ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE
3 - Advanced technology development	**0603006A - Command, Control, Communications Advanced Technolo**

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		9303	9544	12066	11040	11103	6364	6422	6471
257	DIGITAL BATTLEFLD COMM	1071	0	0	0	0	0	0	0
588	HIGH ALTITUDE AIRSHIP ACTD	2841	2775	3000	0	0	0	0	0
592	SPACE APPLICATION TECH	5391	6769	9066	11040	11103	6364	6422	6471

A. Mission Description and Budget Item Justification: The name of this program element (PE) was changed in FY03 to Space Applications Technology. This program matures and demonstrates advanced space technology applications for the Future Force and, where feasible, exploits opportunities to enhance Current Force capabilities. It provides Space Force Enhancement applications for intelligence, reconnaissance, surveillance, target acquisition, position/navigation, missile warning, and Space Control ground-to-space surveillance, negation and battle management capabilities. Advanced Space Force Enhancement technologies include electro-optical, infrared, multi/hyperspectral, synthetic aperture radar, and advanced data collection, processing and dissemination in real and near real time. The program develops algorithms that optimally process space sensor data in real and near real time for integration into battlefield operating systems; and demonstrates, evaluates, and defines Army technical requirements for space platform/sensor/datalink systems development. This program provides Space Control advanced technology risk reduction capability for ground-to-space surveillance and space object negation (disrupt, degrade, deny, and destroy) system development. Additionally, it matures near space application of airship structure, propulsion, flight control, and power generation technologies to carry heavy multi-mission payloads for airship long dwell time at 65,000 feet in High Altitude Airship ACTD. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Defense Technology Area Plan (DTAP). Work in this PE is performed by the US Army Space and Missile Defense Technical Center in Huntsville, AL. This program is designated as a DoD Space Program. Funding for non-space related efforts, including Command, Control, and Communications (C3), was realigned to PE 0603008A in FY03.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	9946	14352	14910
Current Budget (FY 2006/2007 PB)	9544	12066	11040
Total Adjustments	-402	-2286	-3870
Net of Program/Database Changes			
Congressional Program Reductions	-145		
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-257		
Adjustments to Budget Years		-2286	-3870

Change Summary Explanation:
FY06 - Funds realigned ($2286K) to higher priority requirements.
FY07 - Funds realigned ($3870K) to higher priority requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603006A - Command, Control, Communications Advanced Technolo**	**588**

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
588 HIGH ALTITUDE AIRSHIP ACTD	2841	2775	3000	0	0	0	0	0

A. Mission Description and Budget Item Justification: This project validates and demonstrates the technology, engineering feasibility and potential military utility of a large unmanned, helium filled airship within an Advanced Concept Technology Demonstration (ACTD). This High Altitude Airship (HAA) ACTD will demonstrate capabilities to fly un-tethered at 65,000 feet, carry a heavy multi-mission payload, self deploy from continental United States (CONUS) to worldwide locations, and remain on-station for weeks to months before returning to a fixed launch and recovery area in CONUS for service on the ground. HAA technologies will focus on airframe structures and related components to carry payloads which augment space-based capabilities and missile defense architectures. The airship payload will consist of a communication relay and sensor suite to support the Future Force. Other agencies providing additional support and funding include Missile Defense Agency, and Office of the Secretary of Defense. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization plan, and the Defense Technology Area Plan (DTAP). Work in this PE is performed by the US Army Space and Missile Defense Technical Center in Huntsville, AL.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
- FY04 - completed airship design and review. Program decision was made to focus on technology maturation. In FY05, these funds constitute the Army's contribution to the HAA ACTD to initiate the airship prototype development, build and demonstration focusing on component technology maturation. In FY06, these funds constitute the Army's contribution to the HAA ACTD to initiate the airship prototype development, build and demonstration focusing on subsystem integration and ground level testing.	2841	2775	3000	0
Totals	2841	2775	3000	0

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603006A - Command, Control, Communications Advanced Technolo**	**592**

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
592	SPACE APPLICATION TECH	5391	6769	9066	11040	11103	6364	6422	6471

A. Mission Description and Budget Item Justification: This project matures and demonstrates advanced space technology applications in support of the Future Force and, where feasible, exploits opportunities to enhance Current Force capabilities. It provides Space Force Enhancement applications for intelligence, reconnaissance, surveillance, target acquisition, position/navigation, missile warning, and Space Control ground-to-space surveillance, negation and battle management capabilities. Advanced Space Force Enhancement technologies include electro-optical, infrared, multi/hyperspectral, synthetic aperture radar, and advanced data collection, processing and dissemination in real and near real time. The project develops algorithms that optimally process space sensor data in real and near real time for integration into battlefield operating systems; and demonstrates, evaluates, and defines Army technical requirements for space platform/sensor/datalink systems development. This project provides Space Control advanced technology risk reduction capability for ground-to-space surveillance and space object negation (disrupt, degrade, deny and destroy) systems development. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization plan, and the Defense Technology Area Plan (DTAP). Work in this PE is performed by the US Army Space and Missile Defense Technical Center in Huntsville, AL. This program is designated as a DoD Space Program.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Distributed Imaging Radar Technology - In FY04, performed initial testing and algorithm assessment of the Distributed Imaging Radar Technology concept using existing radar data. In FY05, verify the algorithms; detect and locate moving targets using distributed radar and space-time coded aperture waveforms; and initiate miniaturization of high fidelity and stabilized radar receiver/exciter hardware for Upper Tier and space platform application. In FY06, verify algorithms for distributed array implementation of Moving Target Indication (MTI) and develop radar component required for integrated distributed aperture demo with precise time synchronization. In FY07, field demonstrate the distributed aperture radar brassboard with wide area MTI and imaging of moving targets software.	2891	4120	6497	6343

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
All Weather Radio Frequency (RF) Launch Detection - In FY05, assess All Weather Radio Frequency (RF) Launch Detection signatures for rockets, artillery, and mortars. Initiate characterization algorithm development and broadband high/low RF receiver design for real time processor applications. In FY06, initiate development of detection, location and classification algorithms and demonstrate feasibility. In FY07, will initiate RF receiver fabrication to implement the baseline algorithm; mature algorithms and expand threat set; expand frequency band of receivers and extend field of view for increased detection range.	0	2649	2569	4697
Space Surveillance - In FY04, completed hardware/software integration, test, and demonstrated near real time threat assessment in a simulated operational environment; transitioned technology to Army Space Support Team Tactical Set.	2500	0	0	0
Totals	5391	6769	9066	11040