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# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0604256A - THREAT SIMULATOR DEVELOPMENT</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
976 ARMY THREAT SIM (ATS)	22912	25092	22222

**A. Mission Description and Budget Item Justification:** This program supports the design, development, acquisition, integration and fielding of realistic mobile threat simulators and realistic threat simulation products utilized in Army training and developmental and operational tests. While this project originally funded simulators representing Soviet equipment, the changing world order has expanded the scope of this program to address other world threats. Army Threat Simulator and Threat Simulation products are utilized to populate test battlefields for U.S. Army Test and Evaluation Command (ATEC), to conduct developmental and operational tests, and to support Program Executive Office (PEO) required user testing in System Integration Laboratories and hardware/simulation in-the-loop facilities. Army threat simulator and threat simulation products developed or fielded under this program support Army-wide, non-system specific threat product requirements. Each capability is pursued in concert and coordination with existing Army and tri-service capabilities to eliminate duplication of products and services, while providing the proper mix of resources needed to support Army testing and training. These battlefield simulators represent systems (e.g. missile systems, command, control and communications systems, electronic warfare systems, etc.) that are used to portray a realistic threat environment during testing of U.S. weapon systems. Simulator development is responsive to Office of the Secretary of Defense and General Accounting Office guidance for the Army to conduct operational testing in a realistic threat environment. Actual threat equipment is acquired when appropriate (in lieu of development) and total package fielding is still required (i.e., instrumentation, operations and maintenance, manuals, new equipment training, etc.). Threat simulator development is accomplished under the auspices of the Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS) and the Director, Operational Test and Evaluation, Threat Simulator Investment Working Group.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0604256A - THREAT SIMULATOR DEVELOPMENT</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	23339	21416	22200
Current BES/President's Budget (FY 2010)	22912	25092	22222
Total Adjustments	-427	3676	22
Congressional Program Reductions		-84	
Congressional Rescissions			
Congressional Increases		3760	
Reprogrammings	6		
SBIR/STTR Transfer	-433		
Adjustments to Budget Years			22

Change Summary Explanation: Funding - FY09 Congressional add of \$3,760K for Electronic Combat and Counter Terrorism Threat Developments to Support Joint Forces.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0604256A - THREAT SIMULATOR DEVELOPMENT</b>		<b>PROJECT</b> <b>976</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
976 ARMY THREAT SIM (ATS)	22912	25092	22222

**A. Mission Description and Budget Item Justification:** This program supports the design, development, acquisition, integration and fielding of realistic mobile threat simulators and realistic threat simulation products utilized in Army training and developmental and operational tests. While this project originally funded simulators representing Soviet equipment, the changing world order has expanded the scope of this program to address other world threats. Army Threat Simulator and Threat Simulation products are utilized to populate test battlefields for U.S. Army Test and Evaluation Command (ATEC), to conduct developmental and operational tests, and to support Program Executive Office (PEO) required user testing in System Integration Laboratories and hardware/simulation in-the-loop facilities. Army threat simulator and threat simulation products developed or fielded under this program support Army-wide, non-system specific threat product requirements. Each capability is pursued in concert and coordination with existing Army and tri-service capabilities to eliminate duplication of products and services, while providing the proper mix of resources needed to support Army testing and training. These battlefield simulators represent systems (e.g. missile systems, command, control and communications systems, electronic warfare systems, etc.) that are used to portray a realistic threat environment during testing of U.S. weapon systems. Simulator development is responsive to Office of the Secretary of Defense and General Accounting Office guidance for the Army to conduct operational testing in a realistic threat environment. Actual threat equipment is acquired when appropriate (in lieu of development) and total package fielding is still required (i.e., instrumentation, operations and maintenance, manuals, new equipment training, etc.). Threat simulator development is accomplished under the auspices of the Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS) and the Director, Operational Test and Evaluation, Threat Simulator Investment Working Group.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Developed Advanced Electronic Order of Battle (AEOB) upgrade and developed mobile threat emitter system interoperable with threat scenario outputs.	1919		
Continue development of Network Exploitation Test Tool (NETT). Combines with the wireless NETT program in FY09 to provide single program approach for both technologies.	1150	3407	3723
Conduct Threat Systems Management Office Operations efforts. FY09 program mission re-scoped to match Army T&E mission areas.	6469	2194	2358
Develop Threat Intelligence and Electronic Warfare (IEW) Environment to simulate Electronic Warfare capabilities.	2560	2962	3096
Developed simulations of threat camouflage, concealment, deception and obscurants (CCD&O) techniques (formerly known as threat deception techniques).	1139		
Follow-on development for an Electronic Combat and Counter Terrorism Training Range for threat scenarios. This is a follow-on to a FY08 Congressional Add Threat Systems Management satellite office for Townsend Electronic Combat Training Range.	1600	3760	
Develop the functionality of the Threat Battle Command Center (TBCC) to support new threat systems/equipment.	3781	3690	3722
Develop design for 2-channel man-pack Remote Jamming Unit (RJU) and 10 watt environmentally sealed Control Signal Transmitter (CST) for Threat Signal Injection Jammer (TSIJ).	1060	2583	2205

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0604256A - THREAT SIMULATOR DEVELOPMENT</b>	<b>976</b>	
Developed on location tracking capability of Mobile Commercial Network Infrastructure-Test Range (MCNI-TR).	1437		
Develop Threat Wireless Network Exploitation Test Tool (NETT). FY09 funds realigned to NETT program and combine this technology into one program.	1797		
Begins development of Control of Signal Transmission-Open Air Capability (CST-OAC) and Signal Intelligence/Direct Finding (SIGINT/DF) sensors onto a larger aerial platform for Threat Devices capability.		2371	3330
Develops Networked Electronic Support Threat Sensors (NESTS) systems up to 3GHz for integration within threat force.		929	1644
Develops key Computer Network Operations (CNO) Team support for threat events.		2721	2144
Small Business Innovative Research/Small Business Technology Transfer Programs.		475	
<b>Total</b>	<b>22912</b>	<b>25092</b>	<b>22222</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0604258A - TARGET SYSTEMS DEVELOPMENT</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
Total Program Element (PE) Cost	15402	13453	13615
238 AERIAL TARGETS	5668	6205	4273
459 GROUND TARGETS	9734	7248	9342

**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, towed, 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.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0604258A - TARGET SYSTEMS DEVELOPMENT</b>
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<u><b>B. Program Change Summary</b></u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	17787	13498	13703
Current BES/President's Budget (FY 2010)	15402	13453	13615
Total Adjustments	-2385	-45	-88
Congressional Program Reductions		-45	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-1933		
SBIR/STTR Transfer	-452		
Adjustments to Budget Years			-88

The Change Summary includes the following:

FY08 includes reprogramming the congressional add "Next Generation Ice Protection Technologies for UAVs" (\$1,933) to PM UAV to execute in accordance with Congressional intent and (\$452K) for SBIR/STTR transfer.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0604258A - TARGET SYSTEMS DEVELOPMENT</b>		<b>PROJECT</b> <b>238</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
238 AERIAL TARGETS	5668	6205	4273

**A. Mission Description and Budget Item Justification:** Aerial Targets support Army Transformation and the Overseas Contingency Operations 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 Army is the Reliance lead for rotary wing targets and towed target developments and the Tri-Service lead for procurement and enhancement of the MQM-107 fixed wing target.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continues management and sustainment of 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), Apache Block III, and others.	823	517	488
Provides Research, Development, Test and Evaluation (RDT&E) portion of funds needed to update aging High Speed Aerial Target (HSAT, 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.	1418	1207	1275
Provides for engineering support for all Target Tracking Control Systems (TTCS) and aerial target control components. Updates documentation of the system and operations and maintenance manuals. Supports operational repair and maintenance with engineering analysis of target control system performance. Provides for design modifications to solve obsolescence problems and updates software to correct anomalies. Provide for software performance enhancement modifications to support test and evaluation missions, improves test sets and develops upgraded operator displays. This will provide support to programs such as Patriot, SLAMRAAM, MEADS, and others.	741	678	523
Continues development, enhancement, maintenance, and storage for all RDT&E aerial targets, towed targets, and ancillary devices. Continues development and testing of Low Cost Towed target systems (Cruise Missile Tow Target, Reduced Radar Tow Target, and the Special Low Altitude Tow Target) emulating current threats at a very low cost to Patriot, JLENS, SLAMRAAM and classified customers. Signature modification and performance enhancement efforts for these targets is ongoing. Investigate/test other cost-saving towed systems (Glide-Tow and Height-Keeping-Tow) for Air Defense Weapons System customers.	633	694	669
Provides engineering support for the Integrated Avionics Program (IAP). Designs component changes to correct for obsolescence.	289	232	261

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
<b>6 - Management support</b>	<b>0604258A - TARGET SYSTEMS DEVELOPMENT</b>	<b>238</b>		
Update software to correct problems and to modify the software to support specific test and evaluation mission requirements. IAP provides the avionics for aerial targets to support multiple mission requirements for programs such as Patriot, SLAMRAAM, and MEADS.				
Supports research and development of Aerial Virtual Targets of evolving Army and DOD simulation standards and evolving implementation techniques; focuses on simulation target models of airplanes, helicopters, missiles, and unmanned aerial vehicles in commonly used formats to support visualization, infrared, and radar analysis simulations; supports verification and validation of 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 are being used by Developmental Test Command's simulations, Operational Test Command's Analytical Simulation and Instrumentation Suite (OASIS), and multiple weapon system's T&E activities. These models are available on line to all T&E simulation developers.	818	890	549	
Provides engineering funding for the generic, tactical class Unmanned Aerial System Target (UAS-T) to provide threat representative support for SLAMRAAM testing in FY08-11 and MEADS testing in future years. Provides management of approximately 20 customer funded production air vehicles and initial target fleet, ground support equipment, maintenance and operator training. Enables identification and correction of system anomalies identified during operations. Provides limited engineering capability to address minor enhancements to the basic target system identified during operations. The target system can be controlled manually and in a beyond-visual-range mode using either the CloudCap Piccolo ground station or the Target Tracking Control System-Upgrade ground control station. This target system provides significant cost avoidance over using operational, tactical Unmanned Aerial Vehicles for T&E Targets.	582	538	508	
Provides for management and requirements development leading to development, testing and fielding of replacement Rotary Wing (RW) targets to replace the current aging and unsupportable targets (aircraft & drone kits) with new fully supportable/maintainable RW capability for T&E customers. This capability is required to provide RW targets for kill and non-kill missions for T&E tests for customers such as MEADS, SLAMRAAM, FCS-SoS, EAADS, APACHE and others.	364	1290		
Small Business Innovative Research / Small Business Technology Transfer Programs		159		
<b>Total</b>	<b>5668</b>	<b>6205</b>	<b>4273</b>	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0604258A - TARGET SYSTEMS DEVELOPMENT</b>		<b>PROJECT</b> <b>459</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
459 GROUND TARGETS	9734	7248	9342

**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.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Funds management and oversight of five Primary Operating Centers to include operation, storage, maintenance, repair, safety and configuration management for 155 active and 152 inactive Foreign Mobile Ground Target Vehicles, and acquisition of new material and spare parts. Efforts supports users such as Future Combat Systems (FCS), Apache Block III, Guided Multiple Launch Rocket System (GMLRS), Intelligent Munitions System (IMS), Mid-Range Munition (MRM), Non-Line-of-Sight Launch System (NLOS-LS), and others.	2140	2456	2770
Manages Mobile Ground Target Hardware effort. Supplements the Mobile Ground Targets threat fleet with up to date threat representative targets that emulate the visual, infrared, radio frequency, and acoustic signatures to support T&E (e.g.FCS,NLOS, IMS and others).	3421	1860	2656
Supports research and development of the Ground Virtual Targets of evolving Army and DOD simulation standards and evolving implementation techniques; focuses on 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; supports verification and validation of 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 Developmental Test Command's simulations, Operational Test Command's Analytical Simulation and Instrumentation Suite (OASIS, and multiple weapon system's T&E (e.g. Future Combat System (FCS), Excalibur, Mid Range Munition (MRM), etc.). These models are available on-line to all T&E simulation developers.	1847	2762	1041
Congressional Add - Mobile objects for Net-Centric Operations. Funding executed by INSCOM	2326		
Funds acquire and field fully mission capable targets (such as Main battle Tanks, Infantry Fighting Vehicles, and Armored Personnel Carriers) to meet emerging requirements for threat representative missions. This program will provide realistic threat capable targets for use in force-on-force exercises to allow Blue Forces to think and adapt to the changing battle dynamic as it unfolds.			2875

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0604258A - TARGET SYSTEMS DEVELOPMENT</b>	<b>459</b>	
Small Business Innovative Research / Small Business Technology Transfer Program		170	
<b>Total</b>	9734	7248	9342



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0604759A - Major T&amp;E Investment</b>		
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.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0604759A - Major T&amp;E Investment</b>		
<b><u>B. Program Change Summary</u></b>	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.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0604759A - Major T&amp;E Investment</b>		<b>PROJECT</b> <b>983</b>
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.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
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	
<b>Total</b>	<b>7938</b>	<b>8480</b>	<b>8714</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0604759A - Major T&amp;E Investment</b>		<b>PROJECT</b> <b>984</b>
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 (JWTTTC) 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.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
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

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
<b>6 - Management support</b>	<b>0604759A - Major T&amp;E Investment</b>	<b>984</b>		
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 (JWTTTC): 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		
<b>Total</b>	<b>36242</b>	<b>35246</b>	<b>35659</b>	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0604759A - Major T&amp;E Investment</b>		<b>PROJECT</b> <b>986</b>
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.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
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

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0604759A - Major T&amp;E Investment</b>	<b>986</b>	
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	
<b>Total</b>	<b>20356</b>	<b>20678</b>	<b>7473</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605103A - Rand Arroyo Center</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
732 ARROYO CENTER SPT	18618	20272	16305

**A. Mission Description and Budget Item Justification:** This program funds the RAND Arroyo Center, the Department of the Army's Federally Funded Research and Development Center (FFRDC) for studies and analysis. The Arroyo Center draws its researchers from RAND's staff of nearly 700 professionals trained in a broad range of disciplines. Most staff members work in RAND's principal locations-Santa Monica, California; Arlington, Virginia; and Pittsburgh, Pennsylvania. The RAND Arroyo Center provides for continuing analytical research across a broad spectrum of issues and concerns, grouped in four major research areas: Strategy, Doctrine, and Resources; Military Logistics; Manpower and Training; and Force Development and Technology. The RAND Arroyo Center research agenda is primarily focused on mid/long-term concerns. Results and analytical findings directly affect senior leadership deliberations on major issues. Arroyo Center research is sponsored by the Chief of Staff, Vice Chief, the Deputy Chiefs of Staff of the Army; the Army Assistant Secretaries; and most of the Army's major commands. The Arroyo Center is provided guidance from the Army through the Arroyo Center Policy Committee (ACPC), which is co-chaired by the Vice Chief of Staff of the Army and the Assistant Secretary of the Army (Acquisition, Logistics and Technology). The ACPC reviews, monitors, and approves the annual Arroyo Center research plan. Each project requires General Officer (or SES equivalent) sponsorship and involvement on a continuing basis. RAND Arroyo provides the Army with a unique multidisciplinary capability for independent analysis.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605103A - Rand Arroyo Center</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	19149	16339	16570
Current BES/President's Budget (FY 2010)	18618	20272	16305
Total Adjustments	-531	3933	-265
Congressional Program Reductions		-67	
Congressional Rescissions			
Congressional Increases		4000	
Reprogrammings			
SBIR/STTR Transfer	-531		
Adjustments to Budget Years			-265

Change Summary Explanation: Funding - For FY2009, Congressional increase for RAND ARROYO CENTER program adjustment

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605103A - Rand Arroyo Center</b>		<b>PROJECT</b> <b>732</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
732 ARROYO CENTER SPT	18618	20272	16305

**A. Mission Description and Budget Item Justification:** This program funds the RAND Arroyo Center, the Department of the Army's Federally Funded Research and Development Center (FFRDC) for studies and analysis. The Arroyo Center draws its researchers from RAND's staff of nearly 700 professionals trained in a broad range of disciplines. Most staff members work in RAND's principal locations—Santa Monica, California; Arlington, Virginia; and Pittsburgh, Pennsylvania. The RAND Arroyo Center provides for continuing analytical research across a broad spectrum of issues and concerns, grouped in four major research areas: Strategy, Doctrine, and Resources; Military Logistics; Manpower and Training; and Force Development and Technology. The RAND Arroyo Center research agenda is primarily focused on mid/long-term concerns. Results and analytical findings directly affect senior leadership deliberations on major issues. Arroyo Center research is sponsored by the Chief of Staff, Vice Chief, the Deputy Chiefs of Staff of the Army; the Army Assistant Secretaries; and most of the Army's major commands. The Arroyo Center is provided guidance from the Army through the Arroyo Center Policy Committee (ACPC), which is co-chaired by the Vice Chief of Staff of the Army and the Assistant Secretary of the Army (Acquisition, Logistics and Technology). The ACPC reviews, monitors, and approves the annual Arroyo Center research plan. Each project requires General Officer (or SES equivalent) sponsorship and involvement on a continuing basis. RAND Arroyo provides the Army with a unique multidisciplinary capability for independent analysis.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Research addressing the Army's transformation to meet near-term challenges: key issues for the Army, including implications of network-centric insurgencies; support to the unit-focused stability effort; Combat Training Center (CTC) training effectiveness; support to Officer Personnel Management System (OPMS 3); alternative medical force structures; Army Working Capital Fund (AWCF) for an expeditionary Army; integrating APS with the supply chain; and lessons from Stryker support in Iraq.	1026		
Research addressing the Army's transformation to shape the future force: key issues for the Army in laying out long-term alternatives, including future strategic challenges, operational cognition, support to Unified Quest '05, budget implications of current operations; and improving fleet recap planning; improving jointness and interdependence, including improving joint blue force Situational Awareness (SA), training strategies for the Brigade Combat Team-Unit of Action (BCT-UA), and integrating Army requirements and Defense Logistics Agency (DLA) contingency planning; technology for future forces, including future force reconnaissance capabilities, robotics for future forces, fusion architectures for Stability and Support Operations (SASO), architecture options for future forces, behavior based modeling, and RF Spectrum access; logistics support to future forces, including sustaining simultaneous distributed operations and assessment of Future Combat System (FCS) sustainability requirements; and cooperation with friends and allies, including compatibility with new allies, and Army international affairs activities and force compatibility.	2650		
Research addressing support to current operations: key issues for the Army in continuing military operations in Afghanistan and Iraq; measuring Army effectiveness in the Global War on Terrorism (GWOT); access to soldiers for deployment; strengthening Army recruiting and retention; evaluation of unit-based leader-development programs; adapting Combat Training Center (CTC) training proficiency to demands of the Contemporary Operating Environment (COE); and anticipating adaptive enemies.	4148		
Research addressing the Army's transformation to meet near-term challenges: Implementing Army Force Generation (ARFORGEN) for a modular force, including unit-focused stabilization; Units of Action (UAs) and manning the force; training and readiness strategies to	3990		

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0605103A - Rand Arroyo Center</b>	<b>732</b>	
support ARFORGEN; and optimizing Combat Service Support (CSS) capabilities. Improving doctrine/organization for Stability and Support Operations/Counterinsurgency (SASO/COIN), including the implications for the Army of irregular warfare; improving doctrine and planning for stability operations; dominating complex terrain; integrating Information Operations (IO) into planning and execution of military operations; and building transitional security capabilities. Managing the tech challenges of transformation, including managing the Future Combat System (FCS) program; recapitalizing Army Battle Command System (ABCS); Optimizing the ground force network; and integrating UAV capabilities into UA networks. Supporting the transforming force, including improving Army repair parts inventories; and supply chain integration with government providers.			
Research addressing the Army's enduring challenges: key issues for the Army in shaping and staffing the force, including assessing effectiveness of a tier-two attrition screen program, and support to Army review of the Officer Personnel Management System (OPMS); and key issues for the Army in supporting the force, including improving depot supply chain management, identifying best Performance Based Logistics (PBL) practices; evaluating the Army's organic technical capabilities, and implementing best purchasing and supply management practices.	1500		
Research addressing the Army's transformation to shape the future force: key issues for the Army, including reexamining strategic guidance for the US Army; dealing with nuclear weapons; support to TRADOC war-game; building partner capability for coalition operations; assessing the value of commonality and families of systems; developing a total Condition Based Maintenance (CBM) program; evaluating the state of automated fusion; simulating robotics concepts; and future force vulnerability assessment.	5304		
Research addressing manpower and training: key issues for the Army, including recruiting and personnel fill requirements; reserve component readiness; leader development; training (major combat operations and stability operations skills); distance learning, simulation training development and application; training support systems; retention (active command/reserve command); officer career fields, selection, assignment sequencing; and medical forces and operations.		5707	4474
Research addressing force development and technology: key issues for the Army, including systems and technology analysis; networks and C4ISR; modeling and simulation; force and organizational development; acquisition policies; and assessment of tactics, techniques, and procedures.		5152	3811
Research addressing Army logistics: key issues for the Army, including supply chain management; fleet management and modernization; logistics force development; and infrastructure management.		5000	4209
Research addressing strategies, doctrine, and resources: key issues for the Army, including the evolving operating environment; capabilities to face new challenges; partner capabilities; capabilities for stability operations; improvement of resource management; learning from past and present operations; and supporting Army wargames and analysis.		3846	3811
Small Business Innovative Research/Small Business Technology Transfer Program		567	
<b>Total</b>	<b>18618</b>	<b>20272</b>	<b>16305</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605301A - ARMY KWAJALEIN ATOLL</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
614 ARMY KWAJALEIN ATOLL	180812	174024	163514

**A. Mission Description and Budget Item Justification:** The U.S. Army Kwajalein Atoll/Ronald Reagan Ballistic Missile Defense Test Site (USAKA/RTS), located in the Republic of the Marshall Islands, is a remote, secure activity of the Major Range and Test Facility Base (MRTFB). Its function is to support test and evaluation of major Army and DoD missile systems and to provide space operations (surveillance and object identification) in support of U.S. Strategic Command and National Aeronautics and Space Administration (NASA) scientific and space programs. Programs supported include Army missile defense, Missile Defense Agency (MDA) demonstration/validation tests, Air Force and Navy Intercontinental Ballistic Missile (ICBM) development and operational tests, U.S. Space Surveillance Network, and NASA Space Transportation System (Shuttle) and orbital debris experiments. The technical element of USAKA/RTS is RTS, which consists of a number of sophisticated, one-of-a-kind, radar, optical, telemetry, Command/Control/Communications, and data reduction systems. These systems include the four unique radars of the Kiernan Reentry Measurement Site (KREMS); Super Recording Automatic Digital Optical Tracker (SRADOT) long range video-metric tracking systems; high density data recorders for high data-rate telemetry collected by nine antennas; underwater acoustic impact location system; and data analysis/reduction hardware/software. USAKA/RTS is government-managed/contractor-operated (GMCO) and is therefore totally dependent upon its associated support contractors. Program provides funds for the contractors to accomplish installation operation and maintenance (O&M) and provides mission essential bandwidth via a fiber optics cable system. Funding is required to maintain O&M support, while accepting moderate risk of continued degradation of USAKA/RTS infrastructure (housing, offices, and facilities), higher future repair costs, and reduced logistical support capability. The Army, Air Force, Navy and MDA have programs planned which have significant test and data gathering requirements at USAKA/RTS. Air Force programs launch from Vandenberg Air Force Base, CA, with complete data collection during late mid-course and terminal trajectory. MDA programs require range instrumentation to collect technical data in support of mid-course and terminal defense programs. This test data cannot be obtained except through the use of technical facilities available on and in the vicinity of USAKA/RTS. Program supports U.S. Strategic Command (STRATCOM) requirements for data collection on objects in space. The Advanced Research Project Agency (ARPA) Long-Range Tracking and Instrumentation Radar (ALTAIR), and the Target Resolution Discrimination Experiment (TRADEX) radars located at USAKA/RTS, are two of only three radars world-wide that have deep-space tracking capability. The Millimeter Wave Radar (MMW) is the most powerful imaging radar in the world. With the geographic location of RTS, MMW complements the tracking radars for national space capabilities. Program supports Army's Advanced Hypersonic Weapon-Technology Development program; Air Force's Minuteman III operational and developmental tests; MDA's Ground Based Mid-Course Missile Defense (GMD) tests, Flexible Target Family (FTF), Lower-tier Project Office (LTPO) and Family of Systems; NASA's Space Transportation System (STS), Small Expendable Deployer System and Orbital Debris Measurement Programs; and the Air Force Space and Missile Center's associated programs.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605301A - ARMY KWAJALEIN ATOLL</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	180052	174601	165798
Current BES/President's Budget (FY 2010)	180812	174024	163514
Total Adjustments	760	-577	-2284
Congressional Program Reductions		-577	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	5570		
SBIR/STTR Transfer	-4810		
Adjustments to Budget Years			-2284

