ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2006

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

COST (In Thousands)		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		9540	12880	10851	10550	6052	6210	6060
257	DIGITAL BATTLEFLD COMM	0	986	0	0	0	0	0
588	HIGH ALTITUDE AIRSHIP ACTD	274	2957	0	0	0	0	0
592	SPACE APPLICATION TECH	9266	8937	10851	10550	6052	6210	6060

A. Mission Description and Budget Item Justification: This Program Element (PE) matures and demonstrates advanced technologies for space applications that benefit 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, ground-to-space surveillance, and command and control 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. Project 588 funds the High Altitude Airship (HAA) Advanced Concept Technology Demonstration (ACTD), which matures technologies to enable a "near space" application. HAA technologies include airship structure, propulsion, flight control, and power generation required to carry heavy multi-mission payloads in an airship that has long dwell time at altitudes up to 65,000 feet. Project 592 funds the Space Applications Technology effort, which 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 also provides space advanced technology risk reduction capability for ground-to-space surveillance and system 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.

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B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	9544	12066	11040
Current BES/President's Budget (FY 2007)	9540	12880	10851
Total Adjustments	-4	814	-189
Congressional Program Reductions		-56	
Congressional Rescissions		-130	
Congressional Increases		1000	
Reprogrammings	-4		
SBIR/STTR Transfer			
Adjustments to Budget Years			-189

One FY06 Congressional add totaling $1000 was added to this PE.

FY06 Congressional add with no R-2A (appropriated amount is shown):
($1000) Communications and Electronics Cost Module (CECM)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2006

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

COST (In Thousands)	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	274	2957	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). The 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 the 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 2005	FY 2006	FY 2007
In FY05, these funds constituted the Army's contribution to the HAA ACTD which was terminated based on several high risk technical challenges and significant cost overruns.	274	0	0
In FY06, funding being reprogrammed to complete (Army/Airforce) Joint Warfighting Space/Tactical Satellite cooperative payload development for demonstration with direct satellite tasking and satellite mission downlink capabilities.	0	2957	0
Total	274	2957	0

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2006

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

COST (In Thousands)	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	9266	8937	10851	10550	6052	6210	6060

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 Situational Awareness by ground-to-space surveillance, and command and control 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 advanced technology risk reduction capability for ground-to-space surveillance and 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 2005	FY 2006	FY 2007
Distributed Imaging Radar Technology - In FY05, verified the algorithms; detected and located moving targets using distributed radar and space-time coded aperture waveforms; and initiated 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 integrate radar component for distributed aperture demo with precise time synchronization. In FY07, will field demonstrate and evaluate the distributed aperture radar brassboard with wide area MTI and imaging of moving targets; Will modify software and refine algorithms based on analysis of demonstration results.	4120	6368	6154
All Weather Radio Frequency (RF) Launch Detection - In FY05, assessed theater rockets, artillery, mortars signatures for ordnance events; initiated characterization algorithm development and RF receiver requirements for real time processor applications. In FY06, initiate development of detection, location and classification algorithms and demonstrate feasibility for rockets artillery and mortars. In FY07, will initiate RF receiver breadboard fabrication to implement the baseline algorithm; will mature algorithms and expand threat set; will assess system receiver hardware requirements to extend field of view for increased detection range.	2146	1369	2297
Ground Based Space Surveillance - In FY05, initiated baseline algorithm improvements for an adjunct mobile data processor to a ground sensor. In FY06, continue to reduce algorithm processing timelines and initiate new threat signature development; initiate netted sensor hardware and software development. In FY07, will complete expanded threat set signature and processing efforts and integrate hardware/software and demonstrate adjunct mobile data processor with ground sensor.	500	1200	2400
Joint Warfighting Space/Tactical Satellite - In FY05 cooperatively developed Hyperspectral Imaging payload development with Air Force Research Laboratory to demonstrate Joint Warfighting Space/Tactical Intelligence, Surveillance and Reconnaissance (ISR) needs with in-theater satellite tasking and satellite mission downlink capabilities.	2500	0	0
Total	9266	8937	10851