ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
6 - Management support	**0604759A - Major T&E Investment**

	COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
	Total Program Element (PE) Cost	64536	64404	51846
983	Reagan Test Site (RTS) T&E Investments	7938	8480	8714
984	Major Developmental Testing Instrumentation	36242	35246	35659
986	Major Operational Test Instrumentation	20356	20678	7473

A. Mission Description and Budget Item Justification: This program funds the development and acquisition of major developmental test instrumentation for the U.S. Army Test and Evaluation Command's (ATEC) Developmental Test Command (DTC) test activities: White Sands Test Center (WSTC), NM; Yuma Test Center, (YTC), AZ; Aberdeen Test Center (ATC), MD; Electronic Proving Ground (EPG), AZ; Redstone Technical Test Center (RTTC), AL; Aviation Technical Test Center (ATTC), AL; and for the Reagan Test Site (RTS) at the US Army Kwajalein Atoll (USAKA), which is managed by the Space and Missile Defense Command. The program also funds development and acquisition of Operational Test Command's (OTC) major field instrumentation. Requirements for instrumentation are identified through a long range survey of project managers, Research Development and Engineering Centers (RDECs), and Battle Laboratories developing future weapon systems and the test programs that support these systems. Army testing facilities are also surveyed to determine major testing capability shortfalls.

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B. Program Change Summary	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	66276	64618	66199
Current BES/President's Budget (FY 2010)	64536	64404	51846
Total Adjustments	-1740	-214	-14353
Congressional Program Reductions		-214	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	15		
SBIR/STTR Transfer	-1755		
Adjustments to Budget Years			-14353

Change Summary Explanation: FY10: Funds transferred to production account to procure additional Operational Test-Tactical Engagement System (OT-TES) sets to meet higher priority near term test requirements.

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May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0604759A - Major T&E Investment**	**983**

COST (In Thousands)		FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
983	Reagan Test Site (RTS) T&E Investments	7938	8480	8714

A. Mission Description and Budget Item Justification: This project funds the purchase of improvement and modernization (I&M) equipment for the Ronald Reagan Ballistic Missile Defense Test Site located on U.S. Army Kwajalein Atoll (USAKA) in the Marshall Islands. Reagan Test Site (RTS) is an activity of the Major Range and Test Facility Base supporting Army, Missile Defense Agency (MDA), U.S. Air Force, National Aeronautics and Space Administration (NASA), U.S. Strategic Command (STRATCOM), and other developmental test, operational test, and space operations customers. Program upgrades radars, telemetry, optics, range safety, communications, command/control and other equipment required to maintain RTS as a national strategic asset. These upgrades are critical both to maintain a state of the art instrumentation suite and to the successful collection of data supporting developmental and operational decisions for MDA test missions, Minuteman Operational Tests, and STRATCOM's Space Surveillance Network (SSN) and Space Object Identification (SOI) programs.

Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
RTS Distributed Operations (RDO). Provide for distributed operation of the Range instrumentation from Continental U.S. Command and Control (C2) sites.	2000	2000	2000
RTS Optics Modernization Program (ROMP). Modernize RTS optics sensor suite, fixing deficiencies and enabling remote operations of the equipment.	3538	3404	3172
Millimeter Wave (MMW) Ka-Band Tubes.	500	300	350
Ultra High Frequency (UHF) Traveling Wave Tube (TWT) Reliability	1000	40	
Radar Reliability Improvement Program (RRI). Address technology refresh, obsolescence and sustainment issues for critical radar system operation.	400	960	780
Digital Pulse Compression System (DPSC) Replacement.	400	860	1150
Mission Data Study. Increase capability for critical command, control, data sharing among the range instrumentation.	50		
Telemetry Modernization Study	50	130	
MMW Limited Bandwidth (BW) Expansion Program		549	1262
Small Business Innovative Research/Small Business Technology Transfer Programs		237	
Total	7938	8480	8714

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May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0604759A - Major T&E Investment**	**984**

COST (In Thousands)		FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
984	Major Developmental Testing Instrumentation	36242	35246	35659