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605301A - ARMY KWAJALEIN ATOLL</b>		<b>PROJECT</b> <b>614</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
614 ARMY KWAJALEIN ATOLL	180812	174024	163514

**A. Mission Description and Budget Item Justification:** The U.S. Army Kwajalein Atoll/Ronald Reagan Ballistic Missile Defense Test Site (USAKA/RTS), located in the Republic of the Marshall Islands, is a remote, secure activity of the Major Range and Test Facility Base (MRTFB). Its function is to support test and evaluation of major Army and DoD missile systems and to provide space operations (surveillance and object identification) in support of U.S. Strategic Command and National Aeronautics and Space Administration (NASA) scientific and space programs. Programs supported include Army missile defense, Missile Defense Agency (MDA) demonstration/validation tests, Air Force and Navy Intercontinental Ballistic Missile (ICBM) development and operational tests, U.S. Space Surveillance Network, and NASA Space Transportation System (Shuttle) and orbital debris experiments. The technical element of USAKA/RTS is RTS, which consists of a number of sophisticated, one-of-a-kind, radar, optical, telemetry, Command/Control/Communications, and data reduction systems. These systems include the four unique radars of the Kiernan Reentry Measurement Site (KREMS); Super Recording Automatic Digital Optical Tracker (SRADOT) long range video-metric tracking systems; high density data recorders for high data-rate telemetry collected by nine antennas; underwater acoustic impact location system; and data analysis/reduction hardware/software. USAKA/RTS is government-managed/contractor-operated (GMCO) and is therefore totally dependent upon its associated support contractors. Program provides funds for the contractors to accomplish installation operation and maintenance (O&M) and provides mission essential bandwidth via a fiber optics cable system. Funding is required to maintain O&M support, while accepting moderate risk of continued degradation of USAKA/RTS infrastructure (housing, offices, and facilities), higher future repair costs, and reduced logistical support capability. The Army, Air Force, Navy and MDA have programs planned which have significant test and data gathering requirements at USAKA/RTS. Air Force programs launch from Vandenberg Air Force Base, CA, with complete data collection during late mid-course and terminal trajectory. MDA programs require range instrumentation to collect technical data in support of mid-course and terminal defense programs. This test data cannot be obtained except through the use of technical facilities available on and in the vicinity of USAKA/RTS. Program supports U.S. Strategic Command (STRATCOM) requirements for data collection on objects in space. The Advanced Research Project Agency (ARPA) Long-Range Tracking and Instrumentation Radar (ALTAIR), and the Target Resolution Discrimination Experiment (TRADEX) radars located at USAKA/RTS, are two of only three radars world-wide that have deep-space tracking capability. The Millimeter Wave Radar (MMW) is the most powerful imaging radar in the world. With the geographic location of RTS, MMW complements the tracking radars for national space capabilities. Program supports Army's Advanced Hypersonic Weapon-Technology Development program; Air Force's Minuteman III operational and developmental tests; MDA's Ground Based Mid-Course Missile Defense (GMD) tests, Flexible Target Family (FTF), Lower-tier Project Office (LTPO) and Family of Systems; NASA's Space Transportation System (STS), Small Expendable Deployer System and Orbital Debris Measurement Programs; and the Air Force Space and Missile Center's associated programs.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide management support (salaries, training, travel, Space & Missile Defense Command (SMDC) matrix, etc).	9542	9973	10275
Accomplish facility maintenance and repair projects, including design and demolition.	13200	7200	7200
Procure petroleum, oils and lubricants (POL).	27000	26850	23517
Procure other mission services.	4696	4788	4051
Provide air and sea transportation (cargo to and from continental United States).	5850	5307	4966

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management support</b>	<b>0605301A - ARMY KWAJALEIN ATOLL</b>		<b>614</b>
Provide costs for Kwajalein Cable System (KCS) fiber optic cable for annual service contract. Initial Operational Capability begins March 2010.			7670
Continue to support Army, MDA, NASA and Air Force developmental and operational missile testing.	56238	50441	49376
Provide logistical support (facilities maintenance and repair, aviation, automotive, marine, medical, food services, education, information management, environmental compliance, etc.) to self contained islands of USAKA.	59786	57408	52434
Provide for RTS Distributed Operations (distributed operations of the Range sensors from Continental U.S.).	4500	7400	4025
Small Business Innovative Research/Small Business Technology Transfer Programs		4657	
<b>Total</b>	<b>180812</b>	<b>174024</b>	<b>163514</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605326A - Concepts Experimentation Program</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
Total Program Element (PE) Cost	28873	33918	23445
308 Concepts Experimentation	8116	5740	
312 Army/Joint Experimentation	18916	10452	11759
317 CURRENT FORCE CAPABILITY GAPS		15839	9694
33B SOLDIER-CENTERED ANALYSES FOR THE FUTURE FORCE	1841	1887	1992

**A. Mission Description and Budget Item Justification:** Funding for the Army Concept Development and Experimentation Campaign Plan mission enables integrated examinations with US Joint Forces Command (USJFCOM), Army Test and Evaluation Command (ATEC), Research, Development, and Experimentation Command (RDECOM), Army battle laboratories, operational units, research labs, materiel developers, industry and academia for the development, refinement, and assessment of future force concepts and concept capability plans to inform the Capability Integration Development System (CIDS) process and shape future requirements, enabling identification and acquisition of critical Doctrine, Organizational, Training, Materiel, Leader Development, Personnel and Facilities (DOTMLPF) capabilities for the future force in order to provide the land power capabilities needed by the Joint Force commander and establish the Army as a purposely interdependent and expeditionary component of the future Joint force. Enables the Air Assault Expeditionary Force Spirals, the Army's principle live discovery experiments to determine impacts on leaders from increased mental demands and complexities from enhanced situational awareness, requirements of sensor planning, employment and management of accelerated decision cycles in a network-enabled force, training requirements of new technologies (e.g. Unmanned Ground Vehicles, Unmanned Aerial Vehicles, and battle command systems and communications); Digital Warfighter Exercises addressing the required capabilities of future echelons above Brigade command posts; and Battle Command On The Move developments. Support Brigade experiments inform higher echelons of which intelligence, surveillance, and reconnaissance capabilities products are focused on synchronization, and support full spectrum operations. Functional Enabling experiments inform logistics, medical, civil support, as well as rapid transitions, and joint mobility. Subordinate Command experiments with airlift capabilities and operational capability over strategic distances.

The Asymmetric Warfare program provides a method for Army to keep the Current Force current/relevant as adversaries adapt and the operating environment changes. As capability gaps identified by deployed forces reveal shortfalls that impact effectiveness or interoperability, and these capability gaps are prioritized by Army, this program provides the ability for Army to evaluate high priority/high leverage solutions from industry during the current year, with highest priority going to candidates that cover multiple capability gaps. Funding provides the ability to identify and insert leading-edge technology from industry to deployed forces in an incremental manner by leveraging the best ideas of best-positioned Program Manager/Program Executive Officers and pulling, or spiraling, them forward for immediate use in the theater. Asymmetric Warfare program will ensure that a solution's proposed gain in capability is not offset by a disruption caused by integration problems. Program enables the holistic demonstration, assessment and deployment of critically needed capabilities to the current force in an integrated environment in the current year.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605326A - Concepts Experimentation Program</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	29652	28271	22328
Current BES/President's Budget (FY 2010)	28873	33918	23445
Total Adjustments	-779	5647	1117
Congressional Program Reductions		-113	
Congressional Rescissions			
Congressional Increases		5760	
Reprogrammings			
SBIR/STTR Transfer	-779		
Adjustments to Budget Years			1477

Change Summary Explanation: Funding - FY 09: Congressional Add: \$.800 million Gunfighter Detection Systems for Unmanned Aerial Vehicles, \$.960 million Arabic Language Training Program, \$1.600 million Automated Communications Support System for Warfighters, Intelligence Community, Linguist, and Analyst, \$1.200 million Moving Vehicle BAT Face Recognition Surveillance System, \$1.200 million Technology for Rapid Foreign Language Acquisitions for Specialized Military and Intelligence Purposes. These Congressional Adds total \$5.760 million.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605326A - Concepts Experimentation Program</b>		<b>PROJECT</b> <b>308</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
308 Concepts Experimentation	8116	5740	

**A. Mission Description and Budget Item Justification:** A. Mission Description and Budget Item Justification:

UAV Gunfire Detection System: Radiance Technologies Inc. has developed a wide angle weapons detection sensor that can detect, classify and locate a variety of weapon fires including Rocket Propelled Grenades (RPGs), MANPADS, small arms, mortars, tanks and artillery. This Weapons Watch (WW) Technology can process these events in near real time (less than a second) and disseminate the information over existing command and control channels immediately. This sensor, detecting from a variety of airborne platforms can cue other sensors or weapon systems to positively identify and neutralize the hostile weapon system. The basic sensor technology has been demonstrated as part of the Overwatch ACTD and has also been deployed to support current operations. At less than 30 pounds, it has flown on both manned and unmanned aircraft proving its ability to accurately detect at extended ranges while on the move. The Army Aviation Center is ready to integrate this technology on both manned and unmanned aircraft to provide both enhanced targeting and aircrew survivability. In concert with AMRDEC- Huntsville), PM UAV (Huntsville) and the Directorate of Combat Developments (Ft. Rucker), Radiance Technologies will provide simulation software and WW hardware to the USAAVNC for testing and certification through the Aviation Technical Test Center (AATTC). Radiance will employ aviation experts from both the Wiregrass area and Huntsville to develop the techniques, tactics and procedures to fully employ the capabilities of this system.

Online Arabic Language Learning Community: (USAIC Tracking Number LTO 09-03/APC RKD9/Amount: 925K) This is a language tool that is interactive multimedia and mission focused. In this case the mission is to respond and report to an IED event. This is the third in a series of language learning modules developed under the TALON platform developed by Little Planet Learning. The first was titled "Find a Suspect" and the second "Conduct a Census." Learning module topics throughout this ongoing project have been selected through a process of identifying language learning requirements by Army MI HUMINT operators. Feedback from the field is that these mission focused learning modules are of great benefit for HUMINT linguists.

Automated Communication Support System for Warfighters: (USAIC Tracking Number LTO 09-05/APC RKC9/Amount: 1.542M) This is new functionality to be developed for an existing information extraction software that is applied to live or taped audio. Specifically the software will be enhanced to automatically identify correctly among over 100 languages. The enormous amount of audio that has been recorded is far greater than the ability of the trained human linguist pool to fully exploit. Language identification (and other information extraction tools) are extremely important triage tools in order to fully exploit the intelligence in these materials. This software suite is the information extraction software of choice for NSA and the CIA. This Language Identification capability requirement was articulated by several entities within the Intelligence Community to include NSA.

Face Recognition Survey (actually Surveillance)System: Moving Vehicle Facial Recognition (USAIC Tracking Number 09-04/APC RKB9/Amount: 1.157M) This proof of concept is a facial recognition using a moving vehicle mounted camera as the capture device. Current facial recognition technology is limited a full frontal capture of the face, and is thus limited to ideal conditions. This experiment extends 2D to 3D Normalization of a face captured at less than ideal angles and incorporates the capture by the camera from a moving vehicle. This is an extremely important capability to develop in order to exploit the "face in the crowd" concept of facial capture/recognition.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605326A - Concepts Experimentation Program</b>	<b>PROJECT</b> <b>308</b>
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Technology for Rapid Foreign Language Acquisitions: (USAIC Tracking Number LTO 09-02/ APC RKA9/Amount: 1.157M). This proof of concept takes a new approach targeted to adults learning a second language. The MI Audience is MOS 35M who are interrogators who no longer institutionally learn a foreign language until their first reenlistment. The MI Corps has learned that rudimentary language skills in specific interviews topics is a must for these newly minted interrogators to function. The proposed language learning tool is designed to get an individual with a DLPT score of 0/0 to 1+/1+.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
UAV Gunfire Detection System (Congressional Add)	1545	800	
Online Arabic Language Learning Community - Pilot (Congressional Add)	776	925	
Automated Communication Support System for Warfighters (Congressional add)	1545	1540	
Face Recognition Survey System (Congressional add)	2318	1157	
Tech for Rapid Foreign Language Acquisitions (Congressional Add)		1157	
Synchronization and Visualization Tool for Battle Command (Congressional Add)			
Fingerprint Capture Device (Congressional Add)	1932		
SBIR/STTR		161	
<b>Total</b>	<b>8116</b>	<b>5740</b>	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605326A - Concepts Experimentation Program</b>		<b>PROJECT</b> <b>312</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
312 Army/Joint Experimentation	18916	10452	11759

**A. Mission Description and Budget Item Justification:** A. Mission Description and Budget Item Justification: The Army Experimentation mission enables integrated examinations with US Joint Forces Command (USJFCOM), Army Test and Evaluation Command (ATEC), Research, Development, and Experimentation Command (RDECOM), Army battle laboratories, operational units, research labs, materiel developers, industry and academia to collaborate in the development, refinement, and assessment of future force concepts. The intended outcome of this integrative effort is to develop concept capability plans that inform the Capabilities Integration Development System (CIDS) process and define future requirements, enabling identification and acquisition of critical Doctrine, Organization, Training, Materiel, Leader Development, Personnel and Facilities (DOTMLPF) capabilities for the future force to provide land power capabilities needed by Joint and Army commanders. In FY 2009, RDT&E funding specifically enables Subordinate Command Experiments, Support Brigade Experiments, and the World Class Blue Force (subject matter experts overseeing and coordinating experiments efforts from ARCIC proper in collaboration with the Schools and Centers). Program supports enhanced situational awareness, planning requirements, employment and management of accelerated decision cycles in a network-enabled force, and training requirements of new and emerging technologies.

(FY 2008 only) Asymmetric Warfare mission (previously referred to as Spiral Developments program) provides rapid capability development and the insertion of new warfighting capabilities into deployed Army units. Two significant problem sets exist in this area for the Army and TRADOC. First, there is a significant difference between the way Army forces are operating in the field and the way they were designed to operate. Secondly, there is a fast-growing backlog of capabilities that need to be assessed in terms of how well those capabilities are doing what they were intended to do. These two problem sets have never been more evident and critical than today, when the pace at which units and technology are evolving is being driven by the need to adapt to an enemy that not only employs asymmetric means, but also quickly adjusts to our own changes. This creates significant challenges for TRADOC - challenges of integrating key activities across DOTMLPF associated with accelerated capabilities development. Specific examples include integrating those activities that support the full spectrum of complex operations associated with asymmetric warfare in the areas of defeating improvised explosive devices (IED), Electronic Warfare (EW), Information Operations (IO) and Force Protection (FP).

Asymmetric Warfare funding has been transferred to from Project 312 to Project 317 in FY09 - FY13.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Experimentation - World Class Blue Force analysts	3300	3376	3162
Experimentation - Maneuver Brigade Experiments will address 1) integration of Heavy-Brigade Combat Teams (H-BCT)s with spin out capabilities; 2) integration of Interim Brigade Combat Team (IBCT) /Stryker Brigade Combat Team (SBCT) with Future Brigade Combat Team (FBCT) and H-BCTs with spin out capabilities; 3) development of future IBCT, SBCT and HBCT capability DOTMLPF requirements and DOTMLPF solutions and 4) acceleration and integration of capabilities for current force BCTs.			1003
Experimentation - Support Brigade Experiments addresses basic issues such as organization, how-to-fight, and how-to-Command and Control (C2) to refine and detail the concept as well as develop the required capabilities across the DOTMLPF imperatives. Addresses integration - both within Army organizations and across Joint interdependencies.			

<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R2a Exhibit)</b>		<b>May 2009</b>	
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>	<b>PROJECT</b>	
<b>6 - Management support</b>	<b>0605326A - Concepts Experimentation Program</b>	<b>312</b>	
Experimentation - Air Assault Expeditionary Force Experiment (AAEF)			
Experimentation - Functional Enabling Experiments designed to address Combat health, Airlift Capabilities and Supply Support for the Future Modular Force	437	423	
Experimentation - This mission replicates the Operational Environment to competitively challenge Blue concepts and strategies in each TRADOC experiment. Without the Red Cell effort, experiments and concept information would not be valid because the Operational Environment and threat representation would be untested against credible threats.		1400	1400
Experimentation - Subordinate Command Experiments designed to address Future Modular Force operational maneuver from strategic distances and intra-theater operational maneuver when capabilities are degraded or absent	812	1044	
Experimentation - Air/Ground Distribution			
Experimentation - Support Brigade Experiments designed to provide situational awareness and enables situation understanding to all echelons in all conditions conducting complex and urban terrain and multinational operations	795	3917	
Capstone Integration - Provides ramp up costs in support of the Army Concept Development and experimentation Campaign Plan (ACDEP) Phase I Capstone Experiment to include modeling and simulation enhancements; scenario environment modifications; hardware and software upgrades that require approximately 9-12 months of development. Experiment designed to conclude Phase I of the ACDEP with a major experiment demonstrating initial 2017 Future Force capabilities for the Joint Warfighter; these findings will provide the foundation to support transitioning compelling capabilities to the Current Force, including Current Force capability gaps and spinout of Future Combat Systems (FCS) capabilities to 2010 Modular-Brigade Combat Team (M-BCT).			6194
Asymmetric Warfare - Improvised Explosive Device Defeat (IED-D) Integrated Concept Development Team (ICDT)	6200		
Asymmetric Warfare - Sniper Defeat ICDT	4305		
Asymmetric Warfare - Electronic Warfare - Base Expeditionary Target and Surveillance System Combined (BETSS-C)	544		
Asymmetric Warfare - Information Operations	1500		
Asymmetric Warfare - Control, Communications, Computers and Intelligence, Surveillance and reconnaissance (C4ISR)	1023		
Small Business Innovative Research/Small Business Technology Transfer Programs		292	
<b>Total</b>	<b>18916</b>	<b>10452</b>	<b>11759</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605326A - Concepts Experimentation Program</b>		<b>PROJECT</b> <b>317</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
317 CURRENT FORCE CAPABILITY GAPS		15839	9694

**A. Mission Description and Budget Item Justification:** Asymmetric Warfare - Asymmetric Warfare - Integrating events such as the Comprehensive Force Protection Initiative (CFPI) mandated by the Assistant Secretary of the Army will support Force Protection, Soldier Protection, and Network Information Assurance and provide enhanced warfighting capabilities. These enhanced capabilities improve warfighting effectiveness, improve the survivability, and reduce the vulnerability of the Army's current force. Demonstrations will assess near term technologies (next 6-18 months) that could potentially support the war effort by working to identify gaps and prescribe changes to protect soldiers and convoys from threats such as Improvised Explosive Devices (IED). These demonstrations also allow decision makers to view what off-the-shelf technology capabilities are available today, from a host of vendors that could be used in near to midterm operations for all overseas contingencies. Additionally, these integrating events will provide comprehensive plans (with alternative options) for solving capability shortfalls in the Army's current force and approaches for engagement with Army, and Joint communities as related to the development of selected new warfighting capabilities.

NOTE: This is not a new program. FY 08 funds for this project were in project 312.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Improvised Explosive Device (IED) Integrated Concept Development Team		5892	3653
Sniper Defeat Integrated Concept Development Team		3500	2012
Demo/Assess Electronic Warfare - Base Expeditionary Target and Surveillance System Combined (BETSS-C)		2003	1550
Demo/Assess Information Operations		1200	744
Demo/Assess Command and Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR)		2800	1735
Small Business Innovative Research/Small Business Technology Transfer Programs		444	
<b>Total</b>		<b>15839</b>	<b>9694</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605326A - Concepts Experimentation Program</b>		<b>PROJECT</b> <b>33B</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
33B SOLDIER-CENTERED ANALYSES FOR THE FUTURE FORCE	1841	1887	1992

**A. Mission Description and Budget Item Justification:** This project will provide early application of human performance and human figure modeling tools in the development of Soldier-focused requirements to shape technology for Army Transformation. Design analyses, constructive simulations and Soldier-in-the-loop assessments will ensure that manpower requirements, workload and skill demands are considered, avoid information and physical task overloads, and take optimum advantage of aptitudes, individual and collective training, and numbers of Soldiers for an affordable Future Force. 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 project is performed by the Army Research Laboratory (ARL).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide dedicated modeling and analysis cell for early and accurate Manpower and Personnel Integration (MANPRINT) estimates to Army Materiel Command (AMC), AMC Research, Development, and Engineering Command (RDECOM) and its Research, Development, and Engineering Centers (RDECs), TRADOC Centers, Schools and Battle Laboratories, Army Test and Evaluation Command (ATEC) and other service laboratories. In FY08, used quantitative analysis methods to quantify risks in MANPRINT assessment documents for highest-priority systems, based on user and developer community prioritization. In FY09, will apply cross domain MANPRINT risk (i.e. manpower, personnel, training, systems engineering, safety) tradeoff tools to the user, acquisition and test & evaluation (T&E) communities for more cost effective risk mitigation. In FY10, develop approaches to improve integration of Human System Integration (HSI) and T&E risks based on greater use of human performance modeling and simulation.	1121	1140	1228
Provide MANPRINT Manpower, Personnel and Training (MPT) force requirements determination support to TRADOC on selected systems. In FY08, provided analyses of Soldier MPT and Soldier-System performance. In FY09, develop approaches to providing MPT input to tailored and rapid acquisition. In FY10, will increase the efficiency of MPT analyses by increasing use of modeling.	720	743	764
Small Business Innovative Research/Small Business Technology Transfer Program		4	
<b>Total</b>	<b>1841</b>	<b>1887</b>	<b>1992</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605601A - ARMY TEST RANGES AND FACILITIES</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
F30 ARMY TEST RANGES & FACILITIES	349886	346431	354693

**A. Mission Description and Budget Item Justification:** This project provides the institutional funding required to operate the developmental test activities, in accordance with Section 232 of the FY2003 National Defense Authorization Act (NDAA), required by Department of Defense (DoD) Program Executive Officers, Program and Product Managers, and Research, Development, and Engineering Centers. This project provides resources to operate six elements of the DoD Major Range and Test Facility Base (MRTFB): White Sands Missile Range (WSMR), New Mexico; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; and Yuma Proving Ground (YPG), Arizona, Cold Regions Test Center (CRTC), Fort Greely, Alaska and Tropic Regions Test Center (TRTC) at various locations. This project also funds the Army's developmental test capability at Aviation Technical Test Center (ATTC), Fort Rucker, Alabama; and Redstone Technical Test Center (RTTC), Redstone Arsenal, Alabama. Test planning and safety verification at Headquarters, U.S. Army Developmental Test Command (DTC), Aberdeen Proving Ground, Maryland is also supported by this program element.

This project finances the overhead (institutional) test operating costs not appropriately billed to test customers, test infrastructure/capability sustainment requirements, replacement of test equipment, test operating procedures, and test revitalization/upgrade projects to maintain current testing capabilities and improvements to safety, environmental protection, efficiency of test operations, and technological advances. The developmental test capabilities at these test ranges have been uniquely established, are in place to support test and evaluation (T&E) requirements of funded weapons programs, and are required to assure technical performance, adherence to safety requirements, reliability, logistics supportability, Title 10 Live Fire Test and Evaluation and quality of materiel in development and in production.

