ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE
6 - Management support	**0604258A - TARGET SYSTEMS DEVELOPMENT**

COST (In Thousands)	FY 2□□4 Actual	FY 2□□5 Estimate	FY 2□□6 Estimate	FY 2□□7 Estimate	FY 2□□8 Estimate	FY 2□□9 Estimate	FY 2□1□ Estimate	FY 2□11 Estimate
Total Program Element (PE) Cost	134□7	1337□	1□855	1□542	1□99□	11□11	11323	9□58
238 AERIAL TARGETS	7966	9633	7258	6814	6329	6335	6515	5189
459 GROUND TARGETS	5441	3737	3597	3728	4661	4676	4808	3869

A. Mission Description and Budget Item Justification: This program funds aerial and ground target hardware and software development, maintenance, and upgrades. The overall objective is to ensure validation of weapon system accuracy and reliability by developing aerial and ground targets essential for test and evaluation (T&E). These targets are economical and expendable, remotely controlled or stationary, and often destroyed in use. The Army is the Tri-Service lead under Reliance for providing rotary wing, mobile ground, and designated targets for T&E. The Army executes development of some Service-peculiar target requirements in support of quality assurance, lot acceptance, and training and continues development of Service-peculiar and on-going target materiel upgrades to maintain continuity with current weapons technology and trends in modern and evolving Army weapons.

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B. Program Change Summary	FY 2□□5	FY 2□□6	FY 2□□7
Previous President's Budget (FY 2□□5)	11□17	9446	9423
Current Budget (FY 2□□6/2□□7 PB)	1337□	1□855	1□542
Total Adjustments	2353	14□9	1119
Net of Program/Database Changes			
Congressional Program Reductions	-98		
Congressional Rescissions			
Congressional Increases	28□□		
Reprogrammings			
SBIR/STTR Transfer	-349		
Adjustments to Budget Years		14□9	1119

Change Summary Explanation:
FY2□□5: Congressional increase for the Unmanned Air Vehicle Improved Altitude Control (+28□□).
FY 2□□6 & 2□□7: Funds were increased to support rotary wing and mobile ground targets; and to support the conversion of military positions to civilian positions (FY □6 +14□9/FY □7 +1119).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0604258A - TARGET SYSTEMS DEVELOPMENT**	**238**

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
238 AERIAL TARGETS	7966	9633	7258	6814	6329	6335	6515	5189

A. Mission Description and Budget Item Justification: Aerial Targets support Army Transformation by providing for development, acquisition, operation, storage, update, and maintenance of realistic surrogate or acquired threat high-performance, multi-spectral aerial targets and development of virtual target computer models of aerial targets. Modern weapons require test, evaluation, and training using threat representative aerial targets to assess their effectiveness on the battlefield. This program encompasses a family of rotary and fixed-wing targets; full-scale, miniature and subscale targets; virtual targets; ancillary devices; and their control systems. These products are required to adequately stress weapon systems undergoing test and evaluation (T&E). In order to stress systems under test and evaluation, aerial targets must have flight characteristics, signatures, and other performance factors that emulate the modern threat. This includes long-range planning to determine future target needs and development of coordinated requirement documents; the management of target research, development, test and evaluation process; execution of the validation process to ensure that surrogate targets adequately represent the threat; development and acquisition of surrogate and acquired targets; and continuing maintenance, storage, and development/enhancements/update via engineering services of the developed and acquired threat targets to ensure availability for the T&E customer. The US Army is the Reliance lead for rotary wing targets and the Tri-Service lead for procurement and enhancement of the MQM-107 fixed wing target and towed targets beginning in FY 2005.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Continue management and sustainment of more than 20 Army (Reliance Lead) Rotary Wing Targets, including updates for obsolescence, maintenance, and safety to support T&E programs such as Medium Extended Air Defense System (MEADS), Surface Launched Advanced Medium Range Air to Air Missile (SLAMRAAM), and others.	403	393	465	489
Provides RDT&E portion of funds needed to update aging MQM-107 equipment to overcome obsolescence for spare and repair parts, and to maintain equipment and documentation for safe operations supporting T&E programs such as Patriot, Stinger, Joint Land Attack Cruise Missile Defense Elevated Netted Sensors (JLENS), MEADS, SLAMRAAM, and classified programs for Army and Tri-Service customers. FY 2005 begins the process to acquire replacements for expended targets, which will include development of updated component/subsystem replacements of no-longer-available, obsolete equipment and for an enhanced performance envelope, including endurance.	1189	1255	2045	2163

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
Complete redesign and testing of upgraded Target Tracking Control System (TTCS) to new design. Complete testing of upgraded initial test sets. Continue to support current TTCS to maintain operations until all TTCSs are upgraded. Continue management of Targets Management Initiative to develop and integrate a set of Common Digital Architecture control equipment into aerial targets to improve performance and reduce operating costs. FY04–07 completes upgrade of remaining TTCS to new configuration at a rate of 2–3 per year and begins sustainment. Also develops/improves integrated test set, operator displays, software performance enhancements, and documentation of design. This will provide support to programs such as Patriot, SLAMRAAM, JLENS, MEADS, and others.	3272	1725	692	670
Continue development, enhancement, maintenance, and storage for all RDT&E aerial targets, towed targets, and ancillary devices. FY04-06 continues development and testing of Low Cost Towed target systems (Cruise Missile Tow Target and the Theater Optimized Multi-signature Aerial Target) emulating current threats at a very low cost to Patriot and a classified customer. FY 2005 also integrates tandem tow technology into large-scale towed targets to support air defense weapons T&E (e.g. Patriot). It is anticipated that signature modifications and/or performance enhancements to these targets will be required into the FY 2007 timeframe.	713	653	751	758
Integrated Avionics Program incorporated Central Test and Evaluation Investment Program (CTEIP) Common Digital Architecture into aerial targets controlled by TTCS, improving reliability, maintainability, and target performance while reducing operational cost. FY 2004 developed initial prototypes and test set, and performed tests using an MQM-107. FY05-07 provides RDT&E funding to initialize production and provide maintainer and operator training, and finalize technical documentation. The customer will provide funding and training for production units.	731	1216	859	130

