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<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)</b>	DATE <b>February 1999</b>
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<b>BUDGET ACTIVITY</b> <b>3 - Advanced Technology Development</b>	<b>PE NUMBER AND TITLE</b> <b>0603001A Logistics Advanced Technology</b>
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COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	33126	30430	31287	16337	17868	14523	20218	21312	Continuing	Continuing
DC07 Joint Service Food Technology Demonstration	1718	1959	2072	2168	2219	2295	2322	2457	Continuing	Continuing
DJ50 Force XXI Land Warrior	10582	6891	6305	6335	7526	7835	13086	13217	Continuing	Continuing
D242 Airdrop Equipment	1178	1255	1886	3141	3434	3576	3833	4025	Continuing	Continuing
D393 Military Operations in Urban Terrain	18976	19538	20240	3898	3884	0	0	0	0	66969
D543 Ammunition Logistics	672	787	784	795	805	817	977	1613	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This program supports demonstration of technology for the dismounted soldier and materiel essential to support and sustain wartime operations and peacetime readiness, both strategically and tactically. The program's purpose is to develop, demonstrate, and transfer affordable technologies to enhance dismounted soldier system performance and capabilities, reduce the logistics burden on the battlefield, reduce operation and support (O&S) costs, and improve ammunition logistics system performance. It links diverse projects by applications benefiting whole categories of weapons systems and providing high return on investment. The Joint Service Food Technology project demonstrates food service systems and food products, processing, preservation, and serving equipment resulting from technology programs jointly approved by the Services and the Defense Logistics Agency (DLA) that will improve field feeding efficiencies, ration quality, and warfighter combat effectiveness. Force XXI Land Warrior develops and demonstrates advanced technology components for insertion into the Land Warrior program and performs the integration of future soldier system technologies focused on improving soldier performance, lethality and survivability. Enhancements to airdrop equipment for rapid deployment are required for dropping cargo to precise locations from higher altitudes, greater offset distances and higher speeds, resulting in increased survivability of aircraft and crews and increased probability that materials delivered will land in a usable condition. The Military Operations in Urban Terrain (MOUT) ACTD will identify, integrate, and demonstrate a system of systems approach of existing and emerging technologies to provide improved command, control, communications, computers, and intelligence (C4I), engagement, and force protection for Soldiers and Marines operating in the restrictive urban environment. The Ammunition Logistics project 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. Contractors performing the work for this PE include Motorola, Raytheon, Honeywell, Gentex, Battelle, Arthur D. Little, Tecogen, Pioneer Aerospace, Giordano Automation, and InterVision. The work in this program element is consistent with the Army Science and Technology Master Plan (ASTMP) and the Army Modernization Plan. This program adheres to Tri-Service Reliance Agreements on clothing, textiles and food and explosive ordnance disposal with oversight and coordination provided by the Joint Directors of Laboratories. Work in this program element is related to and fully coordinated with efforts in PE 0602786A (Warfighter Technology), and DARPA Small Unit Operations projects. The Ammunition Logistics project is related to PE 0602624A (Weapons and

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Munitions Technology) and PE 0603004A (Weapons and Munitions Advanced Development). These efforts contain no unwarranted duplication of effort among the Military Departments.

<b>B. Program Change Summary</b>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	34361	32969	30376	14445
Appropriated Value	35469	30669		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1108	-239		
b. SBIR / STTR	-853			
c. Omnibus or Other Above Threshold Reductions	-282			
d. Below Threshold Reprogramming	-100			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+911	+1892
Current Budget Submit (FY 2000 / 2001 PB)	33126	30430	31287	16337

Change Summary Explanation: Funding - FY00 and FY01 increased to support MOUT ACTD interim capability for a battalion (vice a company).