In accordance with the FY03 NDAA, this project funds the indirect test costs associated with the rapid testing of systems and equipment needed in support of the Long War Against Terrorism, such as Individual soldier protection equipment and Counter Measures for Improvised Explosive Devices (IEDs) and uparmoring the Army's wheeled vehicle fleet. This project sustains the developmental Test & Evaluation capability required to support Army as well as Joint Service or Other Service systems, materiel, and technologies. Types of systems scheduled for developmental testing include; Aircraft, Air Delivery, Unmanned Aerial Systems, Unmanned Ground Vehicles, Engineering Equipment, Direct fire, Indirect fire, Nonlethal weapons, Ammunition, Automotive Systems, Intelligence Surveillance and Reconnaissance, Ground Soldier Systems, Missiles, Rockets, Directed Energy Weapons, Network Centric and Command, Control, and Communication.

Specific systems supported in FY08 with continued support in FY09 include: Future Combat Systems (FCS), other weapon systems such as: up-armoring vehicle ballistic protection on route clearance vehicles, Family of Medium Tactical Vehicles Long Term Armor Strategy (FMTV LTAS), and Joint Light Tactical Vehicle (JLTV); Stryker upgrades; armor gun shields for tactical vehicles; reactive and active armor; Personnel Screening Systems; the Mine Resistant Ambush Protected (MRAP)Vehicles; Future Combat Systems (FCS) Manned Ground Vehicles; Counter-Rocket Artillery Mortar (C-RAM); High Mobility Artillery Rocket System (HIMARS); Guided Multiple Launch Rocket System (GMLRS) Unitary Rocket; Unattended Ground Sensors; Intelligence Surveillance and Reconnaissance (ISR); Counter Remote Control IED (RCIED) Electronic Warfare (CREW); Warfighter Information Network Tactical (WIN-T); Distributed Common Ground System - Army (DCGS-A); Aerial Common Sensor (ACS); Non Line-of-Sight Launch System (NLOS-LS); Body Armor; High Mobility Multipurpose Wheeled Vehicle (HMMWV); Aviation Transformation (AH-64 Block III, Recon Helicopter, UH-60M Upgrade, JCA); aviation protection systems (Common Missile Warning System (CMWS) and Advanced Threat Infrared Countermeasure (ATIRCM)); missile defense (PAC-3, Terminal High Altitude Area Defense (THAAD), Surfaced Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM), Joint Land Attack



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

**6 - Management support**

**0605601A - ARMY TEST RANGES AND FACILITIES**

Cruise Missile Defense Elevated Netted Sensor System (JLENS)); Unmanned Aerial Systems (Tactical Unmanned Aerial Vehicle, Micro Air Vehicle, Raven B, Extended Range Multi-Purpose, Hunter) , and Unmanned Ground Vehicles (Rabbit, DOK-ING MV-4, MARCBot, PackBot, SWORDS, Talon, Autonomous Navigation System, FCS Class I and IV).

Direct costs are borne by materiel developers in accordance with DoD Directive 3200.11 and DoD Financial Management Regulation 7000.14R.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605601A - ARMY TEST RANGES AND FACILITIES</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	355715	342079	339158
Current BES/President's Budget (FY 2010)	349886	346431	354693
Total Adjustments	-5829	4352	15535
Congressional Program Reductions		-1148	
Congressional Recissions			
Congressional Increases		5500	
Reprogrammings	372		
SBIR/STTR Transfer	-6201		
Adjustments to Budget Years			2631

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605601A - ARMY TEST RANGES AND FACILITIES</b>		<b>PROJECT</b> <b>F30</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
F30 ARMY TEST RANGES & FACILITIES	349886	346431	354693

**A. Mission Description and Budget Item Justification:** This project provides the institutional funding required to operate the developmental test activities, in accordance with Section 232 of the FY2003 National Defense Authorization Act (NDAA), required by Department of Defense (DoD) Program Executive Officers, Program and Product Managers, and Research, Development, and Engineering Centers. This project provides resources to operate six elements of the DoD Major Range and Test Facility Base (MRTFB): White Sands Missile Range (WSMR), New Mexico; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; and Yuma Proving Ground (YPG), Arizona, Cold Regions Test Center (CRTC), Fort Greely, Alaska and Tropic Regions Test Center (TRTC) at various locations. This project also funds the Army's developmental test capability at Aviation Technical Test Center (ATTC), Fort Rucker, Alabama; and Redstone Technical Test Center (RTTC), Redstone Arsenal, Alabama. Test planning and safety verification at Headquarters, U.S. Army Developmental Test Command (DTC), Aberdeen Proving Ground, Maryland is also supported by this program element.

This project finances the overhead (institutional) test operating costs not appropriately billed to test customers, test infrastructure/capability sustainment requirements, replacement of test equipment, test operating procedures, and test revitalization/upgrade projects to maintain current testing capabilities and improvements to safety, environmental protection, efficiency of test operations, and technological advances. The developmental test capabilities at these test ranges have been uniquely established, are in place to support test and evaluation (T&E) requirements of funded weapons programs, and are required to assure technical performance, adherence to safety requirements, reliability, logistics supportability, Title 10 Live Fire Test and Evaluation and quality of materiel in development and in production.

In accordance with the FY03 NDAA, this project funds the indirect test costs associated with the rapid testing of systems and equipment needed in support of the Long War Against Terrorism, such as Individual soldier protection equipment and Counter Measures for Improvised Explosive Devices (IEDs) and uparmoring the Army's wheeled vehicle fleet. This project sustains the developmental Test & Evaluation capability required to support Army as well as Joint Service or Other Service systems, materiel, and technologies. Types of systems scheduled for developmental testing include; Aircraft, Air Delivery, Unmanned Aerial Systems, Unmanned Ground Vehicles, Engineering Equipment, Direct fire, Indirect fire, Nonlethal weapons, Ammunition, Automotive Systems, Intelligence Surveillance and Reconnaissance, Ground Soldier Systems, Missiles, Rockets, Directed Energy Weapons, Network Centric and Command, Control, and Communication.

Specific systems supported in FY08 with continued support in FY09 include: Future Combat Systems (FCS), other weapon systems such as: up-armoring vehicle ballistic protection on route clearance vehicles, Family of Medium Tactical Vehicles Long Term Armor Strategy (FMTV LTAS), and Joint Light Tactical Vehicle (JLTV); Stryker upgrades; armor gun shields for tactical vehicles; reactive and active armor; Personnel Screening Systems; the Mine Resistant Ambush Protected (MRAP)Vehicles; Future Combat Systems (FCS) Manned Ground Vehicles; Counter-Rocket Artillery Mortar (C-RAM); High Mobility Artillery Rocket System (HIMARS); Guided Multiple Launch Rocket System (GMLRS) Unitary Rocket; Unattended Ground Sensors; Intelligence Surveillance and Reconnaissance (ISR); Counter Remote Control IED (RCIED) Electronic Warfare (CREW); Warfighter Information Network Tactical (WIN-T); Distributed Common Ground System - Army (DCGS-A); Aerial Common Sensor (ACS); Non Line-of-Sight Launch System (NLOS-LS); Body Armor; High Mobility Multipurpose Wheeled Vehicle (HMMWV); Aviation Transformation (AH-64 Block III, Recon Helicopter, UH-60M Upgrade, JCA); aviation protection systems (Common Missile Warning System (CMWS) and Advanced Threat Infrared Countermeasure (ATIRCM)); missile defense (PAC-3, Terminal High Altitude Area Defense (THAAD), Surfaced Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM), Joint Land Attack

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Cruise Missile Defense Elevated Netted Sensor System (JLENS)); Unmanned Aerial Systems (Tactical Unmanned Aerial Vehicle, Micro Air Vehicle, Raven B, Extended Range Multi-Purpose, Hunter) , and Unmanned Ground Vehicles (Rabbit, DOK-ING MV-4, MARCBot, PackBot, SWORDS, Talon, Autonomous Navigation System, FCS Class I and IV).		
Direct costs are borne by materiel developers in accordance with DoD Directive 3200.11 and DoD Financial Management Regulation 7000.14R.		

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Mission Support. Funds support test equipment upgrades and maintenance; test facility maintenance; routine calibration; handling and disposal of hazardous materials, transportation, postage, administrative supplies; tools; software; spare parts; test support vehicle maintenance; mission unique installation costs; temporary duty/training of civilian and contractor personnel; printing and reproduction; utilities; communications; land leases; and range road maintenance. Funding supports indirect cost previously paid by the customer for which funding was realigned, as approved by Assistant Secretary of the Army for Acquisition, Logistics and Technology and validated by Deputy Assistant Secretary of the Army for Cost and Economics, from the Army PEO/PMs and non-Army DOD customers.	135373	115912	124464
T&E Civilian Pay. This funding supports the overhead costs of the civilian labor for Program Budget Guidance (PBG) authorizations. The balance is customer funded. The test customer pays all direct costs that are directly attributable to the use of a test facility or resource for testing of a particular program. Funding is essential to maintain core T&E skills as part of the Government civilian workforce.	124606	130836	143642
Contractor Pay. This funding supports contractor labor costs not appropriately billable to the customer. Contract labor is essential to augment core civilian T&E personnel. Functions performed include range operations, automotive test support, radar maintenance, warehousing support, project management, maintenance of support fleet aircraft, recurring/general maintenance to test facilities and data acquisition support. Funding supports contractor efforts related to mission support.	79907	78368	86587
Revitalization/Upgrade of test infrastructure and capabilities. MRTFB elements are required to use institutional funding to sustain, upgrade or create capabilities that support multiple customers. For FY08 through FY09 funding will be focused on improving test and evaluation capabilities for distributed test operations, joint and Army network centric testing.	10000	10000	
Congressional Add: The purpose of the WSMR test support infrastructure darning and trafficability study is to conduct a study resulting in an analysis of the road infrastructure and an operations and maintenance plan including funding strategies for the long term sustainment of the range road infrastructure and to repair degraded road sections. In addition, the DTC Distributed Test Coordination Cell will support needed maintenance and repair of the facility to include upgrade of physical facilities, power distribution and communications wiring required to support operations		5500	
Small Business Innovative Research/Small Business Technology Transfer Programs		5815	
<b>Total</b>	<b>349886</b>	<b>346431</b>	<b>354693</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605602A - Army Technical Test Instrumentation and Targets</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
Total Program Element (PE) Cost	89281	80705	72911
628 Developmental Test Technology & Sustainment	55997	48401	43774
62B OPERATIONAL TESTING INSTRUMENTATION DEVELOPMENT		2741	
62C MODELING AND SIMULATION INSTRUMENTATION	33284	29563	29137

**A. Mission Description and Budget Item Justification:** Effective FY09, 62B and 62C were combined into one line - 62C - to accurately reflect the interwoven use of both Modeling and Simulation (M&S) and instrumentation in support of operational and developmental testing.

This Program Element provides critical front-end investments for development of new test methodologies; test standards; advanced test technology concepts for long range requirements; future test capabilities; advanced development of M&S and instrumentation prototypes; and the full development of systems for the United States Army Test and Evaluation Command (ATEC), which includes the Developmental Test Command (DTC) at Aberdeen Proving Ground, Maryland and the Operational Test Command (OTC) at Ft Hood, Texas. DTC consists of seven Test Centers: Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; White Sands Missile Range (WSMR), New Mexico; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; Yuma Proving Grounds (YPG), Arizona (including the Cold Regions Test Center (CRTC), Fort Greely, Alaska and the Tropics Regions Test Center, at various locations); Aviation Technical Test Center (ATTC), Fort Rucker, Alabama; Redstone Technical Test Center (RTTC), Redstone Arsenal, Alabama; and Dugway Proving Ground (DPG), Utah. OTC consists of four forward Test Directorates (Airborne Special Operations Test Directorate, Fort Bragg, North Carolina; Air Defense Artillery Test Directorate, Fort Bliss, Texas; Fire Support Test Directorate, Fort Sill, Oklahoma; and Intelligence Electronic Warfare Test Directorate, Fort Huachuca, Arizona) together with five other Test Directorates (Aviation; Maneuver; Battle Command and Computers; Engineer and Combat Support; and Future Force) at Ft Hood, Texas. These capabilities support the development and fielding cycle of the Army Transformation as well as Joint Vision 2020 initiatives. Sustainment funding maintains existing testing capabilities at both DTC and OTC by replacing unreliable, uneconomical, and irreparable instrumentation, as well as incremental upgrades of hardware and software for M&S and instrumentation systems to assure adequate test data collection capabilities. This data supports acquisition milestone decisions for all commodity areas throughout the Army including programs such as the Mine Resistant Ambush Protected (MRAP) vehicles, Future Combat Systems (FCS), Terminal High Altitude Area Defense (THAAD), Patriot Advanced Capability Phase 3 (PAC 3), Mobile Gun System (MGS), Warfighter Information Network - Tactical (WIN-T), Joint Tactical Radio System (JTRS), Net Enabled Command Capability (NECC), and the Army Battle Command System (ABCS) with includes Force XXI Battle Command Brigade and Below (FBCB2)/Blue Force Tracking (BFT). This Program Element develops and sustains developmental and operational test capabilities that provide key support to the Army's Transformation. In addition this Program Element supports the Long War Against Extremist Movements by providing instrumentation to support ATEC's 24/7 mission at YTC, Arizona, WSMR, New Mexico and ATC, Maryland - supporting the Joint Improvised Explosive Device Defeat Organization (JIEDDO) - as well as efforts throughout ATEC in support of the Army's Rapid Equipping the Force (REF) initiative.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605602A - Army Technical Test Instrumentation and Targets</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	85862	74624	73908
Current BES/President's Budget (FY 2010)	89281	80705	72911
Total Adjustments	3419	6081	-997
Congressional Program Reductions		-269	
Congressional Rescissions			
Congressional Increases		6350	
Reprogrammings	5703		
SBIR/STTR Transfer	-2284		
Adjustments to Budget Years			-997
Congressional Adds			
<ol style="list-style-type: none"> <li>1. \$2.4 Million Dugway Lidar and Modeling Improvements</li> <li>2. \$1.2 Million Mobile Optical Tracking System (MOTS)</li> <li>3. \$2.0 Million Joint Urban Environment Test Capability--OSD CTEIP</li> <li>4. \$750 Thousand Enhanced Robotic Manipulators for Defense Applications</li> </ol>			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605602A - Army Technical Test Instrumentation and Targets</b>		<b>PROJECT</b> <b>628</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
628      Developmental Test Technology & Sustainment	55997	48401	43774

**A. Mission Description and Budget Item Justification:** This program provides critical front-end investments for development of new test methodologies, test standards, advanced test technology concepts for long range requirements, future test capabilities, and advanced instrumentation prototypes for the United States Army Developmental Test Command (DTC), a subordinate command of the Army Test and Evaluation Command (ATEC), which includes: Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; White Sands Missile Range (WSMR), New Mexico; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; Yuma Proving Ground (YPG), Arizona (including the Cold Regions Test Center (CRTC), Fort Greely, Alaska and the Tropic Regions Test Center, at various locations); Aviation Technical Test Center (ATTC), Fort Rucker, Alabama; Redstone Technical Test Center (RTTC), Redstone Arsenal, Alabama; and Dugway Proving Ground (DPG), Utah. These capabilities are required to support developmental testing requirements of high priority Army systems being rapidly fielded to Iraq and Afghanistan, and those systems supporting Army Transformation.

A key element is sustaining aging instrumentation which maintains existing capabilities at test facilities by replacing unreliable, uneconomical and irreparable instrumentation, as well as incremental upgrades of instrumentation and software, reducing their average age to assure adequate testing capabilities. This project develops and sustains developmental test instrumentation and capabilities that provide the data necessary to support acquisition milestone decisions for all commodity areas throughout the Army and in direct support of all Army Transformation Elements. A series of projects refurbishes and improves Kineto Tracking Mounts and Range Radars at multiple test ranges used for aircraft, missile and air drop tests. In addition, a common field data collection instrument will be customized to collect a wide variety of performance data for various test commodities.

Another key element within this program is building the Army's network-centric test capability. This capability recognizes advances in network-centric warfare and enabling technologies for Mobile Ad Hoc Networking (MANET). In addition, DoD guidance (CJCSI 6212) mandates the certification of joint C4ISR-equipped systems as net-ready in accordance with the four pillars of Net-Ready Key Performance Parameters (NR-KPP) to enhance Interoperability and Information Assurance from a networked, system of system perspective. This capability will ensure that platforms are tested as nodes on the network while executing critical mission threads from end-to-end according to the Army's network model (platforms and sensors, applications, services, transport, and standards). A network of Distributed Test Control Centers (DTCCs), each connected to the Defense Research and Engineering Network (DREN), has been installed at each Army test range to bring all of the Army's test capabilities to bear on the complex challenge of system-of-systems testing. This technology investment follows Office of Secretary of Defense guidance for Test and Evaluation test architectures and test and training range interoperability.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provides command-level oversight, management and technical support for the DTC test technology and instrumentation investment accounts. Provides support to ATEC Capstone efforts in coordinating development of common instrumentation and technology needs for developmental and operational testing. Provides management and support costs for direct interface with the T&E Executive Agent, management of needs and solutions calls for T&E Reliance oversight, management of the Small Business Innovation Research (SBIR), and support of the Army principal of the Test Resource Advisory Group (TRAG).	4544	5074	4478
Develops, acquires and sustains critical test technology and instrumentation: Provides the necessary test instrumentation, computer and	37873	39693	38658

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BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management support</b>	<b>0605602A - Army Technical Test Instrumentation and Targets</b>		<b>628</b>
communications systems, data collection, analysis and reporting equipment and other test capabilities to successfully develop and test the Army weapons and equipment. Provides the necessary live, virtual and constructive environment, hardware-in-the-loop capabilities and models and simulations needed for testing the Army materiel. Acquires instrumentation for reliability, availability and maintainability data collection on tracked and wheeled vehicles; ballistic transducers for measuring chamber pressures during ammunition tests; supports development of common data collection instrumentation used in testing across all test commodity areas; acquires instrumentation for electromagnetic environment effects on ground and air systems; continues replacement and upgrade of range control instrumentation, radar, optics and telemetry equipment used in missile testing; acquires data recorders, signal conditioning equipment, data processing equipment and other instrumentation for various aircraft tests; upgrades natural environments test instrumentation used for testing weapon systems, vehicles, munitions and support equipment in extreme hot desert environments as well as extreme cold conditions; continues upgrade of survivability/vulnerability test capabilities in support of live fire and active protection systems; upgrades and replaces mobile range communications equipment and digital end devices; and develops advanced test technologies and instrumentation for testing next generation materiel such as advanced armor protection, multi-spectral sensors, and advanced soldier systems. Updates the frequency surveillance capability at YPG to ensure a clean radio frequency (RF) environment for testing. Recapitalizes the Antenna test range to continue measuring communication equipment performance. Upgrades Kineto Tracking Mounts at WSMR and YPG.			
Developed models, simulation, and distributed testing capabilities in the past several years to meet highly complex net-centric test environment. As the models and simulation (M&S) matured and as we continue to improve on the technology, we are able to integrate the M&S into the range infrastructure, and they have become part of the integrated solution for testing. M&S is no longer a stand-alone capability but combined into the above critical test technology and instrumentation program as they continue to be developed, acquired, and sustained.	13580		
Army Test and Evaluation Command (ATEC) Common Test Technology for Developmental Testing, Operational Testing, and Evaluation. Provides support for development of the Versatile Information System Integrated, On-line (VISION) Digital Library to enable a centrally accessible repository for test data; accreditation of ATEC Test Integration Network (ATIN) infrastructure to allow distributed, systems-of-systems testing; development of a Test and Evaluation Enterprise Architecture to facilitate use of common tools and standards; support for critical Test Technology Domain Focus Areas of Instrumentation, Modeling and Simulation, Threats, Data Management, and Networks; and support, implementation of ATEC Regulation 70-15 ("Acquisition and Management of Test Technology Assets") for development and implementation of common platforms, interfaces, and processes			638
Congressional Adds: The current Light Detection and Ranging (LIDAR) systems do not provide the full range of aerosol cloud characterization capability necessary to address the Chemical/Biological test requirements. Dugway M&S software is being developed to provide an understanding of how threat clouds affect systems under test such as detectors and shelters as they evolve on the battlefield and in urban environments driven by meteorology and terrain. The purpose of this project is to build one or more LIDAR referee systems to develop elastic backscatter LIDAR calibration procedures and models, and to merge multiple LIDAR and other referee system data with atmospheric dispersion and LIDAR models, to generate the best possible aerosol cloud characterization and tracking, and to extrapolate test results to realistic battlefield scenarios		2400	
Funding for the Small Business Innovative Research/Small Business Technology Transfer Programs		1234	
<b>Total</b>	<b>55997</b>	<b>48401</b>	<b>43774</b>



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**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605602A - Army Technical Test Instrumentation and Targets</b>		<b>PROJECT</b> <b>62B</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
62B OPERATIONAL TESTING INSTRUMENTATION DEVELOPMENT		2741	

**A. Mission Description and Budget Item Justification:** This project provides for the technical development, enhancement, upgrade and maintenance of essential non-major instrumentation related technology programs. The various projects will achieve cost effective data collection, data reduction, data analysis, telemetry, and processing capability in support of robust and credible operational tests as required by the Department of Defense (DOD) and Congress. The increased sophistication of the Army's new weapons as well as communication and control systems demands new instrumentation's ability to capture test data non-intrusively. The data must be collected at high rates and in massive volumes. After the essential data is collected, it must be reduced to the essential elements necessary for effective evaluation. As the Army's digitization and transformation of the battlefield continues, this development effort allows Army Test and Evaluation Command's Operational Test Command (OTC) to modernize and develop its non-major instrumentation to be more robust, reliable and less intrusive in terms of integrating automated instrumentation during operational tests. The goal is to expand data collection, reduction, and analysis of the collected data and test control capability, while reducing future operational test costs. This project supports multiple instrumentation development efforts leading to improved command and control, increased mobility, expanded remote data collection from various tactical sites. In many instances instrumentation must have a transmission capability to central receiving, control, and evaluation stations at various test directorates, and the capability to support Real-Time Casualty Assessments which measures simulated attrition of forces during simulated battlefield engagements. OTC's test directorates are located at Fort Hood, TX, Fort Bragg, NC, Fort Bliss, TX, Fort Huachuca, AZ, and Fort Sill, OK. These programs support Operation Iraqi Freedom (OIF), Operation Enduring Freedom (OEF), and the Current to Future transition path of the Transformation Campaign Plan. Beginning FY 2008 funding from PE Number 0605602A Project 62B for modeling, simulation, and instrumentation development and the subsequent sustainment of all systems are identified under the PE line 0605602A Project 62C.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Small Business Innovative Research/Small Business Technology Transfer Programs		77	
FY09 Planned Program: ExCIS, Performance Instrumentation Systems, Time Space Position Information (TSPI) and Telemetry Systems, Network Control Systems and Data Management, and Imaging System technology categories: Network Instrumentation Test Systems, Family of Digital Data Collectors Test Bed, IEW Test Operations Capability, Mobile Surveillance & Target Acquisition Radar, Multimedia Data Transfer System, Alternative Power Source for Future Combat System (FCS), ExCIS FSA, GPS Modernization, High Speed Data Recording System, Command Audio/Video Modernization, OT-TES Support, Quick Look Instrumentation Workstation, Secure Wide Band Satellite Common Link, and Digital Asset Management System.		2664	
Total		2741	

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**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605602A - Army Technical Test Instrumentation and Targets</b>			<b>PROJECT</b> <b>62C</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
62C MODELING AND SIMULATION INSTRUMENTATION	33284	29563	29137	