A. Mission Description and Budget Item Justification: This project develops and acquires major test instrumentation to perform developmental testing of weapon systems at U. S. Army Test and Evaluation Command's (ATEC) Developmental Test Command (DTC) activities which include: Yuma Test Center (YTC), AZ; Aberdeen Test Center (ATC), MD; Electronic Proving Ground (EPG), AZ; White Sands Test Center (WSTC), NM; Redstone Technical Test Center (RTTC), AL; and Aviation Technical Test Center (ATTC), AL. Projects are designated as a major program based on their visibility, assessed relative technical risk (medium-high), schedule risk, cost (generally greater than $1 Million per yr or $5 Million for the total project) and applicability to other mission areas or services. These projects are technically demanding, state-of-the-art, unique instrumentation assets or suites to meet the technology shortfalls, and generally result from development programs managed by a professional project management team. The Advanced Multi-Spectral Sensor and Subsystem Test Capabilities (AMSSTC) develops the capability to test modern weapon systems and subsystems in the laboratory, in an open or closed loop scenario. Joint Warfighter Test and Training Capability (JWTTC) is the development of an instrumented test area capable of creating Military Operations in Urban Terrain (MOUT) and maneuver training area for platoon size operations. Digital Network Migration (DNM) is the development of mobile assets for support of remote testing areas and linking instrumentation assets to Test Support Network and Cox Range Control Center (CRCC). Fiber Optic Network II (FON II) is the installation of digital fiber optic cable and transmission electronics to modernize secure and expand the backbone telecommunication and data transmission network in support of Aberdeen Test Center. Systems Test and Integration Laboratory (STIL) is the development of a systems integration and test lab for use in developmental testing and integration engineering, including a virtual test environment to support integration testing of aviation electronic systems as a part of modernization of army aircraft. Quantitative Visualization (QV) for Test and Evaluation is the development of QV integration models to enable rapid conversion of test data into visual representations. Mobile Multi-sensor Time-Space Position Information (TSPI) System (MMTS) is the development of a tracking system for weapons with low/flat trajectories and low radar cross sections. Common Range Integrated Instrumentation System (CRIIS) previously named the Enhanced Range Application Program (EnRAP) Integration project will meet critical requirements to provide global positioning system (GPS) based Time, Space, Position Information (TSPI) instrumentation to support the testing of a variety of platforms including advanced aircraft, ships, helicopters, Unmanned Aerial Vehicles (UAVs), Ground Vehicles and dismounted soldiers. Advanced Ballistic Data Acquisition develops capabilities that will permit Yuma Test Center (YTC) and Aberdeen Test Center (ATC) to test and generate safety releases for new systems being introduced by the on-going Army Transformation as part of the Precision Effort and testing of Interim and Legacy weapons. Advanced Distributed Modular Acquisition System (ADMAS) Product Improvement Program develops very small and low power pocket sized ADMAS systems which will extend the Versatile Information Systems Integrated Online system's (VISION) capabilities to support dismounted and small robotic platforms. Range Radar Replacement Program will upgrade or replace obsolete tracking and surveillance radars at EPG, White Sands Missile Range and Yuma Proving Ground with modern digital equipment. Common Range Integrated Instrumentation System (CRIIS) Objective Program provides precision location instrumentation which will significantly increase the T&E ranges' capability to meet the test instrumentation needs of the tri-service range users. Kineto Tracking Mounts (KTM) Recapitalization will refurbish the KTM fleet, rebuilding vans and trailers, replacing servo drive systems, and providing new auxiliary power system, camera and lens upgrades.

Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
Digital Network Migration (DNM): Develop mobile assets for support of testing in remote areas and linking of instrumentation assets to the Test Support Network and Cox Range Control Center (CRCC).	7102	6110	3820
Quantitative Visualization (QV) for Test and Evaluation: Develop QV integration models to enable rapid conversion of test data into	874	839	501

visual representations.			
Fiber Optic Network II (FON II) - Aberdeen Test Center (ATC): Install digital fiber optic cable and transmission electronics to modernize, secure and expand the backbone telecommunication and data transmission network in support of Aberdeen Test Center.	4890	2978	5428
Systems Test and Integration Laboratory (STIL): Develops a systems integration and test lab for use in developmental testing and integration engineering, including a virtual test environment to support integration testing of aviation electronic systems as a part of modernization of army aircraft.	7467	5360	1558
Joint Warfighter Test and Training Capability (JWTTC): Develop instrumented test area capable of creating mobile operations and maneuver training area for platoon size operations.	6038	3589	5803
Mobile Multi-sensor Time Space Position Information (TSPI) System (MMTS)(formerly Hypervelocity Advanced TSPI System): Begin development of a tracking system for weapons with low/flat trajectories and low radar cross sections.	2920	4495	3647
Advanced Multi-Spectral Sensor and Subsystem Test Capabilities (AMSSTC): Continue design, development and integration of advanced multi-spectral simulation, test and acceptance resource for both performance and production testing of Common Missile and other potential multi-mode guided missiles.	3363	2964	
Common Range Integrated Instrumentation System (CRIIS) previously known as EnRAP: The system is a life cycle replacement and technology improvement for the current Advanced Range Data System (ARDS) which is rapidly approaching the end of its life cycle. The capability will include the components to be mounted on the test platform and the components required for any necessary ground infrastructure. The system will support T&E associated with the cooperative collection of TSPI from dismounted soldiers, ground vehicles, low dynamic aircraft, and high dynamic aircraft.	3095	4923	6105
ADMAS Product Improvement Program: Develops very small and low power pocket sized ADMAS systems.	203	2357	3734
Range Radar Replacement Program will upgrade or replace obsolete tracking and surveillance radars at EPG, WSMR and YPG with modern digital equipment.	290	289	3405
Advanced Ballistic Data Acquisition: Develops capabilities to test and generate safety releases for new systems.		428	1290
KTM Recapitalization: This project will refurbish the KTM fleet, rebuilding vans and trailers, replacing servo drive systems, and providing new auxiliary power system, camera and lens upgrades. Four new KTM systems will also be added to meet workload demands.			368
Small Business Innovative Research/Small Business Technology Transfer Programs		914	
Total	36242	35246	35659