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BUDGET ACTIVITY <b>3 - Advanced Technology Development</b>	PE NUMBER AND TITLE <b>0603001A Logistics Advanced Technology</b>	PROJECT <b>DC07</b>
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COST ( <i>In Thousands</i> )	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC07 Joint Service Food Technology Demonstration	1718	1959	2072	2168	2219	2295	2322	2457	Continuing	Continuing

**Mission Description and Justification:** Joint Service Food is a DoD program, for which the Army has executive agent responsibility, which demonstrates nutritionally advanced rations and logistically streamlined food delivery systems to sustain DoD personnel in all operations and to enhance their combat performance under diverse battlefield scenarios. The project focuses on demonstrations of advances in food technology, materials, energy utilization, and combination heating technologies to provide extended, simplified field feeding without resupply. It exploits advances in ration formulation and quality, packaging, preservation, and nutritional content to improve morale, extend endurance, and sharpen mental acuity. This project is managed by the U.S. Army Natick Soldier Center, Natick, MA.

**FY 1998 Accomplishments:**

- 874 - Completed technology demonstration of four new mobility enhancing ration components and transitioned to fielded individual ration program.
  - Completed product/process development phase for multibarrier processing of marine products and transitioned to fielded field rations program.
  - Conducted field test of carbohydrate performance enhancement drink (ERGO) and transitioned to procurement; transitioned performance enhancing HOOAH bar to procurement.
  - Conducted producibility testing and field evaluation of horizontal-form-fill-seal pouch and polymeric tray and transitioned to fielded group ration systems program.
- 844 - Demonstrated prototype heat-driven refrigerator and transitioned to Demonstration and Validation (6.4) phase; pursued thermophotovoltaic (TPV) power cogeneration and developed concepts for field kitchen applications based on ongoing work with portable power generators but TPV heat rejection was insufficient for kitchen application.
  - Developed concept for a light and efficient future field feeding system based on engine cogeneration and thermal fluid heat transfer with potential for upgrade with Liquid-Injection cogeneration as technology matures in Applied Research.

Total 1718

**FY 1999 Planned Program:**

- 1168 - Complete design and fabricate prototype highly efficient, highly mobile Central Heat Unit Cogeneration Kitchen featuring thermal fluid heat transfer and integral cogenerator.
  - Demonstrate Central Heat Unit Cogeneration Kitchen's increased mobility (HMMWV vs. 2 ½ ton), 50% decrease in fuel consumption, 50% increase in MTBF, ease of use, and ability to prepare higher quality meals faster and cheaper than current kitchens; transition technology to Demonstration and Validation Phase for technology integration in both the Containerized Kitchen-Future, and the Kitchen, Company Level Field Feeding-Future.