**A. Mission Description and Budget Item Justification:** Funding in this program element develops, enhances, and sustains the Army Test and Evaluation Command's (ATEC) on- going and future technology projects related to all Modeling, Simulation and Instrumentation (MS&I) systems necessary to test Future Combat System (FCS) and Future Force technology areas as outlined in Acquisition and Management of Test Technology Assets per ATEC Regulation 70-15, Table 1, 22 Mar 06, in the Domains and Contents of Instrumentation, Networks and Test Control, Simulation and Stimulation, and Data Management Systems. Execution of Major Programs will consist of Operational Test Tactical Engagements System (OT-TES); Test Technology Execution Center (TTEC) for M&S capability sustainment, enhancement, and integration capability; Intelligence Modeling and Simulation for Evaluation (IMASE) sustainment and development; Extensible C4I Instrumentation Systems-Fire Support Application (ExCIS-FSA) sustainment and development; Battle Command Network Integration and Simulation (BCNIS) [formerly OneSAF/CES - STORM Integration (Battle Command Systems Environment)]; Fuel Cell Systems; Operational Test Command (OTC) Analytic, Simulation and Instrumentation Suite (OASIS) Integration and Management; and execution of many non-major instrumentation projects that support T&E five domains. These systems use modeling and simulation to enhance the realistic operational environments by simulating supporting units and threat. The non-intrusive systems also collect data from the Systems Under Test (SUT) in harsh field conditions while platforms are moving and operating without impacting the SUT. All OT Technology Systems must be mobile, to the extent possible, to be used at all test locations. The systems are required for systems of systems level operational testing such as Mine Resistant Ambush Protective (MRAP) vehicles, Army Battle Command System (ABCS), Terminal High Altitude Area Defense (THAAD), Patriot Advanced Capability Phase 3 (PAC3), Warfight Information Network-Tactical (WIN-T), Joint Tactical Radio System (JTRS), Net Enhanced Command Capability (NECC), and others.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08 Accomplished Programs: The individual accomplished technology projects within all the domains as described in ATEC Regulation 70-15, Table 1, 22 Mar 06, include but are not limited to: Sustainment and Operations of all OTC Technology, ADATD Base Contract, OT-TES, ExCIS FSA, GPS Modernization, Mobile Surveillance and Target Acquisition Radar, IMASE, High-speed Data Recording System, Multimedia Data Transfer System, IEW Test Operation Capability, Next Generation Command Control Communications & Intelligent Engineering & Evaluation System, TTEC, OASIS JOSIE Integration, Family of Digital Data Collection Test Bed, and STORM.	30839		
Funds development of the Command, Control and Communication Driver (C3 Driver), Test and Evaluation Enterprise Architecture (TEEA), and ATEC Technology Tools. The C3 Driver supports the Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), ABCS 6.3, 6.4, Brigade Combat Team, JTRS, and WIN-T development and integration at the Central Technical Support Facility (CTSF) Fort Hood, TX and contractor locations as the Army's single DT C3 simulator/stimulator.	2445	2122	3235
FY09 and FY10 Planned Programs: Funds will be utilized for the development, upgrade and sustainment of high priority modeling, simulation, and instrumentation systems identified under the POM submission FY10-FY15. The following programs will be executed that will fall under the ATEC's domain categories shown above but are not limited to: OT-TES sustainment and minor upgrades, TTEC		26613	25902

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0605602A - Army Technical Test Instrumentation and Targets</b>	<b>62C</b>	
for M&S sustainment, upgrade, and integration of system of systems, Technology Base Support, ExCIS FSA, IMASE ISSS & ISGT, Fuel Cell, BCNIS, Secure Wide-Band Satellite Common Link, GPS Modernization, High-speed Digital Recording System, OASIS Integration.			
Small Business Innovative Research/Small Business Technology Transfer Programs		828	
<b>Total</b>		33284	29563

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# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605604A - Survivability/Lethality Analysis</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
675 Army Survivability Analysis & Evaluation Support	40693	40929	45016

**A. Mission Description and Budget Item Justification:** This project funds analytical products necessary for inherently-governmental Army Test & Evaluation Command/Army Evaluation Center's (ATEC/AEC) mission. Products result from investigating, analyzing, assessing, and reporting on the survivability of Soldiers, and on the survivability, lethality and vulnerability (SLV) of the highest priority Army systems whether those systems are employed during stability, support, defensive, or offensive missions. Developed through measurement, experiment, test support, and modeling and simulation (M&S), the products funded by this project are used in many ways to make the Army force more survivable. The project provides quantitative lethality and survivability analyses and data for fielded and developmental systems as the Army makes the required choices to decisively transform into a modular BCT based organization. Specific survivability analysis products include assessments of systems such as MRAP, Stryker, Future Combat System and associated spin-out systems, Army fire support systems, direct fire munitions; Army air defense and missile defense systems; Army aviation systems including Unmanned Aerial Vehicles; communications and other systems enabling network enabled battle command and computer network operations (CNO); and selected joint services systems particularly relevant to the Army's joint and expeditionary role. Products also include analysis and data concerning individual Soldier items including protective equipment such as helmets and vests. These survivability products are leveraged into rapid-equipping initiatives and other technical support for operational forces involved in the current fight. Continued development of these products also guarantees preservation of the Army's vitally needed technical corporate memory for expert survivability advice.

Survivability analysis products funded by this project are integrated across the spectrum of battlefield threats to include guns, missiles, mines and other methods of inflicting physical damage; jammers, countermeasures, and other electronic warfare techniques; information warfare attacks; and high and low power directed energy weapons. This survivability information permits developers, users, and decision makers to fully understand the technical details of the most important survivability tradeoffs for both systems and Soldiers. These technical survivability details enable properly informed decisions concerning systems and tactics that maximize both the combat power and survivability of Army forces. Survivability data and analysis results funded by this project are efficiently leveraged for many different Army uses, reducing total cost to the Army by eliminating the need for duplicative capabilities funded by individual system developers. Central funding of this mission assures the Army accurate and consistent treatment of survivability across all classes of systems, across all formal system Evaluations, and across the Army's AR 5-5 studies process. Work program is prioritized principally by the ATEC/AEC and is used by them in the Army's formal Evaluation process in such a way that ATEC can comply with its legally mandated responsibility to assess system survivability along with effectiveness and suitability. Program Managers (PM) and the Program Executive Officers (PEO) use the survivability analyses and data funded by this project to make design decisions that are optimized for survivability, to direct specific weapon system development efforts that are needed for survivability enhancement, and to structure product improvement programs. Soldier survivability data and analysis is leveraged to support the survivability portion of the HQDA G2 MANPRINT program. TRADOC combat developers exploit the survivability products funded by this project to initiate and improve survivability/lethality requirements, and to develop and refine doctrine and tactics. Also, the quantitative analytical results funded by the project are leveraged as core inputs to formal AR 5-5 studies and other studies as directed by Army leaders. While the Army is at war, analytical results funded by this project are also directly leveraged for survivability support to current operations. Finally, for particularly urgent or controversial survivability issues, data and analysis funded by this project are used directly by senior Army decision makers to assure technically sound program/production decisions.

This project also supports highly technical specialized information warfare and information operations survivability analysis of Army communications and electronic equipment and communications architectures essential to network enabled battle command. Supports ATEC and other electronic warfare vulnerability testers by developing and providing

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

**6 - Management support**

**0605604A - Survivability/Lethality Analysis**

highly technical specialized field countermeasure environments that threat forces may employ against Army air defense and other systems. In conjunction with PMs and Army intelligence agencies, analyzes technical vulnerabilities of foreign weapons, network related systems, and intelligence EW systems to U.S. Army Electronic Warfare (EW) systems. Without the survivability products funded by this project, ATEC would not have a technically credible account of survivability issues at milestone decision points and systems could be fielded with unknown vulnerabilities leading to unnecessary US casualties. PMs would make design choices that failed to properly optimize survivability, TRADOC would generate requirements that were not technically credible, and the Army studies process would rest on an inaccurate and inconsistent basis.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605604A - Survivability/Lethality Analysis</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	41681	41066	42456
Current BES/President's Budget (FY 2010)	40693	40929	45016
Total Adjustments	-988	-137	2560
Congressional Program Reductions	-266	-137	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-225		
SBIR/STTR Transfer	-497		
Adjustments to Budget Years			2560

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605604A - Survivability/Lethality Analysis</b>		<b>PROJECT</b> <b>675</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
675 Army Survivability Analysis & Evaluation Support	40693	40929	45016

**A. Mission Description and Budget Item Justification:** This project funds analytical products necessary for inherently-governmental Army Test & Evaluation Command/Army Evaluation Center's (ATEC/AEC) mission. Products result from investigating, analyzing, assessing, and reporting on the survivability of Soldiers, and on the survivability, lethality and vulnerability (SLV) of the highest priority Army systems whether those systems are employed during stability, support, defensive, or offensive missions. Developed through measurement, experiment, test support, and modeling and simulation (M&S), the products funded by this project are used in many ways to make the Army force more survivable. The project provides quantitative lethality and survivability analyses and data for fielded and developmental systems as the Army makes the required choices to decisively transform into a modular BCT based organization. Specific survivability analysis products include assessments of systems such as MRAP, Stryker, Future Combat System and associated spin-out systems, Army fire support systems, direct fire munitions; Army air defense and missile defense systems; Army aviation systems including Unmanned Aerial Vehicles; communications and other systems enabling network enabled battle command and computer network operations (CNO); and selected joint services systems particularly relevant to the Army's joint and expeditionary role. Products also include analysis and data concerning individual Soldier items including protective equipment such as helmets and vests. These survivability products are leveraged into rapid-equipping initiatives and other technical support for operational forces involved in the current fight. Continued development of these products also guarantees preservation of the Army's vitally needed technical corporate memory for expert survivability advice.

Survivability analysis products funded by this project are integrated across the spectrum of battlefield threats to include guns, missiles, mines and other methods of inflicting physical damage; jammers, countermeasures, and other electronic warfare techniques; information warfare attacks; and high and low power directed energy weapons. This survivability information permits developers, users, and decision makers to fully understand the technical details of the most important survivability tradeoffs for both systems and Soldiers. These technical survivability details enable properly informed decisions concerning systems and tactics that maximize both the combat power and survivability of Army forces. Survivability data and analysis results funded by this project are efficiently leveraged for many different Army uses, reducing total cost to the Army by eliminating the need for duplicative capabilities funded by individual system developers. Central funding of this mission assures the Army accurate and consistent treatment of survivability across all classes of systems, across all formal system Evaluations, and across the Army's AR 5-5 studies process. Work program is prioritized principally by the ATEC/AEC and is used by them in the Army's formal Evaluation process in such a way that ATEC can comply with its legally mandated responsibility to assess system survivability along with effectiveness and suitability. Program Managers (PM) and the Program Executive Officers (PEO) use the survivability analyses and data funded by this project to make design decisions that are optimized for survivability, to direct specific weapon system development efforts that are needed for survivability enhancement, and to structure product improvement programs. Soldier survivability data and analysis is leveraged to support the survivability portion of the HQDA G2 MANPRINT program. TRADOC combat developers exploit the survivability products funded by this project to initiate and improve survivability/lethality requirements, and to develop and refine doctrine and tactics. Also, the quantitative analytical results funded by the project are leveraged as core inputs to formal AR 5-5 studies and other studies as directed by Army leaders. While the Army is at war, analytical results funded by this project are also directly leveraged for survivability support to current operations. Finally, for particularly urgent or controversial survivability issues, data and analysis funded by this project are used directly by senior Army decision makers to assure technically sound program/production decisions.

This project also supports highly technical specialized information warfare and information operations survivability analysis of Army communications and electronic equipment and communications architectures essential to network enabled battle command. Supports ATEC and other electronic warfare vulnerability testers by developing and providing

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605604A - Survivability/Lethality Analysis</b>	PROJECT <b>675</b>
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highly technical specialized field countermeasure environments that threat forces may employ against Army air defense and other systems. In conjunction with PMs and Army intelligence agencies, analyzes technical vulnerabilities of foreign weapons, network related systems, and intelligence EW systems to U.S. Army Electronic Warfare (EW) systems. Without the survivability products funded by this project, ATEC would not have a technically credible account of survivability issues at milestone decision points and systems could be fielded with unknown vulnerabilities leading to unnecessary US casualties. PMs would make design choices that failed to properly optimize survivability, TRADOC would generate requirements that were not technically credible, and the Army studies process would rest on an inaccurate and inconsistent basis.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Conduct integrated survivability, lethality, vulnerability analyses for developmental aviation, ground, soldier and munition systems including JCA, MRAP, Stryker, GSS, Excalibur, IMS and MRM. In FY08, conducted LF testing and completed ballistic survivability/vulnerability analysis on 4/7 ARH subsystems before ARH program termination. Completed ballistic survivability/vulnerability analysis for MRAP T&E, GMLRS Unitary IOT&E and Excalibur LFT&E SET-P1 test events, which included providing pre-shot predictions, performing damage assessments after each live fire test, completing post-shot analyses, behind armor debris (BAD) test/analyses, and crew survivability analysis and providing technical data required by ATEC for the Systems Evaluation Reports. FY09-FY11 plans include conducting engineering and crew casualty analyses for MRAP "Lite", JLTV and PIM LFT&E test events. SLAD will conduct LF testing and ballistic survivability/vulnerability analyses for both the JCA and LB Apache Block III LFT&E test events and conduct HWIL investigations on JCA & LB Apache Block III. SLAD will conduct EW vulnerability assessments for IMS, MRM, Excalibur and JAGM. SLAD will conduct ballistic survivability/lethality analysis for Excalibur, MRM, JAGM, GMLRS Alternate Warhead Program (AWP) and Excalibur Increment 1b. SLAD will provide ballistic and non-ballistic survivability/vulnerability/lethality analysis support to new Army carbine program and provide technical data required by ATEC for the Systems Evaluation Report. Provide ballistic survivability/vulnerability analysis support to Army studies. This effort provides the Army Future Combat Systems stakeholders with comprehensive survivability, lethality, and vulnerability assessments and vulnerability reduction recommendations that will enhance these attributes of the system-of-systems. CONTINUED BELOW...	18958	19270	20800
...CONTINUED FROM BLOCK ABOVE. Advanced FCS technologies such as ActiveProtection Systems, hybrid propulsion, and advanced armors are evaluated through precision experimentation and modeling and simulation. Methodology enhancements for simulation of new FCS technologies and system-of-systems operational constructs will be performed as required. Ballistic vulnerability analyses were completed on four of the FCS Manned Ground Vehicles (MGV) in FY08 and the data was provided to the PM, LSI, and for use in Army studies. These data and other engineering support contributed to the system functional review and the initial preliminary design review. A survivability based functional analysis and functional decomposition contributed to the development of the system-of-systems specification. Soldier survivability assessments were completed, including one for the NLOS-C special interest project. Additional vulnerability analysis of MGV platforms will be conducted in FY09 and the data will contribute to two scheduled program milestones; the FCS SoSPDR and OSD DAB; and provide guidance to FCS teams for engineering design and networking. Planning and execution of congressionally mandated LFT&E programs will be performed in conjunction with ATEC and OSD DOT&E including armor coupon testing. Further analysis and LFTE activities will continue in FY10-11. Ballistic vulnerability analysis of the FCS MGV will be conducted in support of planned CDRs, LFT&E activities, and initial qualification tests. Network analysis efforts will also continue during this time frame. Findings and recommendations for survivability enhancements will be disseminated to appropriate FCS stakeholders.			
This effort produces assessments of the survivability of C4ISR systems in Electronic (EW) and Information Warfare (IW) threat environments and conducts Information assurance (IA) projects that reveal critical vulnerabilities in C4ISR systems. It also defines,	13528	14205	15410



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT						
<b>6 - Management support</b>	<b>0605604A - Survivability/Lethality Analysis</b>	<b>675</b>						
<p>demonstrates, and recommends mitigation options to proponents and evaluators of C4ISR. Survivability analyses conducted in FY08 reduced the vulnerability of C4ISR such as Warfighter Information Network-Tactical (WIN-T), Joint Tactical Radio System (JTRS), Single Channel Anti-Jam Man-Portable Terminal, Secure Mobile Anti-Jam Reliable Tactical Terminal and Single Channel Ground and Airborne Radio System Advanced System Improvement Program; ISR systems such as Global Broadcast System; C2 systems integral to air and missile defense systems; GPS components integrated with weapon systems; and software blocking architectures. An IW vulnerability database is maintained for the benefit of the community. Priority testing and analyses will be conducted from FY09-11 including EW/IA modeling, JTRS waveforms and hardware, WIN-T increment 2 and 3, ACS, DGCS-A, FCS, and software blocking. Modeling and simulation tools will be developed as required. Also from FY09-11 this project will continue to analyze the evolving EW threat to GPS as integrated into Army weapons. Capabilities will be developed to simulate and evaluate mobile ad-hoc networks which are critical to future Army mobile networks and during FY09-11 they will be used to analyze Army networks and enhance their survivability. This will include vulnerability analyses of tactical internet components to radio frequency directed energy weapons (RFDEW). System-of-Systems Common Operating Environment (SoSCOE) assessments are also conducted. An IA assessment of SoSCOE was conducted in FY08 and from FY09-11 IA testing and analysis of evolving SoSCOE versions, Battle Command software and T-AIDR, and FCS spinouts will be conducted.</p>								
<p>Conduct integrated survivability, lethality, vulnerability analyses for developmental air and missile defense systems, pre-planned product improvements of current systems, and recently fielded systems. These systems include the Ballistic Missile Defense System (BMDS), Terminal High Altitude Air Defense (THAAD), PATRIOT, Surface-Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM), Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), and Sentinel. In FY 08 SLAD developed state of the art hardware systems to test the PATRIOT system upgrades in countermeasure environments, conducted a risk assessment of the BMDS global communication networks, conducted extensive countermeasure testing and data analysis of the Sentinel radar and SLAMRAAM system, provided detailed recommendations for countermeasure and Information Assurance (IA) testing for the THAAD LUT, and provided detailed design plans to upgrade SLAD's target simulator to support FY 10 JLENS testing. FY 09 - 11 plans include providing the Missile Defense Agency (MDA) with assessments of BMDS Red/Blue IA testing, develop target simulator capability for extensive JLENS developmental testing, conduct additional SLAMRAAM countermeasure testing, provide test planning and conduct of Air and Missile Defense LUT activities, continued upgrade of extensive hardware assets providing realistic threat environments for system testing. In addition, SLAD will continue to provide survivability testing analyses and recommendations to Counter Rocket Artillery and Mortar (C-RAM) during spiral development, and provide innovative solutions and proof of principle testing to the Counter-MANPADS efforts.</p>					5400	5500	6606	
<p>System-of-systems survivability simulation (S4) - FY08: integrated higher-fidelity ballistics effects into S4 to enable analysis of threat effects in a mission context; FY09: extend S4 analytical capability by integrating engineering-level EW and CNO effects into the simulation; FY10: demonstrate MUVES3 V/L service to S4; This capability will enable SLV analysis of the networked-enabled future force. FY11: Continue to improve capability to simulate IW and EW attacks on network-centric battle commands.</p>					1238	1561	2200	
<p>Complete engineering design, site preparation work and concrete pad construction for rotorcraft Survivability Assessment Facility. This is a congressional add. Not a new start.</p>					1569			
<p>Small Business Innovative Research/Small Business Technology Transfer Programs</p>						393		
<b>Total</b>					<b>40693</b>	<b>40929</b>	<b>45016</b>	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605605A - DOD High Energy Laser Test Facility</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
E97 DOD HELSTF	8394	6813	2891

**A. Mission Description and Budget Item Justification:** The High Energy Laser Systems Test Facility (HELSTF) provides a one-of-a-kind, broad based high energy laser (HEL) test and evaluation capability which directly supports testing of laser variants of the Future Combat Systems (FCS). Specifically, HEL weapons will play a major role in the Counter Rockets, Artillery and Mortars (CRAM) initiative and can be a key component of the Future Force supporting Full Dimensional Protection. HELSTF is part of the Department of Defense (DoD) Major Range and Test Facility Base (MRTFB) and supports Tri-Service HEL research and development to include damage, vulnerability, propagation, and lethality laser testing as well as HEL weapon developmental and operational test and evaluation (DTE&OTE). The HELSTF's laser development support capabilities include a fully certified open-air HEL test range, test cells for bringing breadboard to brassboard test devices, fully integrated Command, Control, Communications & Intelligence (C3I) systems and a suite of beam directors to perform both static and dynamic tracking tests. Other capabilities include an extensive array of fully instrumented test sites, full laser meteorological support, and an approved site for above-the-horizon dynamic HEL testing certified for predictive avoidance by the Laser Clearing House. HELSTF's location on White Sands Missile Range (WSMR) provides unparalleled testing flexibility because of WSMR's 3200 square miles of controlled land mass and 7000 square miles of controlled airspace. This location also enables HELSTF to leverage the existing WSMR T&E infrastructure. Current HELSTF facilities include the Sea Lite Beam Director (SLBD), the Mid-Infrared Advanced Chemical Laser (MIRACL), the Large Vacuum Chamber (LVC) with associated Vacuum Test System (VTS), the Solid State Laser testbed, the Tactical High Energy Laser (THEL) testbed, and the Low Power Chemical Laser (LPCL). This multiple use facility supports testing of laser effects for targets ranging from material coupon testing up through full-scale static and dynamic targets, explosive targets, and testing of targets in a high altitude space environment. HELSTF has embarked on its own modernization to fully upgrade its mission control systems, develop state-of-the-art HEL diagnostic capabilities, data reduction, and a mobile HEL diagnostic test suite to support DTE and OTE for potential HEL weapons in the Army Future Force in all relevant combat environments.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605605A - DOD High Energy Laser Test Facility</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	8746	2835	2874
Current BES/President's Budget (FY 2010)	8394	6813	2891
Total Adjustments	-352	3978	17
Congressional Program Reductions	-56	-22	
Congressional Rescissions			
Congressional Increases		4000	
Reprogrammings	-52		
SBIR/STTR Transfer	-244		
Adjustments to Budget Years			17

Change Summary Explanation: Funding - FY 2009 - \$4.000 million increase for congressional add.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605605A - DOD High Energy Laser Test Facility</b>			<b>PROJECT</b> <b>E97</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
E97 DOD HELSTF	8394	6813	2891	

**A. Mission Description and Budget Item Justification:** The High Energy Laser Systems Test Facility (HELSTF) provides a one-of-a-kind, broad based high energy laser (HEL) test and evaluation capability which directly supports testing of laser variants of the Future Combat Systems (FCS). Specifically, HEL weapons will play a major role in the Counter Rockets, Artillery and Mortars (CRAM) initiative and can be a key component of the Future Force supporting Full Dimensional Protection. HELSTF is part of the Department of Defense (DoD) Major Range and Test Facility Base (MRTFB) and supports Tri-Service HEL research and development to include damage, vulnerability, propagation, and lethality laser testing as well as HEL weapon developmental and operational test and evaluation (DTE&OTE). The HELSTF's laser development support capabilities include a fully certified open-air HEL test range, test cells for bringing breadboard to brassboard test devices, fully integrated Command, Control, Communications & Intelligence (C3I) systems and a suite of beam directors to perform both static and dynamic tracking tests. Other capabilities include an extensive array of fully instrumented test sites, full laser meteorological support, and an approved site for above-the-horizon dynamic HEL testing certified for predictive avoidance by the Laser Clearing House. HELSTF's location on White Sands Missile Range (WSMR) provides unparalleled testing flexibility because of WSMR's 3200 square miles of controlled land mass and 7000 square miles of controlled airspace. This location also enables HELSTF to leverage the existing WSMR T&E infrastructure. Current HELSTF facilities include the Sea Lite Beam Director (SLBD), the Mid-Infrared Advanced Chemical Laser (MIRACL), the Large Vacuum Chamber (LVC) with associated Vacuum Test System (VTS), the Solid State Laser testbed, the Tactical High Energy Laser (THEL) testbed, and the Low Power Chemical Laser (LPCL). This multiple use facility supports testing of laser effects for targets ranging from material coupon testing up through full-scale static and dynamic targets, explosive targets, and testing of targets in a high altitude space environment. HELSTF has embarked on its own modernization to fully upgrade its mission control systems, develop state-of-the-art HEL diagnostic capabilities, data reduction, and a mobile HEL diagnostic test suite to support DTE and OTE for potential HEL weapons in the Army Future Force in all relevant combat environments.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
In FY 2008 continued to perform operation, maintenance and base operations support functions in support of the Army, Department of Defense and other agencies (Missile Defense Agency (MDA) MUDPACK program, Special Operations Command (SOCOM) Advanced Tactical Laser (ATL), Air Force Airborne Laser (ABL) program, Full Scale Airflow Static Test (FAST) program, the US Army Space & Missile Defense Command (USASMD) Technical Center High Energy Laser Technology Demonstrator (HEL-TD) program, and other laser programs. Conducted a variety of tracking tests with SLBD to support USASMD, U.S. Air Force (USAF) and MDA missions. Continued development of the Solid State Laser Lethality Test bed and Solid State Laser Transition Test bed based on the ex-THEL Pointer-Tracker System (THEL-PTS) in FY2008. In FY 2009-2011, HELSTF will continue to provide limited support to the Laser T&E programs of all Services and DoD Agencies using the Solid State Laser (SSL) Lethality Test bed and the SSL Transition Test bed. Projected test to be supported include the Joint High Power Solid State Laser Program, a 100Kw solid state laser device to be housed at HELSTF for lethality and dynamic testing, a series of Relay Mirror experiments for the Air Force and numerous low power Counter Rocket and Mortar (CRAM) type laser systems for close in engagements.	8394	6660	2891
Small Business Innovative Research / Small Business Technology Transfer Programs.		153	
<b>Total</b>	<b>8394</b>	<b>6813</b>	<b>2891</b>