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May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0604759A - Major T&E Investment**	**986**

COST (In Thousands)		FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
986	Major Operational Test Instrumentation	20356	20678	7473

A. Mission Description and Budget Item Justification: This project supports the development of major field instrumentation for Operational Testing (OT), Force Development Testing and Experimentation (FDTE), Army Warfighting Experiments (AWE) for the U.S. Army Test and Evaluation Command (ATEC), and Army Transformation. Each initiative set forth in this program element is directly tied to tactical systems that support the following Army Modernization Plan operational capability areas: Dominate Maneuver, Full Dimensional Protection, Precision Engagement, and Focused Logistics. The cornerstone of this effort is the Operational Test-Tactical Engagement System (OT-TES) vice Objective Real-Time Casualty Assessment and Instrumentation Suite (Objective RTCA) that provides users a high fidelity, realistic, real-time capability to measure the performance of hardware and personnel under tactical conditions for small and large-scale operations. Operational Test-Tactical Engagement System (OT-TES) allows the U.S. Army to test all Current-to-Future, Future Force, and Future Combat Systems (FCS) capabilities in a force-on-force operational environment. OT-TES Research, Development, Test and Evaluation (RDTE) develops performance enhancements and technology upgrades to the Command, Control and Communications (C3) Center, Communications Network, weapons system interfaces, dismounted-troop vest and peripherals, Global Positioning System (GPS), encryption components and integrates high-fidelity digital battlefield data collection and analysis tools. These tools will collect, store and analyze data from the digital battlefield. These improvements will enable OT-TES to measure and record accrued damage, levels of exposure, effects of countermeasures, evasive action, and instrument threat vehicles, while significantly reducing system intrusiveness and increase the safety of current instrumentation for both vehicle and dismounted instrumentation. Instrumentation does not presently exist to monitor, record, stress, and analyze the effects of the digital battlefield in realistic operational scenarios. This capability is required by the operational test community to integrate digital battlefield data collection and analysis tools into the Mobile Automated Instrumentation Suite (MAIS) as enhancements to the fielded MAIS system. These tools will collect, store and analyze data from this new dimension of digital battlefield warfare. The ability to fully stress the entire battlefield with numerous simulated entities presents opportunities for significant cost savings and greater realism than would otherwise be achievable. This effort responds to the current Operations Tempo (OPTEMPO) and Personnel Tempo (PERSTEMPO) demands to force the U.S. Army to conduct more realistic, more accurate, and comprehensive evaluations at reduced costs by virtually replicating a greater number of troop resources in force-on-force testing and training exercises. Personnel and resource cuts have already been taken in the test community predicated upon data reduction/analysis streamlining provided by this capability.

Operational Test Command (OTC) Analytic Simulation and Instrumentation Suite (OASIS) Enterprise Integration Solution (EIS) is the operational test environment for FCS and the Future Force. OASIS EIS provides the integrated environment required for testing of network centric systems in a realistic operational environment.

Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
OT-TES: Funds the development of hardware, software, interfaces, and new capabilities to ensure the Real-Time Casualty Assessment (RTCA) requirements for upcoming operational tests are supported. Develops efforts that will initially be directed toward OT-TES; when development efforts transition to OneTESS for player units, funds will also be allocated for the OT-TES infrastructure upgrades. Development efforts include: Integration with New Tactical Systems Under Test, Integration with Live, Virtual, and Constructive Simulation environments, RTCA Capabilities for Active Protection Systems and Countermeasures, RTCA Capabilities for Communications/Sensor Kills and Degradations, Completed Development, Integration, and Testing of the Communications Upgrade -	18998	18918	7473

New Player Units, New Communications Sub-System, New Encryption and RTCA Capabilities for Electronic Warfare and Countermeasures.			
Develop Operational Test Command (OTC) Analytic Simulation and Instrumentation Suite (OASIS) Enterprise Integration Solution (EIS).	1358	1206	
Small Business Innovative Research/Small Business Technology Transfer Programs		554	
Total	20356	20678	7473