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<p>BUDGET ACTIVITY <b>3 - Advanced Technology Development</b></p>	<p>PE NUMBER AND TITLE <b>0603001A Logistics Advanced Technology</b></p> <p align="right">PROJECT <b>DC07</b></p>	
<ul style="list-style-type: none"> <li>• 766 - Demonstrate producibility of interactive packaging technologies and quantify the effects of interactive packaging on improving ration acceptance and consumption while decreasing weight/volume of package rations; transition to DLA.</li> </ul>		
<p><b>FY 1999 Planned Program: (Continued)</b></p>		
<ul style="list-style-type: none"> <li>- Model the effects of incremental differences in carbohydrate sources on mission effectiveness and completion.</li> </ul>		
<ul style="list-style-type: none"> <li>- Demonstrate shockwave technologies for processing that improve texture of meat items for combat rations.</li> </ul>		
<ul style="list-style-type: none"> <li>- Identify commercial and developmental items and initiate acceptance and storage testing to support a family of breakfast items for on-demand combat field feeding.</li> </ul>		
<ul style="list-style-type: none"> <li>• 25 - Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> </ul>		
<p>Total 1959</p>		
<p><b>FY 2000 Planned Program:</b></p>		
<ul style="list-style-type: none"> <li>• 422 - Conduct testing to determine optimal storage conditions, dosage levels and optimal delivery systems to provide fresh fruits and vegetables with extended shelf life for ships at sea.</li> </ul>		
<ul style="list-style-type: none"> <li>• 1650 - Conduct studies on optimization of ration processes to improve quality and reduce cost.</li> </ul>		
<ul style="list-style-type: none"> <li>- Complete field demonstration of radio frequency processed ration components and coordinate with FDA and USDA for regulatory process approval.</li> </ul>		
<ul style="list-style-type: none"> <li>- Complete demonstration of interactive packaging technologies and transition to fielded ration systems.</li> </ul>		
<ul style="list-style-type: none"> <li>- Complete product acceptance and shelf life studies on family of breakfast items for combat rations, complete menu design.</li> </ul>		
<ul style="list-style-type: none"> <li>- Complete demonstration and quality assessment of irradiated foods with enhanced safety.</li> </ul>		
<p>Total 2072</p>		
<p><b>FY 2001 Planned Program:</b></p>		
<ul style="list-style-type: none"> <li>• 1073 - Integrate fuel reformer, fuel cell, and thermal fluid heat exchanger in field kitchen and conduct technology demonstration.</li> </ul>		
<ul style="list-style-type: none"> <li>- Design prototype system for extended shelf life of fresh fruits and vegetables, conduct user testing, and transition to procurement.</li> </ul>		
<ul style="list-style-type: none"> <li>- Investigate new types of chemical heaters with higher energy densities, lower cost and inherent safety which will be used to develop an integral or readily attachable self-heating ration system.</li> </ul>		
<ul style="list-style-type: none"> <li>- Design, fabricate, and test cold storage temperature stabilization system and transition to Demonstration and Validation.</li> </ul>		
<ul style="list-style-type: none"> <li>• 1095 - Conduct user/field testing of portable biosensor system transitioned from Applied Research and transition to Veterinary Command.</li> </ul>		
<ul style="list-style-type: none"> <li>- Complete study on packaging requirements for family of breakfast items and conduct field demonstration.</li> </ul>		
<ul style="list-style-type: none"> <li>- Conduct initial field demonstration of radiant barrier packaging system for freeze/thermal protection of ration components.</li> </ul>		
<p>Total 2168</p>		
<p>Project DC07</p>	<p align="center">Page 4 of 13 Pages</p>	<p align="right">Exhibit R-2A (PE 0603001A)</p>

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVITY <b>3 - Advanced Technology Development</b>				PE NUMBER AND TITLE <b>0603001A Logistics Advanced Technology</b>				PROJECT <b>DJ50</b>		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DJ50 Force XXI Land Warrior	10582	6891	6305	6335	7526	7835	13086	13217	Continuing	Continuing
<p><b>Mission Description and Justification:</b> This project addresses the critical Army need to enhance the performance, lethality, survivability, and sustainment of the individual soldier. This project is the Land Warrior science and technology (S&amp;T) program. In the near term, the Force XXI Land Warrior focuses on near-term technology insertions to the Land Warrior system. These technologies include: enhanced weapon mounted sensor interfaces to increase reliability, reduce weapon weight and increase usability, an integrated navigation component that will provide soldier's accurate geo-location information when GPS is not available, enhanced soldier radio which will provide a better link margin for the soldier radio and increase radio range, system voice control which will provide voice control of the essential Land Warrior functions without the use of a hand control device, combat identification functionality which will provide positive ID of friendly Land Warrior and non-Land Warrior combatants, low power helmet electronics which will reduce the overall power requirements of the Land Warrior helmet system, and a head orientation sensor which in combination with weapon mounted sensors will provide a rapid target acquisition capability when switching between the image intensifier and the weapon sight. Another Force XXI Land Warrior component is the Integrated Sight Technology Demonstration (TD), which will demonstrate a lighter, fully integrated weapon sensor (uncooled thermal, laser pointer, laser range finder, digital compass, daylight camera), with integrated target handover functions. Integrated technology demonstrations utilizing surrogate equipment in lieu of the Land Warrior system will demonstrate the improved individual and small unit operational effectiveness afforded by the modular integration of advanced components onto the Land Warrior platform. These results will be utilized to ensure that future Land Warrior procurements are upgraded with current technological advancements. Force XXI Land Warrior will also pursue a variety of future technology developments (from ongoing Defense Technology Objectives, Science and Technology Objectives, and DARPA programs) to chart a course for future Land Warrior modernization by focusing on technologies available for fielding beyond the FY06 timeframe. The focus of these improvements will be system weight reduction, minimization of system power and energy requirements, system life cycle cost reduction, and improved system fightability. This program will leverage the commercial microelectronics and telecommunications industries as well as other ongoing DOD programs such as DARPA's Small Unit Operations (SUO) program to achieve lightweight, miniaturized components. This project is managed by the US Army Natick Soldier Center, Natick, MA.</p> <p><b>FY 1998 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 1710 - Completed design and fabrication of two Integrated Sights used by Armor Center for mounted warrior concept evaluation program. - Built and delivered two Integrated Sight thermal components and delivered to the Objective Individual Combat Weapon program for integration onto the weapon system.</li> <li>• 3792 - Created the Future Warrior Architecture team to track future technology developments for inclusion into future Land Warrior system/block upgrades. - Created and populated the Warrior Systems Modernization Strategy database that provided the S&amp;T and EMD communities an integrated planning tool for future upgrades to the Land Warrior system as well as to other warrior systems (e.g., Mounted, Air and enhanced systems).</li> <li>• 5080 - Completed development of the enhanced weapon interface and performed proof of concept demonstration.</li> </ul>										
Project DJ50			Page 5 of 13 Pages				Exhibit R-2A (PE 0603001A)			