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605606A - AIRCRAFT CERTIFICATION</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
092 AIRCRAFT CERTIFICATION	4623	5037	3766

**A. Mission Description and Budget Item Justification:** The Airworthiness Certification program ensures flight safety and safe operation of Army aircraft and aviation systems by means of technical design approval and qualification of systems to appropriate airworthiness standards. It provides independent airworthiness qualification of all assigned developmental and in-production Army aircraft, both manned and unmanned, as required by AR 70-62, and is essential for ensuring the safe operation of Army aircraft. This program, when fully funded, performs all engineering functions (design, analysis, testing, demonstrations, and system specification compliance) essential for certifying the airworthiness of assigned Army aircraft, to include performing safety-of-flight investigations/assessments, evaluating system risks, developing Airworthiness Impact Statements, developing Airworthiness Flight Releases, and evaluating Safety of Flight Messages and Aviation Safety Action Messages for new and upgraded aircraft systems. This program also provides management/execution of the Army's Aeronautical Design Standards (ADS) program; management/execution of airworthiness approval for new systems and materiel changes for all assigned Army aircraft systems; airworthiness engineering support to the Program Executive Office for Aviation (PEO Avn) and the Technology Applications Program Office (TAPO, the Army's Special Operations Aircraft program office) in developing requirements for major development/modification and for any future systems/subsystems; and management of the test and evaluation process in support of the airworthiness qualification process. The Airworthiness Certification program also performs general research and development in support of aircraft qualification and overarching airworthiness projects that involve multiple aircraft models. Current ongoing programs requiring airworthiness qualification are PEO Aviation and TAPO Future Force systems including Longbow Apache Block II and III; Chinook F-model; Blackhawk M-model and M-model upgrade; Special Operations MH-47G and MH-60M; Armed Reconnaissance Helicopter; Light Utility Helicopter; Joint Cargo Aircraft; Extended Range/Multi Purpose (ER/MP) unmanned aircraft system (UAS); Aerial Common Sensors aircraft; and Shadow-C UAS. Additionally the Airworthiness Certification program supports application of other critical aviation subsystems onto Army aircraft, including Aircraft Survivability Equipment (e.g. Advanced Threat Infrared Countermeasures (ATIRCM), Common Missile Warning System (CMWS)), Aviation Mission Equipment (e.g. advanced multiband radios like the Joint Tactical Radio System (JTRS), digital data links), Common Sensor (electro-optical multi-spectrum visual sensor), and Blue Force Tracker. The current D092 funding profile for the FY10-15 Program Objective Memorandum marginally funds the airworthiness certification program, and hence the effort will be limited to resourcing civil derivative aircraft technical qualifications through the Federal Aviation Administration's Military Certification Office; development of airworthiness procedures, specifications, critical standards, and other design and qualification documents; participation in airworthiness related tri-service activities (e.g. National Airworthiness Council, Joint Logistics Commanders Group) and international airworthiness related activities mandated by treaty (e.g. Flight Into Nonsegregated Airspace (FINAS)); and limited early airworthiness involvement in Technology Transition projects (e.g. Joint Heavy Lift (JHL) aircraft, Joint Multi Role (JMR) helicopter, and other Office of the Secretary of Defense initiatives).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605606A - AIRCRAFT CERTIFICATION</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	4658	5054	5781
Current BES/President's Budget (FY 2010)	4623	5037	3766
Total Adjustments	-35	-17	-2015
Congressional Program Reductions		-17	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-35		
Adjustments to Budget Years			-2015

Change Summary Explanation: Funds realigned to higher priority requirements.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605606A - AIRCRAFT CERTIFICATION</b>		<b>PROJECT</b> <b>092</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
092 AIRCRAFT CERTIFICATION	4623	5037	3766

**A. Mission Description and Budget Item Justification:** The Airworthiness Certification program ensures flight safety and safe operation of Army aircraft and aviation systems by means of technical design approval and qualification of systems to appropriate airworthiness standards. It provides independent airworthiness qualification of all assigned developmental and in-production Army aircraft, both manned and unmanned, as required by AR 70-62, and is essential for ensuring the safe operation of Army aircraft. This program, when fully funded, performs all engineering functions (design, analysis, testing, demonstrations, and system specification compliance) essential for certifying the airworthiness of assigned Army aircraft, to include performing safety-of-flight investigations/assessments, evaluating system risks, developing Airworthiness Impact Statements, developing Airworthiness Flight Releases, and evaluating Safety of Flight Messages and Aviation Safety Action Messages for new and upgraded aircraft systems. This program also provides management/execution of the Army's Aeronautical Design Standards (ADS) program; management/execution of airworthiness approval for new systems and materiel changes for all assigned Army aircraft systems; airworthiness engineering support to the Program Executive Office for Aviation (PEO Avn) and the Technology Applications Program Office (TAPO, the Army's Special Operations Aircraft program office) in developing requirements for major development/modification and for any future systems/subsystems; and management of the test and evaluation process in support of the airworthiness qualification process. The Airworthiness Certification program also performs general research and development in support of aircraft qualification and overarching airworthiness projects that involve multiple aircraft models. Current ongoing programs requiring airworthiness qualification are PEO Aviation and TAPO Future Force systems including Longbow Apache Block II and III; Chinook F-model; Blackhawk M-model and M-model upgrade; Special Operations MH-47G and MH-60M; Armed Reconnaissance Helicopter; Light Utility Helicopter; Joint Cargo Aircraft; Extended Range/Multi Purpose (ER/MP) unmanned aircraft system (UAS); Aerial Common Sensors aircraft; and Shadow-C UAS. Additionally the Airworthiness Certification program supports application of other critical aviation subsystems onto Army aircraft, including Aircraft Survivability Equipment (e.g. Advanced Threat Infrared Countermeasures (ATIRCM), Common Missile Warning System (CMWS)), Aviation Mission Equipment (e.g. advanced multiband radios like the Joint Tactical Radio System (JTRS), digital data links), Common Sensor (electro-optical multi-spectrum visual sensor), and Blue Force Tracker. The current D092 funding profile for the FY10-15 Program Objective Memorandum marginally funds the airworthiness certification program, and hence the effort will be limited to resourcing civil derivative aircraft technical qualifications through the Federal Aviation Administration's Military Certification Office; development of airworthiness procedures, specifications, critical standards, and other design and qualification documents; participation in airworthiness related tri-service activities (e.g. National Airworthiness Council, Joint Logistics Commanders Group) and international airworthiness related activities mandated by treaty (e.g. Flight Into Nonsegregated Airspace (FINAS)); and limited early airworthiness involvement in Technology Transition projects (e.g. Joint Heavy Lift (JHL) aircraft, Joint Multi Role (JMR) helicopter, and other Office of the Secretary of Defense initiatives).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Conduct technical and airworthiness qualification assessments and studies to demonstrate airworthiness and system performance for Army force modernization aircraft systems or multi-system programs (e.g. AH-64 Block III, UH-60M, UH-60M Upgrade, MH-47G, MH-60M, Armed Reconnaissance helicopter)	1	1	1
Conduct studies of Airworthiness Certification requirements for future aircraft systems and other technology transition programs (e.g. Joint Heavy Lift, Joint Multi-Roll Aircraft, Versatile Affordable Advanced Turbine Engine Program)	704	758	280
Develop, implement, and maintain Army Aeronautical Design Standards, airworthiness procedures and tools, and overarching	2342	2526	2588



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management support</b>	<b>0605606A - AIRCRAFT CERTIFICATION</b>		<b>092</b>
Airworthiness qualification documentation.			
Conduct technical and airworthiness certification assessments of technology upgrades to Army force modernization aircraft systems or programs (e.g. Advanced Threat Infrared Countermeasures integration, Common Missile Warning System integration, Common Sensor integration)	1	1	1
Provide technical and airworthiness qualification for Commercial Derivative Aircraft through the Federal Aviation Administration	453	505	520
Lead and participate in national and international airworthiness certification committees, conferences and working groups responsible for establishing and maintaining aircraft safety for a fleet of aircraft (e.g. National Airworthiness Council, Joint Logistics Commanders Group, Joint Council on Aging Aircraft, Joint Propulsion Coordinating Committee, North Atlantic Treaty Organization (NATO) working groups, Global Air Traffic Management working groups)	1122	1210	376
Small Business Innovative Research/Small Business Technology Transfer Programs		36	
<b>Total</b>	<b>4623</b>	<b>5037</b>	<b>3766</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605702A - Meteorological Support to RDT&amp;E Activities</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
128      Meteorological Support to RDT&E Activities	8153	8262	8391

**A. Mission Description and Budget Item Justification:** All functions and resources in this Program Element (PE) are managed by the U.S. Army Developmental Test Command, a subordinate command of the U.S. Army Test and Evaluation Command (ATEC). Meteorological support to research, development, test, and evaluation (RDT&E) activities provides standard and specialized weather forecasts and data for test reports to satisfy Army/Department of Defense RDT&E test requirements for modern weaponry, e.g., (1) unique atmospheric analysis and sampling to include atmospheric transmittance, extinction, optical scintillation, infrared temperature, aerosol/smoke cloud dispersion characteristics, ballistic meteorological measurements, snow characterization and crystal structure; (2) test event forecasting to include prediction of sound propagation for ballistic firing tests, specialized prediction of light levels and target to background measurements, and predictions for electro-optical testing and ballistic artillery/mortar firing; and (3) advisory and warning products such as go/no-go test recommendations for ballistic and atmospheric probe missiles, smoke/obscurant tests, hazard predictions for chemical agent munitions disposal, monitoring dispersion of simulant clouds for chemical/biological detector tests, simulated nuclear blasts, and weather warnings for test range safety. Provides technical support to Army Program Executive Officers (PEOs), Project Managers (PMs), and the Army test ranges and sites at: White Sands Missile Range (WSMR), New Mexico; Electronic Proving Ground (EPG), Fort Huachuca, Arzonia; Dugway Proving Ground (DPG), Utah; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; Redstone Technical Test Center (RTTC), Redstone Arsenal, Alabama; Yuma Proving Ground (YPG), Arizona (including the Cold Regions Test Center (CRTC), Fort Greely, AK); Fort Belvoir, Virginia; and Fort A.P. Hill, Virginia. This PE develops methodologies and acquires instrumentation and systems that allow meteorological teams to support current and future Army/DoD RDT&E requirements. It finances indirect meteorological support operating costs not billable to customers and replacement/upgrade of meteorological instrumentation and support systems. Direct costs for meteorological support services are not funded by this PE, but are borne by the customer (i.e., materiel/weapons developers and project/product managers) in accordance with DoD Directive 7000.14R, October 1999. This program is essential to the accomplishment of the Army's developmental test mission in that precise weather modeling and measurements directly influence test item performance and quantify test item weather dependencies and vulnerabilities.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605702A - Meteorological Support to RDT&amp;E Activities</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	8294	8289	8378
Current BES/President's Budget (FY 2010)	8153	8262	8391
Total Adjustments	-141	-27	13
Congressional Program Reductions		-27	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-141		
Adjustments to Budget Years			13

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605702A - Meteorological Support to RDT&amp;E Activities</b>		<b>PROJECT</b> <b>128</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
128 Meteorological Support to RDT&E Activities	8153	8262	8391

**A. Mission Description and Budget Item Justification:** All functions and resources in this Program Element (PE) are managed by the U.S. Army Developmental Test Command, a subordinate command of the U.S. Army Test and Evaluation Command (ATEC). Meteorological support to research, development, test, and evaluation (RDT&E) activities provides standard and specialized weather forecasts and data for test reports to satisfy Army/Department of Defense RDT&E test requirements for modern weaponry, e.g., (1) unique atmospheric analysis and sampling to include atmospheric transmittance, extinction, optical scintillation, infrared temperature, aerosol/smoke cloud dispersion characteristics, ballistic meteorological measurements, snow characterization and crystal structure; (2) test event forecasting to include prediction of sound propagation for ballistic firing tests, specialized prediction of light levels and target to background measurements, and predictions for electro-optical testing and ballistic artillery/mortar firing; and (3) advisory and warning products such as go/no-go test recommendations for ballistic and atmospheric probe missiles, smoke/obscurant tests, hazard predictions for chemical agent munitions disposal, monitoring dispersion of simulant clouds for chemical/biological detector tests, simulated nuclear blasts, and weather warnings for test range safety. Provides technical support to Army Program Executive Officers (PEOs), Project Managers (PMs), and the Army test ranges and sites at: White Sands Missile Range (WSMR), New Mexico; Electronic Proving Ground (EPG), Fort Huachuca, Arzonja; Dugway Proving Ground (DPG), Utah; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; Redstone Technical Test Center (RTTC), Redstone Arsenal, Alabama; Yuma Proving Ground (YPG), Arizona (including the Cold Regions Test Center (CRTC), Fort Greely, AK); Fort Belvoir, Virginia; and Fort A.P. Hill, Virginia. This PE develops methodologies and acquires instrumentation and systems that allow meteorological teams to support current and future Army/DoD RDT&E requirements. It finances indirect meteorological support operating costs not billable to customers and replacement/upgrade of meteorological instrumentation and support systems. Direct costs for meteorological support services are not funded by this PE, but are borne by the customer (i.e., materiel/weapons developers and project/product managers) in accordance with DoD Directive 7000.14R, October 1999. This program is essential to the accomplishment of the Army's developmental test mission in that precise weather modeling and measurements directly influence test item performance and quantify test item weather dependencies and vulnerabilities.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provides indirect costs (personnel salaries) for generating weather forecasts, severe weather warnings and advisories; staff meteorological services; and atmospheric measurements in support of Army/DoD tests and projects at nine Army sites/test ranges, and alternate test sites as required. Provides program management for meteorological support to the Army research, development, test and evaluation community and technical review/assistance to ranges and meteorological support teams. Includes Verification, Validation and Accreditation (VV&A) for the Four-Dimensional Weather (4DWX) System.	3188	2670	3276
Provides funding for meteorological instrumentation and technology to support RDT&E activities at Army test ranges. Includes funding for development, fielding, and enhancement of the 4DWX system, an advanced meteorological support system that provides high-resolution weather forecasts and analyses to support developmental and operational field tests. The 4DWX analyses and forecasts of the 3-dimensional structure of the atmosphere over time (4th dimension) are used in test planning, conduct, and forensic analyses. The Global Meteorology on Demand (GMOD) capability allows set-up and launch of 4DWX modeling capabilities anywhere in the world. FY08 accomplishments include initial use of the DPG high performance computer (HPC) to generate ensemble weather, providing probabilistic forecasts by incorporating 30 separate model executions; initial use of the HPC computer to generate 20-year climatologies	4965	5450	5115

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0605702A - Meteorological Support to RDT&amp;E Activities</b>	<b>128</b>	
<p>for seven ranges; upgraded graphical user interface for GMOD; improved land-surface and boundary layer parameterizations; new data acquisition systems; and the replacement of Linux clusters. 4DWX system enhancements planned in FY09-FY10 include continued development of ensemble modeling, improved lightning warning capability; improved parameterizations of wind flow over mountains and other complex terrain features to improve forecast accuracy; and development of new 4DWX-based techniques to generate weather data in vertical profiles, to reduce the need for some weather balloon launches. FY08 instrumentation funding was used to continue a multiyear effort to replace/upgrade obsolete instrumentation, including upper-air sounding systems, upgrades to weather stations, renovation of radar wind profilers, replacement of Doppler acoustic sounders (wind profile measurements), and relocation of sodar systems (equipment to measure vertical weather profiles) between ranges to maximize use of equipment. This instrumentation modernization will continue in FY09-FY10.</p>			
Small Business Innovative Research/Small Business Technology Transfer Programs		142	
<b>Total</b>	<b>8153</b>	<b>8262</b>	<b>8391</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605706A - MATERIEL SYSTEMS ANALYSIS</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
541 MATERIEL SYS ANALYSIS	16927	16971	19969

**A. Mission Description and Budget Item Justification:** This program element funds Department of the Army (DA) civilians at the Army Materiel Systems Analysis Activity (AMSAA) to conduct responsive and effective materiel systems analysis in support of senior Army decision making for equipping the U.S. Army. AMSAA conducts systems and engineering analyses to support Army decisions in technology; materiel acquisitions; and the design, development, fielding, and sustaining of Army weapon systems. As part of this mission, AMSAA develops and certifies systems performance data used in Army studies, and develops systems performance methodology and Modeling and Simulation (M&S).

AMSAA is the Army's center for item/system level performance analysis and certified data. In support of its materiel systems analysis mission, AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and fielded systems. Unique models and methodologies have been developed to predict critical performance variables, such as weapon accuracy, target acquisition, rate of fire, probability of inflicting catastrophic damage, and system reliability. AMSAA generates performance and effectiveness measures and ensures their standard use across major Army and Joint studies. AMSAA conducts and supports various systems analyses, such as: Analyses of Alternatives, system cost/performance tradeoffs, early science and technology tradeoffs, weapons mix analyses, system risk assessments, analytical support for Test and Evaluation, and requirements analyses. These analyses are used by the Army Research, Development and Engineering Command, Army Materiel Command, Program Executive Officers/Project Managers, DA staff/Assistant Secretary of the Army for Acquisition, Logistics, and Technology, and Department of Defense (DoD) leadership in making acquisition, procurement, and logistics decisions in order to provide quality equipment and procedures to the Soldier.

AMSAA's M&S capabilities support the development, linkage, and accreditation of live, virtual, and constructive simulations, and provide unique tools that support systems analysis of individual systems and the combined-arms environment. AMSAA maintains a significant number of models and simulations, most of which were developed in-house to address specific analytical voids. This M&S infrastructure provides a hierarchical modeling process that is unique to AMSAA and allows for a comprehensive performance and effectiveness prediction capability that can be utilized to make trade-off and investment decisions prior to extensive and expensive hardware testing of proposed systems/technologies for Current and Future Force efforts. AMSAA is the Army's executive agent for the verification, validation, and accreditation of item/system level performance models. In this role, AMSAA assists model developers with the development and execution of verification and validation plans to ensure new models and simulations provide credible information/results for decision making.

As the Army's Executive Agent for reliability and maintainability standardization improvement, AMSAA develops and implements reliability and maintainability acquisition reform initiatives. AMSAA develops and applies engineering approaches that assess the reliability of Army materiel and also provides recommendations on ways to improve reliability, thereby reducing the logistics footprint, reducing life cycle costs, and extending failure-free periods for deployed equipment. AMSAA's electronic and mechanical Physics of Failure (PoF) program pioneered the Army's involvement in utilizing computer-aided engineering tools in the analysis of root-cause failure mechanisms at the component level during the system design process. AMSAA's reliability engineering and PoF tools/analyses have been used extensively to support the design improvement of developmental and fielded systems used in Current Operations resulting in improved reliability, reduced Operational and Support costs, and reduced logistics expenditures and footprint.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

**6 - Management support**

**0605706A - MATERIEL SYSTEMS ANALYSIS**

AMSAA's unique analytical capabilities are supporting the Army Evaluation Command to assess and determine the essential analytical requirements to enhance Army evaluations and reduce extensive testing. AMSAA's support in this area improves evaluation products and result in better materiel solutions to the Warfighter. AMSAA assists various ACAT systems' evaluations and provides quick response analyses in support of rapid initiatives for Current Operations.

As the Army's center for materiel systems analysis, AMSAA provides the technical capability to support Army and DoD decision makers throughout the entire acquisition process in responding to analytical requirements across the full spectrum of materiel. AMSAA's unique in-house, consistent, integrated analytical capability is a critical asset that provides Army leadership with timely, unbiased, reliable, and high quality analysis to support complex decisions required for Army Transformation and Current Operations. AMSAA's integrated set of skills and tools are focused on its core mission to be responsive to the breadth and depth of systems analysis requirements critical in supporting Army decisions.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605706A - MATERIEL SYSTEMS ANALYSIS</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	16423	17028	17375
Current BES/President's Budget (FY 2010)	16927	16971	19969
Total Adjustments	504	-57	2594
Congressional Program Reductions		-57	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	504		
SBIR/STTR Transfer			
Adjustments to Budget Years			2594

Change Summary Explanation: Funding - FY10: The adjustment to the budget year is two-fold. First, the majority of the increase/adjustments reflect increased funding for materiel systems performance, survivability/lethality and effectiveness data improvement efforts to support Army Regulation 5-5 level Army Studies. This is approved funding for a requirement that was submitted during the Fiscal Year 10-15 POM cycle to improve the quality of data used to support Army studies and other senior decision support needs. These funds will enable AMSAA to research, investigate, and develop quality baseline systems data that can be used for further surrogation purposes and development of methodologies that address/fill data voids for both non-traditional and emerging threats against Army systems. The remaining portion of the adjustment to the budget year (i.e., \$.606 million) reflect the changes OSD issued in PBD 610 to account for changes to Civilian Pay raise assumptions for the outyears.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605706A - MATERIEL SYSTEMS ANALYSIS</b>		<b>PROJECT</b> <b>541</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
541 MATERIEL SYS ANALYSIS	16927	16971	19969

**A. Mission Description and Budget Item Justification:** This program element funds Department of the Army (DA) civilians at the Army Materiel Systems Analysis Activity (AMSAA) to conduct responsive and effective materiel systems analysis in support of senior Army decision making for equipping the U.S. Army. AMSAA conducts systems and engineering analyses to support Army decisions in technology; materiel acquisitions; and the design, development, fielding, and sustaining of Army weapon systems. As part of this mission, AMSAA develops and certifies systems performance data used in Army studies, and develops systems performance methodology and Modeling and Simulation (M&S).

AMSAA is the Army's center for item/system level performance analysis and certified data. In support of its materiel systems analysis mission, AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and fielded systems. Unique models and methodologies have been developed to predict critical performance variables, such as weapon accuracy, target acquisition, rate of fire, probability of inflicting catastrophic damage, and system reliability. AMSAA generates performance and effectiveness measures and ensures their standard use across major Army and Joint studies. AMSAA conducts and supports various systems analyses, such as: Analyses of Alternatives, system cost/performance tradeoffs, early science and technology tradeoffs, weapons mix analyses, system risk assessments, analytical support for Test and Evaluation, and requirements analyses. These analyses are used by the Army Research, Development and Engineering Command, Army Materiel Command, Program Executive Officers/Project Managers, DA staff/Assistant Secretary of the Army for Acquisition, Logistics, and Technology, and Department of Defense (DoD) leadership in making acquisition, procurement, and logistics decisions in order to provide quality equipment and procedures to the Soldier.

AMSAA's M&S capabilities support the development, linkage, and accreditation of live, virtual, and constructive simulations, and provide unique tools that support systems analysis of individual systems and the combined-arms environment. AMSAA maintains a significant number of models and simulations, most of which were developed in-house to address specific analytical voids. This M&S infrastructure provides a hierarchical modeling process that is unique to AMSAA and allows for a comprehensive performance and effectiveness prediction capability that can be utilized to make trade-off and investment decisions prior to extensive and expensive hardware testing of proposed systems/technologies for Current and Future Force efforts. AMSAA is the Army's executive agent for the verification, validation, and accreditation of item/system level performance models. In this role, AMSAA assists model developers with the development and execution of verification and validation plans to ensure new models and simulations provide credible information/results for decision making.

