ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2004

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

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		8700	11339	9946	14352	14910	11152	6494
257	DIGITAL BATTLEFLD COMM	2721	1087	0	0	0	0	0
588	HIGH ALTITUDE AIRSHIP ACTD	0	2913	2898	0	0	0	0
592	SPACE APPLICATION TECH	5979	7339	7048	14352	14910	11152	6494

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 airship structure, propulsion, flight control, and power generation technologies to carry heavy multi-mission payloads for airship long dwell time at 70,000 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 2003	FY 2004	FY 2005
Previous President's Budget (FY 2004)	6814	10379	13073
Current Budget (FY 2005 PB)	8700	11339	9946
Total Adjustments	1886	960	-3127
Congressional program reductions		-97	
Congressional rescissions			
Congressional increases		1100	
Reprogrammings	1886	-43	
SBIR/STTR Transfer			
Adjustments to Budget Years			-3127

Significant Change Explanation.
FY03 - Funds increased to support the High Altitude Airship ACTD and the Space Surveillance STO.
FY04 - Funds realigned ($3127K) to higher priority requirements.

FY04 Congressional Adds with no R-2A:
($1056) Dynamic Re-Addressing and Management for the Army (DRAMA), Project 257. The purpose of this one year Congressional Add is to fund research in dynamic re-addressing and management of communications. No additional funding is required to complete this project. This add will be executed through the Communications Electronics Research Development and Engineering Center (CERDEC) and aligned with PE 0602782A, Command, Control, and Communications Technology.

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

February 2004

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

COST (In Thousands)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
588	HIGH ALTITUDE AIRSHIP ACTD	0	2913	2898	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 70,000 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, Office of Home Land Security, 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 2003	FY 2004	FY 2005
- In FY04, mature and integrate HAA ACTD airframe, power generation, propulsion flight control, and C2 subcomponent technologies, define payload interfaces, conduct subcomponent ground test, and complete airship flight qualification. In FY05, complete airship and payload integration; demonstrate airship/payload prototype for one month at 70,000 feet.	0	2828	2898
- Small Business Innovative Research/Small Business Technology Transfer Programs	0	85	0
Totals	0	2913	2898

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

February 2004

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

COST (In Thousands)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate
592	SPACE APPLICATION TECH	5979	7339	7048	14352	14910	11152	6494

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 2003	FY 2004	FY 2005
- In FY03, completed Long Wave Infrared/Acoustic Optical Tunable Filter performance assessment.	46	0	0
- In FY04, perform initial testing and algorithm assessment of the Distributed Imaging Radar Technology concept using existing synthetic aperture radar. 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.	0	3176	3589
- 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.	0	0	2554
- In FY03, continued maturing formal Space Surveillance software coding of algorithms; completed initial software development and user interface design. Demonstrated threat assessment techniques on ground-to-space surveillance radar processor. In FY04, complete hardware/software integration, test, and demonstrate near real time threat assessment in a simulated operational environment; and transition technology to Army Space Support Team Tactical Set.	3172	2500	0

Accomplishments/Planned Program (continued)	FY 2003	FY 2004	FY 2005
- In FY04, conduct detailed Space Control technical assessments to reduce ground to space surveillance response times and to optimize performance levels for stability and active tracking of space objects. Develop and refine space surveillance algorithm compression techniques with multiple data to exploit real time events. Quantify stability and tracking performance parameters. In FY05, incorporate error models to enhance space survillance algorithm accuracy and prediction, and identify optimal technology base for dynamic stability and active tracking capabilities.	0	1466	905
- In FY03 initiated airship platform design and defined technical requirements for project 588 High Altitude Airship ACTD.	2761	0	0
Small Business Innovative Research/Small Business Technology Transfer Programs	0	197	0
Totals	5979	7339	7048