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<p>BUDGET ACTIVITY <b>3 - Advanced Technology Development</b></p>	<p>PE NUMBER AND TITLE <b>0603001A Logistics Advanced Technology</b></p> <p align="right">PROJECT <b>DJ50</b></p>	
<p>- Completed development of the system voice control system and performed proof of concept demonstration; technology has been accepted by the user, is being included in the operational requirements document (ORD), and is being included as part of the baseline Land Warrior system.</p>		
<p><b>FY 1998 Accomplishments (Continued):</b></p>		
<p>- Completed development of the Land Warrior Combat Identification (ID) functionality. Proof of concept demonstration delayed until FY99 due to lack of Combat ID components from the Combat ID Engineering, Manufacture and Development (EMD) program.</p>		
<p>- Completed development of the enhanced soldier radio. Proof of concept demonstration delayed due to a delay in getting the Land Warrior radio for comparison demonstration.</p>		
<p>- Completed development of the integrated navigation component and performed proof of concept demonstration; technology has been accepted by the user, is being included in the ORD, and is being included as part of the baseline Land Warrior system.</p>		
<p>Total</p>	<p align="right">10582</p>	
<p><b>FY 1999 Planned Program:</b></p>		
<ul style="list-style-type: none"> <li>•</li> </ul>	<p>4891 - Assess and develop future technology insertions into the Land Warrior system.</p>	
	<p>- Build Land Warrior surrogate systems for the conduct of the Integrated Technology Demonstrations (ITDs).</p>	
	<p>- Build system voice control, integrated navigation, combat ID, enhanced soldier radio, and integrated sight components for the ITD, with some functionality limitations due to use of surrogate systems.</p>	
<ul style="list-style-type: none"> <li>•</li> </ul>	<p>1845 - Perform ITD of upgraded Land Warrior (surrogate) systems.</p>	
	<p>- Prepare transition documents for other successful technologies.</p>	
	<p>- Demonstrate future component integration onto the Land Warrior (surrogate) platform.</p>	
	<p>- Complete initial elements of the Future Warrior Architecture trade study.</p>	
<ul style="list-style-type: none"> <li>•</li> </ul>	<p>155 - Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.</p>	
<p>Total</p>	<p align="right">6891</p>	
<p><b>FY 2000 Planned Program:</b></p>		
<ul style="list-style-type: none"> <li>•</li> </ul>	<p>4075 - Upgrade seven Land Warrior systems with system voice control and integrated navigation upgrades.</p>	
	<p>- Transition system voice control and integrated navigation to the Land Warrior EMD program.</p>	
	<p>- Complete Future Warrior Architecture trade study.</p>	
	<p>- Identify DARPA Small Unit Operations (SUO) technologies for potential Land Warrior upgrades.</p>	
<ul style="list-style-type: none"> <li>•</li> </ul>	<p>2230 - Participate in the Military Operations in Urban Terrain (MOUT) ACTD Advanced Concept Excursion (ACE) with upgraded Land Warrior systems.</p>	
	<p>- Develop a Land Warrior interface with the Objective Individual Combat Weapon (OICW).</p>	
	<p>- Develop transition documents for the transitioning of MOUT/OICW related technologies onto the Land Warrior system.</p>	
<p>Project DJ50</p>	<p align="center"><i>Page 6 of 13 Pages</i></p>	<p align="right">Exhibit R-2A (PE 0603001A)</p>