As the Army's Executive Agent for reliability and maintainability standardization improvement, AMSAA develops and implements reliability and maintainability acquisition reform initiatives. AMSAA develops and applies engineering approaches that assess the reliability of Army materiel and also provides recommendations on ways to improve reliability, thereby reducing the logistics footprint, reducing life cycle costs, and extending failure-free periods for deployed equipment. AMSAA's electronic and mechanical Physics of Failure (PoF) program pioneered the Army's involvement in utilizing computer-aided engineering tools in the analysis of root-cause failure mechanisms at the component level during the system design process. AMSAA's reliability engineering and PoF tools/analyses have been used extensively to support the design improvement of developmental and fielded systems used in Current Operations resulting in improved reliability, reduced Operational and Support costs, and reduced logistics expenditures and footprint.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605706A - MATERIEL SYSTEMS ANALYSIS</b>	<b>PROJECT</b> <b>541</b>
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AMSAA's unique analytical capabilities are supporting the Army Evaluation Command to assess and determine the essential analytical requirements to enhance Army evaluations and reduce extensive testing. AMSAA's support in this area improves evaluation products and result in better materiel solutions to the Warfighter. AMSAA assists various ACAT systems' evaluations and provides quick response analyses in support of rapid initiatives for Current Operations.

As the Army's center for materiel systems analysis, AMSAA provides the technical capability to support Army and DoD decision makers throughout the entire acquisition process in responding to analytical requirements across the full spectrum of materiel. AMSAA's unique in-house, consistent, integrated analytical capability is a critical asset that provides Army leadership with timely, unbiased, reliable, and high quality analysis to support complex decisions required for Army Transformation and Current Operations. AMSAA's integrated set of skills and tools are focused on its core mission to be responsive to the breadth and depth of systems analysis requirements critical in supporting Army decisions.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
These funds will be used to conduct various materiel system analysis efforts in support of senior Army decision makers. AMSAA will conduct analyses, materiel systems performance data generation and certification, methodology development, and Modeling and Simulation (M&S) development, verification, validation, and accreditation. The planned accomplishments include performance and combat effectiveness analyses of materiel systems and technology base programs for the Department of Army, the Army Materiel Command, the Research, Development and Engineering Command, Program Executive Officers/Program Managers, the Training and Doctrine Command and the Army Test and Evaluation Command. These analyses form the basis for Analysis of Alternatives (AoAs), system cost/performance tradeoffs, early technology tradeoffs, weapons/systems mix analyses, requirements analyses, technology insertion studies, reliability growth studies, and Physics of Failure (PoF) analyses. Critical AMSAA analyses are planned to support the following programs: Future Combat Systems Brigade Combat Team, Experimental Brigade Combat Team, Mine Resistant Ambush Protected System assessment, Joint Light Tactical Vehicle, Joint Non-Lethal Weapons Program, Intelligent Munitions System, Stryker, and Future Force Warrior. AMSAA will also develop and modify system level methodologies, and M&S to be used in the conduct of analyses. Examples of efforts include the development and enhancements to: Infantry Warrior Simulation, One Semi-Automated Force Survivability Suite, suppression methodology, Network System of Systems modeling, power and energy (soldier and vehicle) methodology, Improvised Explosive Device modeling, target acquisition methodology, sensor fusion modeling, mechanical and electronic PoF modeling, vehicle performance methodology, Active Protection System performance, non-lethal weapons performance and effectiveness estimation methodology, and modeling operations in urban terrain.	16927	16971	19969
<b>Total</b>	16927	16971	19969

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605709A - EXPLOITATION OF FOREIGN ITEMS</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
C28 ACQ/EXPLOIT THREAT ITEMS (MIP)	3292	3909	5432

**A. Mission Description and Budget Item Justification:** This is a continuing project for acquisition and exploitation of foreign materiel constituting potential advanced technology threats to U.S. systems. The primary aim of this project is to maximize the efficiency of research and development for force and materiel development by reducing the uncertainties concerning these threats. The project also answers general scientific and technical intelligence requirements, aids in the development of countermeasures to threat materiel and threat technology, and provides materiel for realistic testing and training. Acquisitions and exploitations are executed according to an Army Foreign Materiel Review Board and with the approval of the Army, Director of Intelligence (G2).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605709A - EXPLOITATION OF FOREIGN ITEMS</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	3291	3530	5521
Current BES/President's Budget (FY 2010)	3292	3909	5432
Total Adjustments	1	379	-89
Congressional Program Reductions		-11	
Congressional Rescissions			
Congressional Increases		390	
Reprogrammings	1		
SBIR/STTR Transfer			
Adjustments to Budget Years			-89

Change Summary Explanation: Funding - FY 2009: Anticipated Congressional Overseas Contingency Operation effort for camouflage material and decoys (\$390 thousand).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605709A - EXPLOITATION OF FOREIGN ITEMS</b>		<b>PROJECT</b> <b>C28</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
C28 ACQ/EXPLOIT THREAT ITEMS (MIP)	3292	3909	5432

**A. Mission Description and Budget Item Justification:** Base: This is a continuing project for acquisition and exploitation of foreign materiel constituting potential advanced technology threats to U.S. systems. The primary aim of this project is to maximize the efficiency of research and development for force and materiel development by reducing the uncertainties concerning these threats. The project also answers general scientific and technical intelligence requirements, aids in the development of countermeasures to threat materiel and threat technology, and provides materiel for realistic testing and training. Acquisitions and exploitations are executed according to an Army Foreign Materiel Review Board and with the approval of the Army, Director of Intelligence (G2).

Justification for FY 09 Overseas Contingency Operations (OCO) Request Dollars: Modern weapons lethality has driven a worldwide proliferation of camouflage materials (nets, covers, paints and appliques) and decoys (low-and high-fidelity) designed to defeat modern sensors and enhance survivability of foreign weapons systems and facilities. Camouflage, concealment and Deception (CC&D) systems often utilize inexpensive technology that has a significant impact on sophisticated and costly smart sensors and weapons. Materiel targeted for exploitation includes the following however, additional items may be received: \*Serbia/Montenegro Mile Dragic Nets \*Russian MRPK Radar Absorbing Camouflage Nets \*Swedish Barracuda Counter-Observation Barrier System \*Swedish Barracuda RAPCAM \*Malaysian Metro Koats MKT \*Greek Intermat Paints.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Base: Acquire threat systems identified and prioritized in the Army Foreign Materiel Program (FMP) Five Year Plans.	1153	1235	1932
Base: Initiate, continue, or complete exploitation projects on ground systems of Army interest identified in the appropriate Army FMP Exploitation Programs.	2139	2284	3500
FY 09 OCO: Acquire CC&D material of interest identified by the Army as threats to U.S. Soldiers and Systems.		130	
FY 09 OCO: Initiate, continue, or complete exploitation projects on CC&D systems of interest and threats to U.S. Forces.		260	
<b>Total</b>	<b>3292</b>	<b>3909</b>	<b>5432</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE		
<b>6 - Management support</b>		<b>0605712A - Support of Operational Testing</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
Total Program Element (PE) Cost	73003	74695	77877	
001 ATEC Joint Tests and Follow-On Test & Evaluations	3607	10230	8655	
V02 ATEC ACTIVITIES	69396	64465	69222	

**A. Mission Description and Budget Item Justification:** This Program Element provides the resources to operate the Army's operational test directorates located at Fort Hood, TX; Fort Bragg, NC; Fort Bliss, TX; Fort Huachuca, AZ; and Fort Sill, OK; all managed by the Operational Test Command (OTC), a subordinate command of the Army Test and Evaluation Command (ATEC). Also funds the Test and Evaluation Coordination Offices (TECOs) located at Fort Benning, GA; Fort Knox, KY; Fort Lee, VA; and Fort Leonard Wood, MO; as well as recurring support costs of Headquarters, Army Test and Evaluation Command (HQ ATEC), joint testing, operational test and evaluations without an Army Program Executive Officer/Project Manager and follow-on test and evaluations, all of which are managed by HQ, ATEC.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605712A - Support of Operational Testing</b>
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<u><b>B. Program Change Summary</b></u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	78797	72942	74466
Current BES/President's Budget (FY 2010)	73003	74695	77877
Total Adjustments	-5794	1753	3411
Congressional Program Reductions	-248	-247	
Congressional Rescissions			
Congressional Increases		2000	
Reprogrammings	-4818		
SBIR/STTR Transfer	-728		
Adjustments to Budget Years			3411

Change Summary Explanation: Funding - FY2009: \$2 million Congressional add for Mattracks will be transferred to 0603005A, Combat Vehicle and Automotive Advanced Technology for proper execution.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605712A - Support of Operational Testing</b>		<b>PROJECT</b> <b>001</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
001 ATEC Joint Tests and Follow-On Test & Evaluations	3607	10230	8655

**A. Mission Description and Budget Item Justification:** This project funds the Army's direct costs of planning and conducting Multi-service Tests and Evaluations (MOTE) for which there is no Army Project Manager (PM) and Army requirements for Joint Test and Evaluation (JT&E). These are required to evaluate concepts and address needs and issues that occur in joint military environments and provides information required by Congress, Office of the Secretary of Defense, the Unified Commands, and the Department of Defense components relative to joint operations. This project also funds Follow-on Test and Evaluation (FOTE), as necessary. FOTE may be required after a full production decision to assess system training and logistics, to verify correction of deficiencies identified during earlier testing and evaluation, and to ensure that initial production items meet operational effectiveness, suitability and supportability thresholds. There has been a shift of focus for items funded by this project due to continuing operations in the US Central Command (CENTCOM). Traditional system workload has dropped off and has been replaced by rapid fielding initiatives. In response to this shift, the Army Test and Evaluation Command (ATEC) has established a forward operational assessment team in theater and a rapid response cell. These groups facilitate MOTTE, JT&E, and FOTE events in the rapid environment. Traditional acquisition requirements are expected to return to normal as operations in Iraq and Afghanistan wind down.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Joint operational testing and evaluation.	1159	3360	2996
Other-Special projects/Operational Test and Evaluation without Army Project Manager	767	2116	1859
Multi-Service Operational Text and Evaluation/Follow-on testing and evaluations.	1681	4468	3800
Small Business Innovative Research/Small Business Technology Transfer Programs		286	
New Accomplishment			
<b>Total</b>	<b>3607</b>	<b>10230</b>	<b>8655</b>



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605712A - Support of Operational Testing</b>		<b>PROJECT</b> <b>V02</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
V02 ATEC ACTIVITIES	69396	64465	69222

**A. Mission Description and Budget Item Justification:** The Operational Test Command (OTC) conducts operational tests required by public law that provide significant data to the Army decision-makers on key Army systems and concepts. This project finances recurring costs for the Operational Test Command that are essential for conducting realistic and continuous testing in the critical areas of equipment, doctrine, force design and training. These recurring costs include civilian pay, requirements for base support contracts, temporary duty, supplies and equipment. This project funds requirements for the Operational Test Command's nine test directorates and one support activity located at Fort Hood, TX; Fort Bragg, NC; Fort Bliss, TX; Fort Sill, OK; and Fort Huachuca, AZ. The primary mission of these test directorates is to perform detailed planning, execution, and reporting of Initial Operational Test and Evaluation (IOTE), and Force Development Test and Experimentation (FDTE). Project V02 also provided support for the four Test and Evaluation Coordination Offices (TECOs) located at Fort Benning, GA; Fort Knox, KY; Fort Lee, VA; and Fort Leonard Wood, MO as well as for the recurring support costs of Headquarters, Army Test and Evaluation Command (HQ ATEC).

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Operational costs including: civilian pay, support contracts, temporary duty, supplies and equipment for subordinate elements of the Operational Test Command.	46100	46095	49950
Operational costs for HQ ATEC includes: civilian pay, support contracts, temporary duty, supplies and equipment for non-AMHA (Army Management Headquarters Activity) HQ ATEC and TECOs.	19296	17924	19272
FY 2008 Congressional Adds for EQUATE (\$1.6 million) and Denied GPS (\$2.4 million)	4000		
Small Business Innovative Research/Small Business Technology Transfer Programs.		446	
<b>Total</b>	<b>69396</b>	<b>64465</b>	<b>69222</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>6 - Management support</b>	PE NUMBER AND TITLE <b>0605716A - Army Evaluation Center</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
302 Army Evaluation Center	59347	63173	66309

**A. Mission Description and Budget Item Justification:** The Army Evaluation Center (AEC) provides independent and integrated technical and operational evaluations, and life-cycle Continuous Evaluation (CE) of assigned Major Defense Acquisition Programs (MDAP), Major Automated Information Systems, and In-Process Review (IPR) programs for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. AEC is The Army's independent evaluator. AEC develops the evaluation strategy, designs technical and operational tests, and evaluates the test results to address a system's combat effectiveness, suitability, and survivability factors pertinent to the decision process, such as: Critical Operational Issues and Criteria (COIC), system performance, soldier survivability, performance in countermeasures, system survivability, reliability, supportability, etc. AEC has the lead in planning and execution of Army Live Fire Tests and Continuous Evaluations through its evaluation and test design responsibilities. The evaluations produced by AEC are required by the Army Chief of Staff, the Army Acquisition Executive, other Army senior leaders and the Director of Operational Test and Evaluation for acquisition decisions. In addition, Army leadership has recognized the numerous benefits of an early involvement initiative. In support of ongoing contingency operations and other Global War on Terrorism (GWOT) related activities, AEC continues to dedicate a significant amount of its evaluation workload towards the evaluation of Rapid Initiative (RI) & Rapid Equipping Force (REF) systems, Urgent Material Releases, and Counter Improvised Explosive Device (IED) systems in support of the Joint IED Defeat Office (JIEDDO) and the Joint Test Board.

This project funds the salaries of civilian employees conducting T&E early involvement, evaluation and test design missions and associated personnel support/sustainment costs including temporary duty, supplies, equipment, and support contractors. This project does not finance test facility operations, test instrumentation or test equipment.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605716A - Army Evaluation Center</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	61295	63382	65413
Current BES/President's Budget (FY 2010)	59347	63173	66309
Total Adjustments	-1948	-209	896
Congressional Program Reductions	-405	-209	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-1048		
SBIR/STTR Transfer	-495		
Adjustments to Budget Years			896

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605716A - Army Evaluation Center</b>		<b>PROJECT</b> <b>302</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
302 Army Evaluation Center	59347	63173	66309

**A. Mission Description and Budget Item Justification:** The Army Evaluation Center (AEC) provides independent and integrated technical and operational evaluations, and life-cycle Continuous Evaluation (CE) of assigned Major Defense Acquisition Programs (MDAP), Major Automated Information Systems, and In-Process Review (IPR) programs for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. AEC is The Army's independent evaluator. AEC develops the evaluation strategy, designs technical and operational tests, and evaluates the test results to address a system's combat effectiveness, suitability, and survivability factors pertinent to the decision process, such as: Critical Operational Issues and Criteria (COIC), system performance, soldier survivability, performance in countermeasures, system survivability, reliability, supportability, etc. AEC has the lead in planning and execution of Army Live Fire Tests and Continuous Evaluations through its evaluation and test design responsibilities. The evaluations produced by AEC are required by the Army Chief of Staff, the Army Acquisition Executive, other Army senior leaders and the Director of Operational Test and Evaluation for acquisition decisions. In addition, Army leadership has recognized the numerous benefits of an early involvement initiative. In support of ongoing contingency operations and other Global War on Terrorism (GWOT) related activities, AEC continues to dedicate a significant amount of its evaluation workload towards the evaluation of Rapid Initiative (RI) & Rapid Equipping Force (REF) systems, Urgent Material Releases, and Counter Improvised Explosive Device (IED) systems in support of the Joint IED Defeat Office (JIEDDO) and the Joint Test Board.

This project funds the salaries of civilian employees conducting T&E early involvement, evaluation and test design missions and associated personnel support/sustainment costs including temporary duty, supplies, equipment, and support contractors. This project does not finance test facility operations, test instrumentation or test equipment.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide integrated technical and operational evaluations and continuous evaluation of assigned MDAPs and major automated information systems for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. Develop the evaluation strategy, design technical and operational tests, and evaluate the test results to address the combat effectiveness, suitability, and survivability factors pertinent to the decision process, for programs such as Future Combat System (FCS), Mine resistant Ambush Protected Vehicle (map), Warfighter Information Network- Tactical (WIN-T), Stryker, High Mobility Artillery Rocket System (HIMARS), Land Warrior (LW), General Fund Enterprise Business System (GFEBS), Joint Tactical Radio System (JTRS), Global Command and Control System-Army (GCCS-A), Family of Medium Tactical Vehicles (FMTV), Maneuver Control System, Distributed Learning System (DLS) and the Transportation Coordinator-Automated Information for Movement Systems II (TC-AIMS II). As the Army lead for Live Fire Test and Evaluation, plan and execute the Army Live Fire Test and Evaluation program for developmental systems such as the FCS. Prepare integrated System Evaluation Plans and conduct integrated technical and operational evaluations for all Army weapon systems. In support of contingency operations and the Global War on Terrorism (GWOT), AEC has continued its workload focus towards the evaluation of Rapid Initiative (RI) systems, Counter Improvised Explosive Device (IED) systems, and Urgent Material Releases. Includes civilian pay costs for 385 authorizations for FY09 and 371 authorizations for FY 10-15.	55747	58558	60156
Supports the Commanding General's early involvement initiative which positions acquisition certified liaison officers at 2 Joint and 9 Army Program Executive Offices (PEO), TRADOC/ARCIC, REF, JIEDDO, and RDECOM. Assigned personnel provide continuous	3600	4060	6153

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0605716A - Army Evaluation Center</b>	<b>302</b>	
support to materiel and combat developers from the inception of their programs. The early involvement of LNOs supports the sections of the ATEC Mission Essential Task List (METL) that apply to ongoing contingency operations and other GWOT/LWOT related activities. ATEC performance continues to meet 120 day rapid equipping requirement set by the CSA. Liaison officers continue to enable ATEC to sustain rapid, flexible T&E support in the evaluation of Rapid Initiative Systems, Counter IED systems, and Urgent Material Releases. Effort results in cost savings, cost avoidance and critical design efficiencies being identified early in a system's development, thereby avoiding more expensive product improvement programs later in a system's life cycle. T&E efficiency gains continue to be realized through early identification of instrumentation, modeling and simulation tools, and other resources needed for testing, as well as making more efficient use of data from developmental testing and experiments.			
Small Business Innovative Research/Small Business Technology Transfer Programs		555	
<b>Total</b>	<b>59347</b>	<b>63173</b>	<b>66309</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE		
<b>6 - Management support</b>		<b>0605718A - Army Modeling &amp; Sim X-Cmd Collaboration &amp; Integ</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
Total Program Element (PE) Cost	5169	5308	5357	
S02 HQDA DECISION SUPPORT TOOLS & SERVICES	1693	1663	1679	
S03 Analysis M&S Tools and Services	2451	2104	2123	
S05 SIMULATION TECHNOLOGY (SIMTECH) PROGRAM	1025	1541	1555	

**A. Mission Description and Budget Item Justification:** Army Modeling and Simulation Cross-Command Collaboration and Integration (M&SC3I) promotes the Army's goal to achieve affordable, interoperable and networked Modeling and Simulation (M&S) capabilities. In support of Army operations, Generating-Force functions and institutional processes, M&SC3I addresses analytical efforts underlying decision making, capability development and life-cycle costs by capitalizing on M&S technologies (accomplished through collaborative efforts of the training/operations and acquisition communities). The RDTE component of M&SC3I encompasses programs that (1) develop new M&S models and improve existing M&S models to reduce time, resources and risks associated with operational/institutional decision making and the acquisition process and (2) advance the following disciplines: M&S research, analysis and experimentation; simulation technology; and M&S tools and services. M&SC3I applies to development of tactics and doctrine, experimentation and exercises, traditional weapon system development, and assessment and transition of advanced technologies to operational capabilities. The overarching goal of M&SC3I is to reduce the time and cost of providing improved capabilities to the war fighter. Emerging information-age technologies continue to revolutionize the Army's ability to collaborate among all stakeholders using data descriptions, digital representations, and virtual prototypes to improve understanding of required capabilities, shorten procurement time, reduce procurement and sustainment costs, and, ultimately, reduce total lifecycle cost. M&SC3I advocates the use of advanced technologies to enable Future-Force capabilities through improved understanding of operational requirements, collaborative analyses of emerging technologies, and cross-domain participation in experiments and exercises. The following is a description of key programs under the three projects of PE 0605718. Under the project "HQDA Decision Support Tools and Services" the Army develops (1) the Cross-Command Collaboration Effort (3CE), (2) the Joint Integrated Analysis Tool (JIAT) and (3) the Future Land Operations Interoperability Study-Command, Control, Communications, Intelligence (FLOIS-C3I). The 3CE is a cross-command M&S and data environment for design, development, integration, and testing of capabilities, systems, and prototypes across the life cycle of a program; 3CE promotes the science and technology, analysis, experimentation, development, and testing of all products within the DOTMLPF continuum; DOTMLPF = Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities. The 3CE is a consistent, reliable and reusable environment that meets the common requirements of all commands and Army Program Managers (PMs) who employ M&S to conduct DOTMLPF development. The 3CE achieves significant cost avoidance by reducing duplication of effort; maximizing reuse of tools, data and services; and ensuring interoperability. JIAT is a total life-cycle integrated cost estimating tool with both system- and component-level capability. JIAT is an Army-wide, web-based tool that integrates cost estimating, engineering design, requirements, capabilities and performance models using common databases, models and tools. JIAT includes database modules that provide ready access to cost and technical data in each commodity area (Aircraft, Missiles, Command and Control, Intelligence/Electronic Warfare, Weapons/Tracked Combat Vehicles) and is designed to conduct Cost As Independent Variable (CAIV) analysis. The JIAT integrated data environment enables optimization of battlefield effectiveness and provides the technology to control life-cycle costs based on analyses of future capabilities and program requirements. FLOIS-C3I is a study that examines the concepts required to integrate a United Kingdom (UK) brigade into a US Future-Force division. Under the project "Analysis M&S Tools and Services," the Army develops common and cross-cutting M&S tools for concept development, analysis, acquisition, evaluation and experimentation. The primary developers/users of these tools are the

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management support

## 0605718A - Army Modeling & Sim X-Cmd Collaboration & Integ

Training and Doctrine Command Analysis Center (TRAC), the Army Materiel Systems Analysis Activity (AMSAA), and the Center for Army Analysis (CAA). Additionally, Army M&S Capability Area Teams (CATs) conduct HQDA-directed research to develop solutions for high priority M&S objectives impacting current and future operations. CATs focus, first and foremost, on areas that have near-term operational impact or have been difficult to model but are, nonetheless, critical to closing capability gaps. Under the project "Army Simulation Technology (SIMTECH)," the Army enhances Current and Future Force effectiveness by inducing research organizations on an immediate/short-term basis to conduct high-priority, promising simulation research initiatives that are outside the scope of Small Business Innovative Research and Army Science and Technology programs. SIMTECH directs simulation research initiatives toward immediate and short-term Army needs and serves as a catalyst for major technology breakthroughs in M&SC3I, embedded simulation, rapid prototyping, commercial innovation, and related simulation technology.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605718A - Army Modeling &amp; Sim X-Cmd Collaboration &amp; Integ</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	6302	5325	5445
Current BES/President's Budget (FY 2010)	5169	5308	5357
Total Adjustments	-1133	-17	-88
Congressional program reductions		-17	
Congressional rescissions			
Congressional increases			
Reprogrammings	-956		
SBIR/STTR Transfer	-177		
Adjustments to Budget Years			-88



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605718A - Army Modeling &amp; Sim X-Cmd Collaboration &amp; Integ</b>		<b>PROJECT</b> <b>S02</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
S02 HQDA DECISION SUPPORT TOOLS & SERVICES	1693	1663	1679

