA manages this project.

Accomplishments/Planned Program	FY 2003	FY 2004	FY 2005
Concept Development (CD) Phase – In FY03, matured Soldier system of systems architectures for all Future Force Unit of Action Soldiers, which are compatible with the FCS architecture and Army concepts of operations. Performed trade-off analyses, technology surveys, and technology assessments underpinned with analytical modeling and simulation. Defined specific technology projects required to meet technology goals within the timelines of the OFW Concept and Technology Development (CTD) effort. Defined initial interfaces to Future Force systems and matured system level requirements. Defined system design concept for all Soldiers in Unit of Action including a "common core" configuration that is tailorable to Soldier variants across the spectrum of the Future Force Unit of Action (UA). Constructed two mock-up prototype sets of systems to physically represent the OFW system of systems concepts for the Dismounted UA Soldier variant. Downselected and awarded the Phase II Agreement Award (Other Transaction Agreement) to a single Lead Technology Integrator (LTI) to execute the Technology Integration Phase of the OFW CTD program.	3733	0	0
OFW Technology Integration Phase Planning and Initial Development- In FY03, conducted program synchronization with down-selected Lead Technology Integrator. Established coordinated program plans. Defined a preliminary/detailed spiral design process utilizing technology integration cycles (four cycles planned) that include architectural definition, virtual prototyping, subsystem breadboard design and testing, user assessments, and modeling and simulation. Initiated initial design of OFW dismounted soldier variant incorporating a set of core technologies common to all Unit of Action Soldiers and those specific to dismounted infantry. These core technologies include: base uniform system; modular load carriage system; headgear system; computer system, communication system and power system. Defined initial system of systems architectural documents. Allocated system level and interface requirements to major subsystems/critical components. Evaluated and assessed FCS interface requirements to OFW. Completed FCS interoperability report. Conducted pilot Joint Conflict and Tactical Simulations (JCATS) to assess initial system utility.	21935	0	0

Accomplishments/Planned Program (continued)	FY 2003	FY 2004	FY 2005
OFW Technology Integration Cycle I- In FY04, conduct OFW Technology Integration Cycle I, which includes the following efforts. Refine operational concepts and architecture including distribution of capabilities across small combat units. Develop technical performance measures for each design cycle; allocate subsystem weight, power and cost budgets. Develop initial Soldier Borne System (SBS) prototype to include load carriage and signature management. Conduct JCATS simulations to assess utility. Establish System Integration Lab to assess system functionality. Begin development and perform initial evaluation of OFW subsystems that include, but are not limited to, the areas listed below. Headgear systems: evaluate headgear component technology candidates including ballistic materials, hearing and vision augmentation/protection, and chemical/biological protection. Communications: define hardware/software interfaces and integration requirements for Joint Tactical Radio System (JTRS) Cluster 5 and the Soldier radio waveform. Power: define requirements (including trade-off analyses on power source candidates) and develop power sources/power management tools that meet needs for operational mission scenarios and vignettes. Lethality: define architecture and begin development of interfaces for individual weapons and networked fires. Platform interfaces: define requirements for soldier/vehicle interfaces for robotic and manned vehicles including FCS. Software: define software architecture and interfaces for information management, battlefield applications, and data security; begin software development. Warfighter Physiological Status Monitoring: assess monitoring and sensor technology developed by Army Medical Research and Materiel Command; define technical requirements for integration into Personal Area Network. Embedded training: develop concepts for embedded training; evaluate display device options.	0	19619	0

Accomplishments/Planned Program (continued)	FY 2003	FY 2004	FY 2005
OFW Technology Integration Cycle II- In FY04-FY05 (beginning third quarter FY04 and ending second quarter FY05), conduct OFW Technology Integration Cycle II that includes the following efforts. Develop lower level specifications, detailed design of components, and trade-off decisions for system/subsystem design and architectures. Mature SBS integration from initial prototype, advancing ballistic protection and load carriage. Fabricate Cycle II SBS prototypes with limited functionality. Perform modeling and simulation analysis on updated design. Conduct System Integration Laboratory evaluations and field assessments with soldiers to obtain feedback for further SBS design refinement. Focus on continued subsystem development that includes, but is not limited to, the areas listed here. Headgear system: integrate video and processing/network/ratio surrogate; fabricate prototypes for fightability assessment, head-borne weight assessment, and bench-top testing; integrate headgear with SBS. Personal Area Network: develop proof-of-concept computer system and antenna. Communications: continue to define detailed technical hardware and interfaces specifications for integration with JTRS Cluster 5 and the Soldier radio waveform in Cycles III and IV. Power: test and validate power architecture within the Personal Area Network through testing and trade-off analyses. Lethality: continue maturation of interfaces between SBS and individual/other weapons; demonstrate connectivity to weapon mounted fire control system for beyond line of sight capability. Platform interfaces: continue to develop and refine interface specifications for unmanned and manned vehicles including FCS. Software: develop initial software modules for application program interfaces and embedded training. Warfighter Physiological Status Monitoring: integrate sensor components and subsystem into Personal Area Network; evaluate subsystem.	0	23607	23829

Accomplishments/Planned Program (continued)	FY 2003	FY 2004	FY 2005
OFW Technology Integration Cycle III- In FY05, will begin OFW Technology Integration Cycle III that includes the following efforts. Will fabricate fully functional prototypes including integrated position/navigation; antennas; electronics; warfighter physiological status monitoring; and headgear system. Evaluate system functionality and perform modeling and simulation analysis. Will develop initial Limited Objective Experiments and Capstone Demonstration test plans. Will focus subsystem development on integration that includes, but is not limited to, the areas listed here. Headgear system: will integrate system including chemical/biological protection, video, and processing/network/radio technologies into the SBS. Personal Area Network: will refine architecture and computer form factor. Communications: will develop hardware and software interfaces to enable the physical integration of JTRS Cluster 5 and Soldier radio waveform. Power: will integrate power sources into the SBS. Lethality: will demonstrate integration of individual weapons with SBS. Platform Interfaces: will conduct robotic system integration tests with surrogate platforms to validate soldier control and wireless capabilities; will conduct robotic systems deployment studies; will develop sensor fusion architecture; will conduct OFW/FCS compatibility assessment.	0	0	32847
Multifunctional Head-to-Toe Combat Ensemble Subsystem - In FY03, matured concepts to the greatest extent possible as risk reduction for the OFW CTD Technology Integration Phase. Conducted early technology demonstration with troops in field environments. Continued multi-functional material technology integration for combat ensemble applications. Transitioned technologies, design concepts, and analyses to the OFW LTI teams.	4229	0	0
Personal Warfighter Navigation (Congressional add) - In FY03, established enhanced sensor fusion performance in situations where signal is lost (e.g., under canopies or in buildings). Conducted an initial demonstration to assess system attributes. No additional funding is required to complete this project.	2346	0	0
Scorpion Future Combat Helmet (Congressional add): This one-year Congressional add created an integrated combat helmet that includes a chemical biological respiratory subsystem, ballistic protective materials, and thermal management subsystems. No additional funding is required to complete this project.	5256	0	0
Small Business Innovative Research/Small Business Technology Transfer Programs	0	1250	0
Totals	37499	44476	56676