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BUDGET ACTIVITY  
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Total      6305



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BUDGET ACTIVITY <b>3 - Advanced Technology Development</b>	PE NUMBER AND TITLE <b>0603001A Logistics Advanced Technology</b>	PROJECT <b>D242</b>
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COST ( <i>In Thousands</i> )	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D242 Airdrop Equipment	1178	1255	1886	3141	3434	3576	3833	4025	Continuing	Continuing

**Mission Description and Justification:** This project focuses on the demonstration and development of equipment and innovative techniques for aerial delivery of cargo and personnel, a key capability for rapid force projection, particularly into hostile areas as envisioned in Vision 2010. The goal is precision delivery of payloads from extremely high altitude (up to 25,000 ft) and long offset distances. Delivery from high altitudes and large offset distances improves cargo/personnel and aircraft survivability. In the near-term, revolutionary technologies for the reliable precision guided delivery of combat essential munitions/sensors and equipment using high glide wing technology will be demonstrated which incorporate a low cost, modular global positioning system (GPS) guidance package and control system. Specific near-term goal is a system capable of a 2,000-5,000 lb. payload, a glide ratio of at least 6:1, and an optional glide augmentation system with a range of 75-300 km.

**FY 1998 Accomplishments:**

- 1178 - Completed fabrication of High Glide Air Delivery prototypes.
  - Conducted extraction test from USAF aircraft.
  - Conducted testing of glide augmentation system.
- Total 1178

**FY 1999 Planned Program:**

- 1233 - Conduct flight testing of High Glide Air Delivery System for use in Air Delivery of cargo from an offset range of 75-300 km.
  - Conduct demonstration of precision high glide of a 2,000 lb. Payload with a goal of 5,000 lb. payload using an advanced guidance package and high glide wing.
  - 22 - Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 1255

**FY 2000 Planned Program:**

- 1886 - Fully define required technologies and establish concept development strategies for parachute and harness systems for high altitude, high offset, precision airborne insertions into restricted terrain.
- Conduct field and market surveys to identify known deficiencies with current equipment and target technologies which will address these deficiencies while advancing the state-of-the-art.
- Develop test and evaluation methods and strategies; explore low cost, yet highly reliable data collection equipment and devices for measuring parachute and harness system performance.
- Develop canopy guidance and navigation methods/algorithms; perform concept evaluations of user interface/MANPRINT issues.

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<p>Total</p>	<p align="right">1886</p>	
<p><b>FY 2001 Planned Program:</b></p>		
<ul style="list-style-type: none"> <li>•</li> </ul> <p>Total</p>	<p>3141 - Complete concept evaluation of personnel-sized parachute high glide decelerator technology.</p> <p>- Conduct flight testing and performance measurement of promising parachute designs and technologies; explore and evaluate methods for improving canopy control techniques.</p> <p>- Fully quantify canopy performance in full glide and in full brakes; identify stall characteristics of high glide and precision landing canopies; explore methods for integrating these distinct canopy design methods without compromising performance.</p> <p>- Validate canopy flight guidance and navigation methods through actual flight testing.</p> <p align="right">3141</p>	
<p>Project D242</p>	<p align="center"><i>Page 9 of 13 Pages</i></p>	<p align="right">Exhibit R-2A (PE 0603001A)</p>