**A. Mission Description and Budget Item Justification:** The project "HQDA Decision Support Tools and Services" provides decision support tools and services for the Army staff and forward operating agencies assigned to the Headquarters, Department of the Army. Two tools are receiving funds under this project during FY08-10. These are the Cross-Command Collaboration Effort (3CE) and the Joint Integrated Analysis Tool (JIAT), the latter sponsored by the Deputy Assistant Secretary of the Army for Cost and Economics (DASA-CE). The 3CE is a cross-command M&S and data environment for design, development, integration and testing of capabilities, systems and prototypes across the life cycle of a program; 3CE promotes the science and technology, analysis, experimentation, development, and testing of all products within the DOTMLPF continuum; DOTMLPF = Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities. The 3CE is a consistent, reliable and reusable environment that meets the common requirements of all commands and Army Program Managers (PMs) who employ Modeling and Simulation (M&S) to conduct distributed DOTMLPF development. The 3CE identifies, develops, integrates and maintains a core set of M&S tools, data and business processes; develops, maintains and provides interoperable connectivity to link the participating organizations; and provides the common 3CE environment and expertise to leverage 3CE capabilities. The 3CE enables a responsive simulation environment that inculcates consistency along a program's life cycle as it executes the Joint Capabilities Integration and Development System (JCIDS) and acquisition processes. The 3CE process achieves cost avoidance by reducing duplication of effort; maximizing reuse of tools, data and services; and ensuring interoperability. The 3CE provides the Army with a viable business model to ensure readily modifiable integrated solutions across parallel command and organization efforts. JIAT is a multi-linked system that integrates cost estimating tools, engineering design models, requirements, capability models and performance models appropriate for current and emerging technologies. JIAT enables analysts to optimize battlefield effectiveness at an affordable cost by providing databases, models and tools (common to all components) in a readily accessible Army-wide, web-based integrated environment. Solutions resulting from JIAT application increase the quality and maintainability of fielded war-fighting systems while controlling/reducing system life-cycle costs. The robust analysis performed through JIAT appreciably improves usage/dissemination of information and increases the efficiency, scope and clarity of the decision-making capabilities required by the acquisition process. A third effort -- Future Land Operations Interoperability Study-Command, Control, Communications, Intelligence (FLOIS-C3I) -- is funded in FY08, FY09 and FY10 under the project "HQDA Decision Support Tools and Services." FLOIS-C3I is a study examining the concepts required to integrate a United Kingdom (UK) brigade into a US Future-Force division. The primary purpose of FLOIS-C3I is to identify the desired level of UK-US battle command interoperability when incorporating a UK brigade into a US Future-Force division. A fourth effort, funded in FY08, is the development of an architecture for data standardization across the M&S enterprise.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08-10, Cross-Command Collaboration Effort (3CE). Funds will enable the Army to expand 3CE across the entire Army (beyond the Future Combat Systems -- its current use) to develop System-of-Systems concepts, prototypes, and test and evaluation methodologies.	1093	1116	1279
FY08-10, FLOIS-C3I. Funds will enable identification of tasks, conditions and standards necessary to integrate a UK medium-weight brigade into a US Future Force division and overcome the identified capability gaps.	300	500	400
FY08, Joint Integrated Analysis Tool (JIAT). JIAT was formerly known as the Integrated Performance Cost Model (IPCM). In FY08, DASA-CE will update, test and validate the component level cost model; populate the database; and update the prototypes provided to the	149		

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management support</b>	<b>0605718A - Army Modeling &amp; Sim X-Cmd Collaboration &amp; Integ</b>		<b>S02</b>
Tank and Automotive Command (TACOM). In FY09, DASA-CE completes additional collection of data for cost estimating, model integration and standardization.			
FY08, Development of an architecture for data standardization across the M&S enterprise. For each Army community of interest, the Army Materiel Systems Analysis Activity (AMSAA) assists in the process to determine types of tool being used, issues addressed by these tools, and data used by these tools.	151		
Small Business Innovative Research/Small Business Technology Transfer Program		47	
<b>Total</b>	<b>1693</b>	<b>1663</b>	<b>1679</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605718A - Army Modeling &amp; Sim X-Cmd Collaboration &amp; Integ</b>			<b>PROJECT</b> <b>S03</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
S03      Analysis M&S Tools and Services	2451	2104	2123	

**A. Mission Description and Budget Item Justification:** Under the project "Analysis M&S Tools and Services" the Army develops Modeling and Simulation (M&S) tools and services (e.g., hardware, software, infrastructure) for the Army's analysis community. The primary users of these tools and services are the Training and Doctrine Command Analysis Center (TRAC), the Army Materiel Systems Analysis Activity (AMSAA), and the Center for Army Analysis (CAA). Efforts focus on (1) development of analysis tools that will enable assessment of emerging technologies during concept exploration and (2) development of infrastructure and enabling technologies to support the Current and Future Force. These critical efforts are required for analysis-of-futures work to justify Army requirements, assessment of alternative approaches to satisfy those requirements, and development of current and emerging war fighting doctrine from tactical to operational levels of warfare. Many efforts funded under this project are chosen by Army M&S Capability Area Teams (CATs), who conduct HQDA-directed research to develop solutions for high priority M&S objectives impacting current war fighting capabilities. CATs focus, first and foremost, on areas that have near-term operational impact or have been difficult to model but are, nonetheless, critical to closing capability gaps.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08-10, Advanced Signals Intelligence (SIGINT) simulation capability. Funds will enable the Army to represent in simulation the SIGINT technologies and capabilities now an essential part of the Cost of War (COW).	400	400	400
FY08-10, Army modeling and simulation data strategy. Funds will enable the M&S community to collect, store and disseminate data as part of the Cost of War (COW).	400	400	400
FY08-10, Capability gaps identified by M&S CATs. Funds will enable Army to find M&S solutions to capability gaps in airspace command and control, rapidly developing networks, battle command systems, irregular warfare, counter-insurgency operations, and other areas. FY09 funds focus heavily on irregular warfare, identified in the January 09 "Quadrennial Roles and Missions Review" as one of four primary roles of DoD.	1563	1246	1323
FY08, Research in adversary cyber-protection measures for irregular warfare. Funds will enable Army to identify cyber-force protection measures used by adversaries and develop a shared database of these measures for implementation of current and future analyses.	88		
Small Business Innovative Research/Small Business Technology Transfer Program		58	
<b>Total</b>	<b>2451</b>	<b>2104</b>	<b>2123</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605718A - Army Modeling &amp; Sim X-Cmd Collaboration &amp; Integ</b>		<b>PROJECT</b> <b>S05</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
S05 SIMULATION TECHNOLOGY (SIMTECH) PROGRAM	1025	1541	1555

**A. Mission Description and Budget Item Justification:** The Army Simulation Technology (SIMTECH) program enhances Current and Future Force effectiveness by inducing Modeling and Simulation (M&S) research agencies and organizations to conduct high-priority, promising simulation technology research that is outside the scope of the Small Business Innovative Research (SBIR) and the Army science and technology programs. The SIMTECH program provides a source of competitive funds to Army research agencies and organizations to stimulate high quality, innovative M&S research with significant opportunity for payoff in Army war fighting capability. The SIMTECH program focuses simulation technology research initiatives on immediate short-term Army capability requirements by including a theme in the annual call for proposals. The SIMTECH program serves as a catalyst for major M&SC3I-related technology breakthroughs in embedded simulation, collaboration, rapid prototyping, commercial innovation, and related simulation technology. (M&SC3I = Modeling and simulation Cross-Command Collaboration and Integration.) Successful SIMTECH projects are generally transitioned to start-up projects and existing Army simulation programs. SIMTECH-activities are performed by the Army Materiel Command, the Army Corps of Engineers Engineer Research and Development Center, the Army Research Institute, the Army Training and Doctrine Command Analysis Center, the Program Executive Office for Simulation, Training and Instrumentation (PEO-STRICOM) and other Army agencies.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08-10, Mobility Common Operational Picture (MCOP) effort; geoBattlefield Management Language (geoBML); and integrated use of common geo-environmental, maneuver, and command and control behaviors across battle command systems. Funds will enable Army to improve commonality and consistency in the simulation results of an operations plan (OPLAN) during mission rehearsal.	625	500	500
FY08-10, GIS-Enabled Modeling and Simulation Project (GEMS) (GIS = Geospatial Information & Services). Funds will increase interoperability of M&S and C4ISR systems with GEMS. (C4ISR = Command, Control, Communication, Computers, Intelligence, Surveillance, reconnaissance.)	400	400	400
FY09-10, Improvement of the C4ISR component of M&S, identified by SIMTECH managers as a high-priority requirement.		597	655
Small Business Innovative Research/Small Business Technology Transfer Program		44	
<b>Total</b>	<b>1025</b>	<b>1541</b>	<b>1555</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE		
<b>6 - Management support</b>		<b>0605801A - Programwide Activities</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
Total Program Element (PE) Cost	72413	73504	77823	
M02 MED CMD SPT (NON-AMHA)	23766	24721	22661	
M15 ARI MGMT/ADM ACT	1928	1806	2014	
M16 STANDARDIZATION GROUPS	4779	4989	5170	
M42 ARDEC CMD/CTR Support	5765	6112	6986	
M44 CECOM CMD/CTR SPT	3969	4208	4935	
M46 AMCOM CMD/CTR SPT	8986	7664	10587	
M47 TACOM CMD/CTR SPT	2876	2989	3420	
M53 Developmental Test Command/Ctr Spt	11252	11626	11757	
M55 Edgewood Chemical Biological Center (ECBC)	5585	5857	6530	
M58 SSCOM CMD/CTR SPT	2230	2187	2411	
M76 Armament Group Support	1277	1345	1352	

**A. Mission Description and Budget Item Justification:** This program funds the continued operation of non-Army Management Headquarters Activities (AMHA) management and administrative functions at U.S. Army Research, Development and Standardization Groups overseas, Army Research, Development, Test, and Evaluation (RDTE) commands, centers and activities required to accomplish overall assigned general research and development missions and international research and development not directly related to specific research and development projects. The Standardization Groups play an integral role in the U.S. Army efforts for international cooperative research, development and interoperability, and fulfill international memoranda of understanding requirements (especially the American, British, Canadian and Australian Armies' Standardization Programs). Starting in FY06, the bulk of funding for The Futures Center transfers to the Operation and Maintenance appropriation

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605801A - Programwide Activities</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	73256	73748	69087
Current BES/President's Budget (FY 2010)	72413	73504	77823
Total Adjustments	-843	-244	8736
Congressional Program Reductions	-66	-244	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-777		
Adjustments to Budget Years			8736

Change Summary Explanation: Funding: Increased funding in FY10 in project number M02 will be used to fund critical civilian pay requirements, the special immunization program, and mandated electronic Food and Drug Administration reporting system. Increased funding in FY10 in project number M46 will be used to support the Anti-Tamper program.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M02</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M02 MED CMD SPT (NON-AMHA)	23766	24721	22661

**A. Mission Description and Budget Item Justification:** This project provides funding for headquarters (HQ) activities that support the Medical Research, Development, Test, and Evaluation (RDTE) Program at the U.S. Army Medical Research and Materiel Command (USAMRMC), Fort Detrick, Maryland to: (1) perform planning, programming, and budgeting, (2) manage resources, and (3) ensure compliance with U.S. Food and Drug Administration (FDA), and other regulatory and safety requirements supporting the Special Immunization Program (SIP); providing protection for workers at risk of exposure to highly hazardous pathogenic microorganisms or toxins. It also provides for continued operations of contracting and acquisition management functions performed by the U.S. Army Medical Research Acquisition Activity (USAMRAA) in support of the USAMRMC Medical RDTE Program.

Additionally, the USAMRMC is implementing the Medical Research Information Technology System (MeRITS), an electronic data and document-handling system needed to standardize animal and human clinical trial documentation. This system will create centralized storage and access between Headquarters and its five subordinate laboratories. MeRITS is an integral part of an overall USAMRMC effort to enhance its laboratories performance, efficiency, and accountability. MeRITS FY 2007-2009 expenses include purchase of commercially off-the-shelf (COTS) software and equipment and significant non-recurring contractor costs necessary to tailor the COTS software to meet USAMRMC requirements.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
MeRITS: In FY08, built data management, biostatistics and medical coding capability, and continued integrating systems and process components at fielded laboratories. In FY09, continue fielding systems to achieve coverage of clinical trials for which the Army Surgeon General is the product sponsor, and implement software upgrades, including a capability to electronically submit applications to the FDA for consideration of product licensure. In FY10, will acquire and begin integrating a Commercially-Off-The-Shelf (COTS) software capability for handling Serious Adverse Effects and Electronic Data Capture.	7784	8083	5866
Civilian Authorized Salaries and the Special Immunization Program (SIP): In FY08, FY09 and FY10, funds authorized civilian salaries assigned to HQ, USAMRMC and USAMRAA. Also, provides regulatory, clinical monitoring and data support for SIP. This program provides non-licensed vaccines and other biological products under FDA oversight to personnel at risk of exposure to selected infectious diseases; and partially funds other USAMRMC operational costs (e.g., supplies, equipment, and services) that support Medical RDTE.	15982	16280	16795
Small Business Innovative Research/Small Business Technology Transfer Programs		358	
<b>Total</b>	<b>23766</b>	<b>24721</b>	<b>22661</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>			<b>PROJECT</b> <b>M15</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
M15      ARI MGMT/ADM ACT	1928	1806	2014	

**A. Mission Description and Budget Item Justification:** This project supports the non-Army Management Headquarters Activity (AMHA) management and administrative functions for the U.S. Army Research Institute (ARI) for the Behavioral and Social Sciences to accomplish its mission to conduct the Army's research and development (R&D) in personnel, training, and leader development issues that will ensure the future Army remains ready and relevant. Specifically, this project provides technical and administrative support to the headquarters element and to six field research units and three liaison units to include budget execution, procurement oversight, RDT&E program planning and evaluation, management control, security/safety, logistics, information technology, and personnel/manpower execution and oversight.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Each fiscal year, provides continued operation of management, administrative, personnel, budget, and support functions at a level consistent with Army and mission requirements to meet the needs of ARI as an Army Laboratory conducting the Army's personnel, training, leader development, and organizational performance R&D program.	1928	1806	2014
<b>Total</b>	1928	1806	2014



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M16</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M16      STANDARDIZATION GROUPS	4779	4989	5170

**A. Mission Description and Budget Item Justification:** Project M16 supports nine International Technology Centers (formerly known as Standardization Groups) (Australia, United Kingdom, Canada, France, Germany, Japan, Chile, Argentina, and Singapore) for personnel, travel and overhead costs, leases on buildings, and mandatory permanent change of station.

The mission of the International Technology Centers is to represent the Army and serve as in-country/region focal point for all international armaments cooperation in their areas (countries) of responsibility to government agencies, academia, and defense industries.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at the nine International Technology Centers.	4779	4910	5170
Small Business Innovative Research/Small Business Technology Transfer Programs		79	
<b>Total</b>	<b>4779</b>	<b>4989</b>	<b>5170</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M42</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M42 ARDEC CMD/CTR Support	5765	6112	6986

**A. Mission Description and Budget Item Justification:** Supports the non-Army Management Headquarters Activity (AMHA) management and administrative functions at the U.S. Army Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at ARDEC.	5765	6112	6986
<b>Total</b>	<b>5765</b>	<b>6112</b>	<b>6986</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M44</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M44 CECOM CMD/CTR SPT	3969	4208	4935

**A. Mission Description and Budget Item Justification:** Supports the non-Army Management Headquarters Activity management and administrative functions at the U.S. Army Communications-Electronics Research Development and Engineering Center (CERDEC), Ft. Monmouth, NJ.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at CERDEC.	3969	4194	4935
Small Business Innovative Research/Small Business Technology Transfer Programs		14	
<b>Total</b>	<b>3969</b>	<b>4208</b>	<b>4935</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M46</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M46 AMCOM CMD/CTR SPT	8986	7664	10587

**A. Mission Description and Budget Item Justification:** Supports the non-Army Management Headquarters Activity (AMHA) management and administrative functions at the U.S. Army Aviation and Missile Research and Development Center (AMRDEC), Redstone Arsenal, AL.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at AMRDEC.	8986	3864	6887
Anti-Tamper (AT) is a DoD program that encompasses the systems engineering activities intended to prevent and/or delay exploitation of critical technologies in U.S. weapon systems. These activities involve the entire life-cycle of systems acquisition, including research, development, implementation, and testing of AT measures. These funds will be used to maintain the core team of subject matter experts (SMEs) available for this mission and to conduct technical assessments of micro-electronic parts used in the board designs of the Army's weapon systems including the FCS.		3700	3700
Small Business Innovative Research/Small Business Technology Transfer Programs		100	
<b>Total</b>	<b>8986</b>	<b>7664</b>	<b>10587</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M47</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M47 TACOM CMD/CTR SPT	2876	2989	3420

**A. Mission Description and Budget Item Justification:** Supports the non-Army Management Headquarters Activity management and administrative functions at the U.S. Army Tank-Automotive Research Development Engineering Center (TARDEC), Warren, MI.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at TARDEC.	2876	2989	3420
<b>Total</b>	<b>2876</b>	<b>2989</b>	<b>3420</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M53</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M53      Developmental Test Command/Ctr Spt	11252	11626	11757

**A. Mission Description and Budget Item Justification:** Project M53 funds civilian labor and support costs for the technical direction and administrative functions of the Headquarters, U.S. Army Developmental Test Command (DTC) located at Aberdeen Proving Ground, Maryland, and is required to support accomplishment of assigned developmental test missions not directly related to specific test and evaluation projects. This project includes staff/management functions of resource management, safety, security, environmental, strategic planning and ADPE/information/technology support for command-wide databases in support of the developmental test mission with technical direction of five Major Range and Test Facility Bases (MRTFBs) and test centers: White Sands Missile Range (WSMR), New Mexico; Aberdeen Test Center (ATC), Maryland; Dugway Proving Ground (DPG), Utah; Electronic Proving Ground (EPG), Arizona; and Yuma Proving Ground (YPG), Arizona; Cold Regions Test Center (CRTC), Ft Greeley, Alaska; and Tropic Regions Test Center (TRTC) at various locations, as well as for Redstone Technical Test Center (RTTC), Alabama; Aviation Technical Test Center (ATTC), Alabama; . This is the operating budget for DTC Headquarters, which provides technical direction for the annual execution of over 3202 tests, 8472 workyears, and a \$2.0 billion program.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Civilian labor and other support costs for DTC to provide technical direction and administer the assigned Army developmental test mission.	10815	10737	11179
Contract costs required to technically direct and administer the assigned Army developmental test mission; i.e., ADPE/information and technology support for command-wide databases. Also includes Materials, Supplies, and Equipment.	437	786	578
Small Business Innovative Research/Small Business Technology Transfer Programs		103	
<b>Total</b>	<b>11252</b>	<b>11626</b>	<b>11757</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M55</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M55 Edgewood Chemical Biological Center (ECBC)	5585	5857	6530

**A. Mission Description and Budget Item Justification:** Supports the non-Army Management Headquarters Activity management and administrative functions at the U.S. Army Edgewood Chemical Biological Center (ECBC), Aberdeen Proving Ground, MD.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at ECBC.	5585	5837	6530
Small Business Innovative Research/Small Business Technology Transfer Programs		20	
<b>Total</b>	<b>5585</b>	<b>5857</b>	<b>6530</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M58</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M58      SSCOM CMD/CTR SPT	2230	2187	2411

**A. Mission Description and Budget Item Justification:** Supports the non-Army Management Headquarters Activity management and administrative functions at the Natick Soldier Research, Development and Engineering Center (NSRDEC), Natick, MA.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at NSRDEC.	2230	2187	2411
<b>Total</b>	<b>2230</b>	<b>2187</b>	<b>2411</b>



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605801A - Programwide Activities</b>		<b>PROJECT</b> <b>M76</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M76 Armament Group Support	1277	1345	1352

**A. Mission Description and Budget Item Justification:** The goal of this program is to expand worldwide allied standardization and interoperability through cooperative research and development (R&D) and technology sharing per SECDEF guidance and especially in support of the U.S. Army. This program partially funds the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate in international fora, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), Defense Against Terrorism (DAT) and to pursue new cooperative R&D initiatives and international cooperative agreements such as memoranda of understanding. This program also includes: the United States' share of costs of the NATO Civil Budget, Chapter IX, which funds the NATO Industrial Advisory Group (NIAG) and the Special Fund for Cooperative Planning (U. S. Army is Executive Agent for this NATO bill); partially funds the Five Power Senior National Representatives, Army [SNR (A)], the Technical Cooperative Program, Bilateral SNR(A)s, and Army armaments working groups with many nations.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Funds support Army subject matter experts to attend scientific and technological exchange, meetings, demonstrations, and/or simulations having military application and mutual benefits to the United States and its Allies.	290	298	275
Fund the United States' share of the NATO Civil Budget, Chapter IX (Defense Support Programs). U. S. Army is Executive Agent for this NATO bill.	987	1009	1077
Small Business Innovative Research/Small Business Technology Transfer Programs		38	
<b>Total</b>	<b>1277</b>	<b>1345</b>	<b>1352</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605803A - Technical Information Activities</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
Total Program Element (PE) Cost	44484	44359	51620
720 TECH INFO FUNC ACTV	7625	8088	8693
727 TECH INFO ACTIVITIES	8453	9788	9033
729 YOUTH SCIENCE ACTIV	2939	3147	3152
730 PERS & TRNG ANALYS ACT	1897	2049	2067
731 ARMY HIGH PERFORMANCE COMPUTING CENTERS (AHPCC)	6999	7519	7685
733 ACQUISITION TECH ACT	7745	8425	17220
737 KNOWLEDGE MANAGEMENT FUSION	5217	1595	
C16 FAST	2502	2566	2580
C18 BAST	1107	1182	1190

**A. Mission Description and Budget Item Justification:** This program element (PE) supports upgrading the accuracy, timeliness, availability, and accessibility of scientific, technical, and management information at all levels of the Army Research and Development (R&D) community. Management of this information is critical to achieve the goals established by the Army's Senior Leadership. Use of accurate and timely technical information is essential to successfully meeting the milestones required on the path to the future force, allowing Army Science and Technology (S&T) leadership to refine investment strategy and quickly react to emerging opportunities and issues. This program includes initiatives to improve information derivation, storage, access, display, validation, transmission, distribution, and interpretation; to develop and enhance a single business model for Army S&T knowledge management information technology; to provide for Independent Review Team analysis of technology maturity as part of the Technology Area Readiness Assessment as required by DoDI 5000.2 dated May 12, 2003 as well as the Army Science Board (ASB) (projects 720 and 727). This program addresses the need to increase the competitiveness and availability of scientific, engineering, and technical skills in the DoD and National workforce through outreach programs aimed at middle school through college students and teachers. By providing direct working experience for these students in Army laboratories, the programs expose these students to the working world of science and engineering (project 729). The program includes funding for studies and analyses using behavioral science-based analytic tools to provide policy and decision makers with Soldier-oriented recommendations concerning manpower, personnel, and training issues (project 730). The program includes funding for support for Army high performance computing centers (project 731). The program includes funding for improvements to the Army's acquisition process (project 733). This program supports combatant commanders and major Army commands by providing science advisors to address scientific and technical issues and by providing engineering teams to solve field Army technical problems (project C16). Finally, this program funds studies by the Board on Army Science and Technology (BAST) (project C18). Coordination of this program with the other Services is achieved through inter-service working groups.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

**6 - Management support**

**0605803A - Technical Information Activities**

Work in this PE is performed by the Research, Development, and Engineering Command (RDECOM), Aberdeen Proving Ground, MD, the Army Research Institute (ARI) for the Behavioral and Social Sciences, Arlington, VA, the Army Corps of Engineers' Engineer Research and Development Center (ERDC), Vicksburg, MS, Medical Research and Materiel Command (MRMC), Ft. Detrick, MD, Space and Missile Defense Command (SMDC), Huntsville, AL, and the Information Management Office, Arlington, VA.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605803A - Technical Information Activities</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	42715	42905	42663
Current BES/President's Budget (FY 2010)	44484	44359	51620
Total Adjustments	1769	1454	8957
Congressional Program Reductions		-146	
Congressional Rescissions			
Congressional Increases		1600	
Reprogrammings	2837		
SBIR/STTR Transfer	-1068		
Adjustments to Budget Years			8957

Funds were added to Project 733 in FY10 to fund the Geospatial Acquisition Support Office (GASO) and to provide analytical support to the Program Executive Officers (PEOs) by the Army Materiel Systems Analysis Activity (AMSAA).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>		<b>PROJECT</b> <b>720</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
720      TECH INFO FUNC ACTV	7625	8088	8693