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
FY04-07 funding supports research and development of evolving Army and DoD simulation standards and evolving implementation techniques; fabricates additional simulation target models of airplanes, helicopters, missiles, and unmanned aerial vehicles in commonly used model formats; develops simulation target model infrared and radar frequency signature models, and provides archiving and distribution of simulation target models to simulation developers throughout the Army and DoD test and evaluation communities. Simulation target models are employed to facilitate simulations for both Developmental and Operational Testing (test planning, test rehearsal, post-test analysis, hardware-in-the-loop testing, and execution of test events that are too costly or difficult to be conducted under actual field conditions). These models will be used by Developmental Test Command's (DTC) Virtual Proving Ground simulation, Operational Test Command's (OTC) Analytical Simulation and Instrumentation Suite (OASIS), and multiple weapon systems' T&E (e.g. Future Combat System, Patriot, SBCT (Stryker), MEADS, etc.). These models are on-line and available to all T&E simulation developers.	384	710	872	771
Develops, tests and provides generic, tactical class Unmanned Aerial Vehicle (UAV) targets to provide threat representative support for MEADS/SLAMRAAM testing in FY06-08 and MEADS testing in future years. Provides 12 COTS-based air vehicles for developmental testing (DT) and initial targets fleet, ground support equipment, and maintainer and operator training. TTCS will be utilized for target control. This effort provides significant cost avoidances over using real UAVs for T&E targets.	1274	881	1574	741
FY07 initiates Airborne Control System for Rotary Wing targets, incorporating the Central Test and Evaluation Investment Program (CTEIP) Common Digital Architecture into aerial rotary wing targets controlled by TTCS; improving reliability, maintainability, and target performance while reducing operational cost.	0	0	0	1092
Develops software to achieve Improved Low Altitude Threat Simulation Control of aerial targets through use of a digital terrain database and Global Positioning System (GPS) altitude data using the Target Tracking Control System UHF (TTCSU) and the Drone Formation Control System (DFCS). This will allow single or multiple target formations to be flown in more threat representative presentations than are now possible with existing hardware and software systems.	0	2800	0	0
Totals	7966	9633	7258	6814

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0604258A - TARGET SYSTEMS DEVELOPMENT**	**459**

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
459	GROUND TARGETS	5441	3737	3597	3728	4661	4676	4808	3869

A. Mission Description and Budget Item Justification: This program funds Army efforts to support test and evaluation (T&E) of advanced weapon systems and supports Army Transformation by developing surrogates, acquiring foreign equipment and developing virtual target computer models of ground vehicle targets. These products are required to adequately stress weapon systems undergoing T&E. This tasking includes long-range planning to determine future target needs and development of coordinated requirement documents; the centralized management of the ground target research, development, test and evaluation processes; execution of the validation process; acquisition of foreign equipment; and continuing maintenance, storage, and development/enhancement/update via engineering services of developed and acquired targets to ensure availability for T&E customers. This program also manages use of current assets and operates centralized spare parts program. The US Army is the Tri-Service lead for providing mobile ground targets for T&E.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
FY 2004-2007 funds management and oversight of five Primary Operating Centers to include operation, storage, maintenance, and configuration management for the repair of 165 active and 187 inactive Mobile Ground Target vehicles, and acquisition of new material and spare parts. Supports users such as Future Combat Systems (FCS), Precision Fire, Apache, Armed Reconnaissance Helicopter (ARH), Guided Multiple Launch Rocket System (GMLRS), Excalibur, Mid-Range Munition (MRM), Non-Line-of-Sight Launch System (NLOS-S), Precision Guided Mortar Munition (PGMM), and others.	2230	1896	2093	2075

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
Supports research and development of evolving Army and DOD simulation standards and evolving implementation techniques; fabricates additional simulation target models of wheeled and tracked ground vehicles in commonly used model formats; develops simulation target model infrared (IR) and radio frequency (RF) signature models, and provides archiving and distribution of simulation target models to simulation developers throughout the Army and DOD T&E communities. Simulation target models are employed to facilitate simulations for both developmental testing (DT) and operational testing (OT) test planning, test rehearsal, post-test analysis, hardware-in-the-loop testing, and execution of test events that are too costly or difficult to be conducted under actual field conditions). These models will be used by DTC's Virtual Proving Ground simulation, OTC's Analytical Simulation and Instrumentation Suite (OASIS), and multiple weapon systems' T&E (e.g. Future Combat System (FCS),Army Tactical Missile System (ATACMS), SBCT (Stryker Brigade Combat Team), Land/Air Warrior, etc.) These models are available on-line to all T&E simulation developers.	1912	1129	1333	1476
Tests and validates (FY04), and fields (FY05) a very low cost (less than 10% of cost of the actual) Main Battle Tank (MBT), Russian MBT Surrogate, which will emulate the visual, infrared, and radio frequency signatures to support T&E (i.e., Apache, ARH, FCS, NLOS-LS, Compact Kinetic Energy Missile (CKEM) and others).	1299	402	0	0
Manages Mobile Ground Target Surrogates development effort beginning in FY05. Supplements the Mobile Ground Targets threat fleet with up to date threat representatives surrogates that emulate the visual, infrared and radio frequency signatures to support T&E (i.e. ARH, Apache, FCS, NLOS-LS, CKEM, and others).	0	310	171	177
Totals	5441	3737	3597	3728