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVITY <b>3 - Advanced Technology Development</b>				PE NUMBER AND TITLE <b>0603001A Logistics Advanced Technology</b>				PROJECT <b>D393</b>		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D393 Military Operations in Urban Terrain	18976	19538	20240	3898	3884	0	0	0	0	66969
<p><b>Mission Description and Justification:</b> This project conducts the integration of technology products into a “System of Systems”, develops of operational concepts and tactics/techniques/procedures (TTPs), and executes live experiments and simulations to determine the military utility of various technologies in enhancing operational capabilities in the urban environment. The Military Operations in Urban Terrain (MOUT) Advanced Concept Technology Demonstration (ACTD) will integrate promising Commercial-off-the-Shelf (COTS), Government-off-the-Shelf (GOTS) products and technology products from on-going Army, Marine Corps and Defense Advanced Research Projects Agency (DARPA) programs to create the MOUT System of Systems. The objective is to improve the command, control, communications, computers and intelligence (C4I), engagement, force protection and mobility capabilities of soldiers and Marines, and ensure the effective interoperability of these capabilities in the particularly challenging urban environment. The program will transition to rapid and efficient acquisition and fielding of the value-added components following the completion of the ACTD culminating demonstration in FY2000. Hardware successfully demonstrating capabilities will be provided to operational units as an interim capability, including follow-on support, during FY2001/2002. The MOUT ACTD is a joint Army/Marine Corps program with participation from DARPA. This project is managed by U.S. Army Natick Soldier Center, Natick, MA.</p> <p><b>FY 1998 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 10327 - Developed the initial MOUT systems architecture. <ul style="list-style-type: none"> <li>- Completed engineering characterization of technology products in the MOUT environment for ten MOUT ACTD requirements.</li> <li>- Conducted integration, interoperability assessments, and diagnoses of mature technology products from the Army, Marine Corps, DARPA, COTS, and GOTS.</li> <li>- Identified models and simulations to assess and quantify military utility and force effectiveness of hardware and software in MOUT.</li> </ul> </li> <li>• 8649 - Planned, managed, coordinated, and executed the MOUT ACTD program. <ul style="list-style-type: none"> <li>- Procured prototype hardware and software for use in MOUT experiments.</li> <li>- Conducted baseline MOUT experiments (Army #1-3, USMC #1&amp;2) at Fort Benning and Camp Lejeune.</li> <li>- Conducted squad/platoon MOUT experiments (Army #1-3, USMC #1&amp;2) of mature technologies at Fort Benning and Camp Lejeune.</li> </ul> </li> </ul> <p>Total 18976</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 9138 - Implement integration, interoperability assessments, and diagnoses of technology candidate products for the systems of systems. <ul style="list-style-type: none"> <li>- Conduct modeling and simulation to quantify military utility of advanced technology hardware and software.</li> <li>- Assess MOUT operational concepts and Tactics, Techniques and Procedures to determine effectiveness of new capability employment.</li> </ul> </li> <li>• 10400 - Manage, coordinate, and execute the MOUT ACTD program.</li> </ul>										
Project D393			Page 10 of 13 Pages				Exhibit R-2A (PE 0603001A)			

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<p align="center">- Procure additional prototype hardware and software for use in MOUT experiments.</p>		
<p><b>FY 1999 Planned Program: (continued)</b></p>		
<p align="center">- Conduct transition assessments of successful technologies.</p>		
<p align="center">- Complete follow-on squad/platoon level MOUT experiments with prototype hardware.</p>		
<p align="center">- Conduct joint MOUT company level experiments to ensure integration and interoperability of MOUT ACTD hardware and software.</p>		
<p>Total</p>	<p align="right">19538</p>	
<p><b>FY 2000 Planned Program:</b></p>		
<p>•</p>	<p>7193 - Manage, coordinate and execute MOUT ACTD program</p>	
<p align="center">- Complete integration/modifications resulting from joint company experiments.</p>		
<p align="center">- Conduct force effectiveness analyses to determine higher echelon impacts of individual soldier/small unit MOUT improvements.</p>		
<p>•</p>	<p>13047 - Complete New Equipment Training (NET) package and conduct NET.</p>	
<p align="center">- Deliver culminating demo hardware.</p>		
<p align="center">- Conduct Advanced Concept Excursion to identify MOUT potential of emerging technologies.</p>		
<p align="center">- Conduct MOUT ACTD culminating demonstration at Joint Readiness Training Center.</p>		
<p align="center">- Finalize technology transition assessments.</p>		
<p>Total</p>	<p align="right">20240</p>	
<p><b>FY 2001 Planned Program:</b></p>		
<p>•</p>	<p>1745 - Complete transitions of successful MOUT ACTD technologies to Army acquisition programs.</p>	
<p align="center">- Conduct extended military utility and technical analyses and assessments of residual hardware.</p>		
<p align="center">- Refurbish ACTD residual hardware</p>		
<p align="center">- Transition residual hardware to Army and USMC experimental forces units.</p>		
<p>•</p>	<p>2153 - Provide technical/engineering operations for residual hardware during extended evaluation phase.</p>	
<p>Total</p>	<p align="right">3898</p>	

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COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D543 Ammunition Logistics	672	787	784	795	805	817	977	1613	Continuing	Continuing
<p><b>Mission Description and Justification:</b> This project develops technology that maximizes munitions availability and survivability for the force projection Army. It enhances logistics survivability and force readiness through improvements in explosive safety, materiel handling equipment, ammunition and missile packaging/palletization, and asset throughput/management. It also improves weapon system rearm for artillery, armor, air defense, aviation, and infantry. Emerging technologies and productivity enhancers/cost savers are exploited to provide quantum improvements to the force projection (strategic), in-theater (operational), and combat-focused (tactical) logistics systems. This project is managed by the U.S. Army Armament Research, Development, and Engineering Center, Picatinny Arsenal, NJ. Technology will transition to weapons and munitions development programs and the Total Army Distribution System.</p> <p><b>FY 1998 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 672 - Defined specifications for shock attenuation and fire blocking characteristics of a rapidly deployable barrier and fire blocking system that mitigates propagation of explosions and fire between open stacks of munitions in forward storage areas. -Conducted small scale experiments to verify shock attenuation and fire blocking characteristics of the rapidly deployable barrier and fire blocking system.</li> </ul> <p>Total 672</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 766 - Conduct full scale testing of a prototype rapidly deployable barrier and fire blocking system that improves the survivability of munitions storage areas and personnel. - Prepare data package for the rapidly deployable barrier and fire blocking systems.</li> <li>• 21 - Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> </ul> <p>Total 787</p> <p><b>FY 2000 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 784 - Design and fabricate a prototype sensor and passive (battery-free) transceiver unit that will be embedded in advanced munitions for the AAN Combat Vehicle armament system to provide asset visibility and expenditure rates for anticipatory resupply as well as internal temperature data used by the fire control system to improve armament system accuracy. - Develop a modular munitions packaging/logistics system concept for autonomous resupply/rearm of the AAN Combat Vehicle in the field to reduce the logistics tail, greatly decrease rearm burden, and allow the AAN Combat Vehicle more time on station.</li> </ul>										
Project D543			Page 12 of 13 Pages				Exhibit R-2A (PE 0603001A)			

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<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)</b>		DATE <b>February 1999</b>
<b>BUDGET ACTIVITY</b> <b>3 - Advanced Technology Development</b>	<b>PE NUMBER AND TITLE</b> <b>0603001A Logistics Advanced Technology</b>	<b>PROJECT</b> <b>D543</b>
<p><b>FY 2000 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>- Design and fabricate a prototype battery powered Micro-Electro Mechanical Systems (MEMS) based environmental sensor suite that will be attached to munitions or munitions packaging to provide remote tracking of munitions "health" status for improved stockpile management/readiness and Total Asset Visibility.</li> </ul> <p>Total            784</p> <p><b>FY 2001 Planned Program:</b></p> <ul style="list-style-type: none"> <li>•            795 - Integrate discrete components and conduct full scale testing and demonstration of the embedded passive sensor for AAN Combat Vehicle munitions.</li> <li>- Design conceptual munitions resupply module for the AAN Combat Vehicle armament system.</li> <li>- Integrate individual MEMS based environmental sensor devices (shock, humidity, temperature, barometric pressure, etc.) into a single chip system that is attached to munitions or munitions packaging and demonstrate remote tracking of munitions health status and logistics data.</li> </ul> <p>Total            795</p>		
Project D543	<i>Page 13 of 13 Pages</i>	Exhibit R-2A (PE 0603001A)

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