**A. Mission Description and Budget Item Justification:** This project provides funding for technology transfer activities to support acquisition, storage, and utilization of technical information for both military and domestic applications. Effective exploitation of science and technology (S&T) information is critical to achieving the goals established by Senior Army Leadership. Activities include Army support for Federal Laboratory Consortium (FLC) as required by Public Law; the Army Science Board; the Army Science Conference; S&T database management efforts; and administration of the Army's Small Business Innovative Research (SBIR) and Small Business Technology Transfer Program (STTR) in accordance with the Small Business Research and Development Enhancement Act of 1992. Technology transfer activities make technical information available to both the public and private sectors to reduce duplication in Research and Development programs and to increase competitiveness in the US business community. Database management efforts support development of decision aids, databases, and automation support for the management and execution of the Army Research, Development, Test and Evaluation (RDTE) appropriation. In addition, this project provides funding for patent legal expenses and fees for all Research, Development, and Engineering Command (RDECOM) subordinate commands and laboratories, as required by the Omnibus Budget Reconciliation Act.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work is performed by the Army Research Laboratory (ARL), Adelphi, MD.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide Army funding support for Federal Laboratory Consortium as required by Public Law 104-113.	209	224	226
Provide administrative and contractual support for the Army Science Board.	1450	1508	2087
Provide administrative support for the Army's SBIR and STTR programs.	1200	1266	1211
Provide funding for patent fees and patent legal expenses for AMC commands and laboratories.	1032	1113	1136
Provide funding for S&T Strategic Planning and Support.	194	199	368
Provide funding for the Army Science Conference.	490	536	492
Administer S&T database computer engineering support contract and support RDECOM databases S&T management support.	3050	3030	3173
Small Business Innovative Research/Small Business Technology Transfer Programs		212	
<b>Total</b>	<b>7625</b>	<b>8088</b>	<b>8693</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>		<b>PROJECT</b> <b>727</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
727      TECH INFO ACTIVITIES	8453	9788	9033

**A. Mission Description and Budget Item Justification:** This project funds the development of decision aids, databases, and automation support for the management and execution of the Army Research, Development, Test, and Evaluation (RDTE) Appropriation. It includes the hardware, software, and contractor support required to develop and implement a set of management decision aids, databases, and hardware/software tools to support technical and budgetary decisions at the Office of the Secretary of Defense (OSD) and Department of the Army (DA), including support of the Army Science and Technology (S&T) Master Plan. Most of the efforts in this project are on-going activities to support Army Research, Development, and Acquisition programs. Effective exploitation of S&T information is critical to achieving the goals established by Senior Army Leadership for the future force. Funding in this program supports Independent Review Team analysis of technology maturity as part of Technology Readiness Assessments as required by DoDI 5000.2 dated May 12, 2003.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan and Basic Research Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the Office of the Assistant Secretary of the Army, Acquisition, Logistics and Technology, The Pentagon, Washington, DC.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Conduct and support S&T program portfolio assessments and analysis.	1909	2085	1862
Support Army S&T strategic planning, analysis, and prioritization.	3293	3829	3533
Provide funding and support for Army Science and Technology Master Plan development and publication.	955	1104	1123
Provide funding and support for Army Acquisition Program Technology Readiness Assessments for Program Milestone Decisions.	1796	1997	2023
Provide Army support to Director, Defense Research and Engineering Executive Staff for DoD-wide Science and Technology oversight.	500	500	492
Small Business Innovative Research/Small Business Technology Transfer Programs		273	
<b>Total</b>	<b>8453</b>	<b>9788</b>	<b>9033</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>		<b>PROJECT</b> <b>729</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
729 YOUTH SCIENCE ACTIV	2939	3147	3152

**A. Mission Description and Budget Item Justification:** This project supports science activities that encourage middle/high school and college youths annually to develop an interest in and pursue higher education and employment in the science, math, and engineering fields. These activities are consolidated within the Army Educational Outreach Program (AEOP) that links and networks appropriate components to derive the best synergies to "present the Army" to a larger pool of technical talent and to provide students with Army-unique practical experiences at Army laboratories, centers, and institutes to fill future Army Science and Technology workforce needs. AEOP increases interest and involvement of students and teachers across the nation in science, math, and engineering at all proficiency levels and backgrounds to include under-represented and economically disadvantaged groups through exposure to Army sponsored research, education, competitions, internships, and practical experiences. The joint Army/Navy Washington regional area Science and Engineering Apprenticeship Program (SEAP) is included in the overall effort. This project enhances the national pool of science and engineering personnel that in turn supports defense industry and Army laboratory and research, development, and engineering center needs.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work is performed by the Research, Development, and Engineering Command (RDECOM), Aberdeen Proving Ground, MD, the Army Research Institute (ARI) for the Behavioral and Social Sciences, Arlington, VA, the Army Corps of Engineers' Engineer Research and Development Center (ERDC), Vicksburg, MS, Medical Research and Materiel Command (MRMC), Ft. Detrick, MD, and Space and Missile Defense Command (SMDC), Huntsville, AL.

<b><u>Accomplishments/Planned Program:</u></b>	<b><u>FY 2008</u></b>	<b><u>FY 2009</u></b>	<b><u>FY 2010</u></b>
Foster high school student interest nationally in science, technology, mathematics, engineering, and computer science by sponsoring the Junior Science and Humanities Symposium (JSHS), International Mathematical Olympiad (IMO), International Science and Engineering Fair (ISEF), Research and Engineering Apprenticeship Program (REAP) and the Uninitiates' Introduction to Engineering (UNITE) Program.	1602	1693	1737
Sponsor joint Army/Navy Washington Regional Area SEAP and increase Army Laboratory/Research, Development, and Engineering Center (RDEC) sponsorship of students.	232	247	238
Conduct West Point cadet research internship program to enhance cadet training through field experience within Army research labs and centers.	236	243	316
Support Army Educational Outreach Program (AEOP) to enhance Science, Mathematics, and Engineering education through student experiences in Army labs and academic partner institutions.	869	875	861
Small Business Innovative Research/Small Business Technology Transfer Programs		89	
<b>Total</b>	<b>2939</b>	<b>3147</b>	<b>3152</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>		<b>PROJECT</b> <b>730</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
730 PERS & TRNG ANALYS ACT	1897	2049	2067

**A. Mission Description and Budget Item Justification:** This project funds the Army's behavioral and social science research-based studies and analyses to address current and near term Soldier, training, and leader development issues. The research provides a unique capability to address a number of issues that directly or indirectly affect Soldier and unit performance and readiness, such as the effects of changes in training on individual and unit performance, the personnel costs of alternative programs and policies and the effects of program changes on retention of quality Soldiers. Requirements for these critical studies and analyses are solicited on an annual basis from the Training and Doctrine Command (TRADOC), the Assistant Secretary of the Army for Manpower and Reserve Affairs (ASA(M&RA)), the Army Deputy Chief of Staff, G-1, and the Human Resources Command (HRC).

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is managed by the US Army Research Institute (ARI) for the Behavioral and Social Sciences, Arlington, VA.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08: the following research-based analyses were completed: analyzing and evaluating methods for building cross-cultural competence in Army leaders; validating measures that assess the likelihood of Soldier attrition and retention; determining the feasibility of using an individual's prior experience and knowledge to better tailor their training within particular course curriculums. FY09, analyze the effectiveness of innovative training methodologies, principles, and best practices; and assess refined selection measures and their effect on Soldier and officer retention. FY10 studies and analyses will be based on critical issues identified by TRADOC, ASA(M&RA), the Army Deputy Chief of Staff, G-1, and the HRC.	1897	2002	2067
Small Business Innovative Research/Small Business Technology Transfer Programs		47	
<b>Total</b>	<b>1897</b>	<b>2049</b>	<b>2067</b>



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>		<b>PROJECT</b> <b>731</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
731 ARMY HIGH PERFORMANCE COMPUTING CENTERS (AHPCC)	6999	7519	7685

**A. Mission Description and Budget Item Justification:** This project provides funding for research, education, outreach, and sustainment of the Army High Performance Computing Centers at the Army Research Laboratory (ARL), the Tank and Automotive Research, Development, and Engineering Center (TARDEC), and the Army High Performance Computing Research Center (AHPCRC) consortium. The Army High Performance Computing Centers provide high fidelity modeling, simulation, and analysis of materials, systems, and operational constructs. The Centers work with researchers at Army laboratories and research, development, and engineering centers to explore new algorithms in the computational sciences to address critical technology issues in computational research areas.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work is performed by the Army Research Laboratory (ARL), Aberdeen Proving Ground, MD and the Tank and Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Sustain the high performance computing environment and infrastructure in support of the US Army Research Laboratory Major Shared Research Center (MSRC).	3573	3821	4189
Sustain the high performance computing environment and infrastructure in support of the US Army Tank and Automotive Research Development and Engineering Center (TARDEC).	2205	2296	2228
Sustain the high performance computing environment and infrastructure in support of the Army High Performance Computing Research Center's (AHPCRC) research, education, and outreach activities.	1221	1296	1268
Small Business Innovative Research/Small Business Technology Transfer Programs		106	
<b>Total</b>	<b>6999</b>	<b>7519</b>	<b>7685</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>		<b>PROJECT</b> <b>733</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
733 ACQUISITION TECH ACT	7745	8425	17220

**A. Mission Description and Budget Item Justification:** This project funds improvements to the Army's acquisition process by applying decision support and expert information systems, and by supporting analysis and evaluation of alternative acquisition strategies using techniques such as value-added analysis and analysis-of-alternatives. This project provides the environment for the analysis and evaluation of new information technologies, concepts, and applications for integrated management activities and support dynamic Army acquisition technology requirements. This program supports analysis efforts to conduct critical analyses for Army leadership in support of Army Transformation. These analyses are used by leadership in making acquisition, procurement, and logistics decisions in order to provide quality equipment and procedures to the Soldiers.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the Army Acquisition Support Center, Ft. Belvoir, VA.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Distribute and beta test application programs and user interface utilities for executive level information systems that offer Standard Query Language services to Army Acquisition Corps corporate and global databases. Analyze acquisition program financial programming and budgeting requirements. Continue development of Weapon Systems Handbook, long-range planning and policy analysis, resource allocation analysis, cost tracking, and analysis.	6831	7268	7604
Army Materiel Systems Analysis Activity (AMSAA) analytical support for the Program Executive Officers. The AMSAA support activities include system performance analysis, technology and risk assessment, modeling and simulation new methodology development/validation/accreditation, business case analyses, integrated logistics support/supportability analyses, operation and support cost reduction, and reliability improvement.			4696
Geospatial Acquisition Support Office (GASO). These dollars will support the front end assessments of the PEO requirements to ensure that system's acquisition processes address geospatial concepts, technology and standards early in their development processes. Moreover, they are tasked to provide a geospatial baseline system of systems in theater, which is a near-term requirement that cannot be deferred.			4920
Conduct analysis and evaluation of new information technologies, concepts, and applications of integrated management activities to meet the dynamic Army acquisition technology requirements.	914	922	
Small Business Innovative Research/Small Business Technology Transfer Programs		235	
<b>Total</b>	<b>7745</b>	<b>8425</b>	<b>17220</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>	<b>PROJECT</b> <b>737</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate
737 KNOWLEDGE MANAGEMENT FUSION	5217	1595

**A. Mission Description and Budget Item Justification:** Congressional Interest Item funding.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Knowledge Integration and Management	2898		
Knowledge, Tech Sharing Program	2319	1550	
SBIR/STTR		45	
<b>Total</b>	<b>5217</b>	<b>1595</b>	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>			<b>PROJECT</b> <b>C16</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
C16      FAST	2502	2566	2580	

**A. Mission Description and Budget Item Justification:** This project provides funding for the Field Assistance in Science and Technology (FAST) program. The FAST program provides Science advisers, recruited from Army Materiel Command (AMC) headquarters and all AMC Major Subordinate Commands (MSC) to serve combatant commands and major commands worldwide. FAST tours of duty provide significant professional growth opportunities for the Army's scientists and engineers and enable them to focus AMC resources on rapidly identifying and solving field technical problems that enable the improvement of readiness, safety, training, and reduce operations and support (O&S) costs. The FAST activity is supported by Quick Reaction Coordinators within the engineering centers. The FAST program recoups many times its cost in O&S savings. FAST also provides emerging technology demonstration opportunities to the engineering centers and executes a biannual Technology Applications Conference (TAC) on a rotating basis between Forces Command, US Army Europe, US Forces Korea/Eighth Army. FAST also maintains close coordination with the Navy Science Advisor Program (Naval Fleet Forces Technology Integration Office).

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the US Army Materiel Command (AMC), Ft. Belvoir, VA.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Respond to combatant commanders worldwide with technological solutions to urgent materiel problems they identify; deploy science advisors with US Task Forces in support of combatant commanders; execute biannual Technology Applications Conference.	2502	2505	2580
Small Business Innovative Research/Small Business Technology Transfer Programs		61	
<b>Total</b>	<b>2502</b>	<b>2566</b>	<b>2580</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605803A - Technical Information Activities</b>			<b>PROJECT</b> <b>C18</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
C18      BAST	1107	1182	1190	

**A. Mission Description and Budget Item Justification:** This project funds the Board on Army Science and Technology (BAST). The BAST functions under the auspices of the National Research Council (NRC) an organization within the National Academies of Sciences and provides an external, independent, and objective source of advice to the Army. The BAST serves as a convening authority for the discussion of science and technology issues of importance to the Army and oversees independent Army-related studies conducted by the National Academies. Working in close coordination with the Army, the BAST helps define problems, brings together experts to study these problems, and provides recommendations. Committees are assembled in accordance with established NRC procedures and BAST studies often take 12 months or more to conclude.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is executed extramurally by the Army Research Laboratory (ARL), Research Triangle Park, NC.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide studies and conducts periodic meetings to help identify, assess, and recommend emerging opportunities in science and technology fields applicable to the US Army. Primary study topic for FY08 was on the study of "Opportunities in Neuroscience for Future Army Applications". Topics for FY09 and FY10 will be selected according to Army Science and Technology (S&T) strategy and senior leader initiatives.	1107	1149	1190
Small Business Innovative Research/Small Business Technology Transfer Programs		33	
<b>Total</b>	<b>1107</b>	<b>1182</b>	<b>1190</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
Total Program Element (PE) Cost	39812	47898	45053
296 Close Combat Technology	1080	1137	7755
297 Mun Survivability & Log	4873	5838	8721
857 DOD EXPLOSIVES SAFETY STANDARDS	1535	1643	1664
858 ARMY EXPLOSIVES SAFETY MANAGEMENT PROGRAM	387	462	469
859 LIFE CYCLE PILOT PROCESS	22114	30843	4723
862 Indirect Fire and Fuze Technology	2067	2174	3096
F21 Direct Fire Technology and NATO Ammo Evaluation	972	1015	3042
F24 CONVENTIONAL MUNITIONS DEMIL	6784	4786	15583

**A. Mission Description and Budget Item Justification:** This Program Element supports continuing technology investigations. It provides a coordinated tri-service mechanism for the collection and free exchange of technical data on the performance and effectiveness of all non-nuclear conventional munitions and weapons systems in a realistic operational environment. It provides for NATO interchangeability testing (F21); Joint munition effectiveness manuals used by all services; development of standardization agreements (STANAGS) and associated Manuals of Proof and Inspection (MOPI); operation of the North American Regional Test Center (NARTC); evaluation of demilitarization methods for existing conventional ammunition (F24); evaluation of useful shelf life, safety, reliability and producibility of pyrotechnic munitions; and improvement of explosives safety criteria for DOD munitions via the DOD Explosives Safety Board (857). Pyrotechnic Reliability and Safety (296) supports pyrotechnic research, development and testing to identify, characterize and resolve reliability, safety, storage and manufacturing issues that impact production availability and field use of pyrotechnics. Project 296 will result in the development and demonstration of new, safe, reliable and environmentally acceptable munitions. Munitions Survivability and Logistics (297) will make Army units more survivable by applying technologies to reduce the sensitivity of munitions to unplanned stimuli (e.g. bullet impacts, fragment impacts, fast cook off, slow cook off, sympathetic detonation, shaped charge jets) and by testing and demonstrating munitions logistics system solutions that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Project 297 also supports the Army Insensitive Munitions (IM) Board's reviews. The Army Explosives Safety Management Program (858) was established in FY01. The U.S. Army Technical Center for Explosives Safety uses the funds in this project to evaluate current explosives safety standards and develop new, scientific and risk-based standards to meet U. S. Army explosives requirements. The Life Cycle Pilot Program (LCPP) (859) will assess production base capabilities and needs over the acquisition life cycle of various munitions and will address the producibility of ammunition including the transition to type classification and production, and the ability of the production base to cost effectively produce quality products on schedule. The Fuze Technology Integration program (862) will improve performance and lower the costs of existing proximity fuzes and enable new applications in submunitions and medium caliber fuzes, addressing advanced proximity fuze sensor technology, Micro-electromechanical Systems (MEMS), Safety and Arming (S&A) technology, and Electronic S&A (ESA) technology for smart munitions.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		

<u><b>B. Program Change Summary</b></u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	40947	20857	21146
Current BES/President's Budget (FY 2010)	39812	47898	45053
Total Adjustments	-1135	27041	23907
Congressional Program Reductions		-159	
Congressional Rescissions			
Congressional Increases		27200	
Reprogrammings	9		
SBIR/STTR Transfer	-1144		
Adjustments to Budget Years			23907

**Change Summary Explanation:**

FY 2009: Increase due to Congressional Adds of \$27.2M in Project 859 - Life Cycle Pilot Process.

FY 2010: Funds increased to support various technology investigations.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>PROJECT</b> <b>296</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
296 Close Combat Technology	1080	1137	7755

**A. Mission Description and Budget Item Justification:** This project will support research, development and testing to identify, characterize and resolve reliability, safety, storage and manufacturing issues that impact production availability and field use of demolitions, grenades, shoulder launched munitions, mines and mine clearing charges, pyrotechnics, including training realism. Project will result in the development and demonstration of new, safe, reliable and environmentally acceptable munitions.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Mitigation of Perchlorates	360		
Mitigation of Naphthalene			1000
Heavy Metal in Green Illuninants	295	175	255
Yellow Dye alternatives			500
Fragmentation Studies	155		
Nanoparticles for Pyro Items	270	380	750
Safer, More stable hand held signals and simulators		280	750
Multifunction Pyro Simulators		270	
M796 Impulse Cartridge variability and tolerance reduction			1000
M206 Infrared Countermeasure Flare trajectory improvement			1500
M211 Infrared Countermeasure Flare material dispersion improvement			1500
Aircraft Countermeasure Flare reliability modeling for Apache and Chinook			500
Small Business Innovative Research/Small Business Technology Transfer Programs		32	
<b>Total</b>	<b>1080</b>	<b>1137</b>	<b>7755</b>



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>PROJECT</b> <b>297</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
297 Mun Survivability & Log	4873	5838	8721

**A. Mission Description and Budget Item Justification:** This project supports the Army Transformation by making Army units more survivable through the investigation, testing and demonstration of munitions logistics system improvements that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Key thrusts are munitions storage area survivability, insensitive munitions (IM) technology integration and compliance, weapon system rearm, munitions configured load enablers and advanced packaging and distribution system enhancements. Within each thrust, a broad array of solutions will be identified, tested, and evaluated against developed system measures of effectiveness. Optimum, cost effective solutions that enable the rapid projection of lethal and survivable forces will be demonstrated. The early stages of force deployment are especially critical. Theater ammunition storage areas are vulnerable and present the enemy with lucrative targets. These areas and distribution nodes contain the only available munitions stocks in theater. Loss of these munitions could cripple the force, jeopardize the mission, and result in high loss of life. This project mitigates vulnerabilities and ensures a survivable fighting force.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Demonstrate technology for munitions packaging that will create a venting system during propellant burning to reduce internal pressures and minimize explosive reactions.	98		200
Demonstrate new IM explosives formulated from new less sensitive basic explosive ingredients and binders to replace current non-IM explosives.	1334	1275	2136
Manage technology integration efforts to meet IM requirements, develop improved IM test capability, update and maintain IM compliance status and IM technology databases, and support the updating of the PEO Ammunition IM Strategic Plan. Conduct reviews of munitions in development and production to determine if they meet a DoD 5000.1 requirement to withstand unplanned stimuli.	715	366	600
Establish generic testing procedures to evaluate and down-select IM explosive candidates based on sensitivity to bullet and fragment impacts, sympathetic detonation, and high temperature. These procedures will provide a reliable and low cost method of determining IM reactions for new explosives used in a variety of munitions.	300		
Demonstrate a new generation of IM booster/supplementary materials to initiate new IM main charge explosives which cannot be initiated with a currently available booster.	570	493	
Demonstrate thermal protection material and warhead and cartridge case venting systems to mitigate ammunition cook-off failure when exposed to fire.			520
Evaluate, through modeling and simulation and testing, barrier technology that will mitigate bullet impact, fragment impact, and sympathetic detonation			200
Investigate alternatives to both natural and processed wood ammunition packaging pallets and boxes that provide a cost effective, environmentally and phyto-sanitary compliant packing and unitization option.	115		
Design and demonstrate a tank ammunition container sized to be compatible with the Joint Modular Intermodal Container (JMIC)	113		

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0605805A - Munitions Standardization, Effectiveness and Safety</b>	<b>297</b>	
footprint in order to demonstrate rapid and seamless delivery of tank ammunition configured loads to the warfighter.			
Investigate and test alternative methods (blankets, coatings, dunnage) to achieve reductions in solar loading on ammunition packaging.			115
Investigate and evaluate commercially available and modified resealable barrier bags that will reduce life-cycle costs for many demolition items that undergo repacking multiple times during their expected shelf life.			100
Develop an alloy from commercially available metals that when applied to munitions containers utilizing techniques such as brazing/soldering/welding will maintain container structural integrity, but will also yield when exposed to a predetermined temperature thus allowing the container to vent when subjected to unplanned thermal stimuli.		271	285
Evaluate alternatives to Polyethylene-laminated (PolyLam) paper material which is used in the construction of fiber container inserts in ammunition packaging. Identification of alternative materials will help to reduce fiber insert costs and ensure availability of inserts for ammunition production.	105		
Develop an injection blow molded container for training ammunition that is less expensive and more weather resistant than current fiberboard packaging.	150		
Demonstrate next generation packaging with standardized characteristics that permit easy reconfiguration and that are reusable, nestable, unit friendly, and survivable.		200	1105
Develop technologies and algorithms that enable munitions to indicate their serviceability to the operator based upon aggregate environmental exposures, system cycling and munition degradation models.		149	1843
Demonstrate standard sized inter-modal shipping modules for ammunition. The modules will interlock with each other, top to bottom, and cargo platforms to form a stable, palletized, mixed-supply class configured load. They are automation friendly and rapidly re-configurable to meet changing user needs.	307	60	
Upgrade the ammunition Configured Load Building Tool and enable it to operate as a web based application. This would facilitate ease of use, reduce setup time for new users, and increase speed and efficiency in building configured ammunition loads for unit deployments.	310		300
Demonstrate temperature responsive materials that can be used to indicate highest and lowest temperature exposures and passive (battery free) visibly interpreted shock indicators that when applied to ammunition and/or packaging will provide end users and ammunition management personnel a low cost means of determining if ordnance has become unsafe or degraded due to environmental conditions or rough handling.		52	415
Develop Munitions Survivability Software (MSS) improvements to include incorporating a government off the shelf mapping capability that will facilitate field use of this explosives safety storage planning software tool.	546	669	125
Demonstrate a Forward Ammunition Resupply System, including robotic handling and/or soldier lifting enhancements and related ammunition tool kit upgrades, designed to improve soldier productivity and safety while unpacking and handling current ammunition.		1880	
Design and develop an International Standards Organization-container based capability to retrograde ammo returned from deployed combat units. The system will include the capability to inspect, reconfigure and recertify ammunition for Future Combat System in ready to fire configuration at the weapon systems.	210	189	537
Determine whether surface acoustic wave (SAW) enabled passive RFID tags mounted at the ammunition item or pallet level can be effectively utilized with ordnance for inventory, tracking, locating, or security purposes.		40	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management support</b>	<b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>297</b>
Demonstrate hazard classification certified packaging configurations for ammunition retrograde that use materials organic to the OCONUS facilities charged with the retrograde in order to provide a way to avoid the high costs for specialized transportation, detention and storage, or OCONUS demilitarization.		31	66
Using thermo-formable composites made from recycled plastics, demonstrate a low cost, disposable 463L pallet replacement that if substituted for the current aluminum 463L pallet would greatly reduce replacement costs and eliminate repair costs.			174
Small Business Innovative Research/Small Business Technology Transfer Programs		163	
<b>Total</b>		<b>4873</b>	<b>5838</b>

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# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>PROJECT</b> <b>857</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
857 DOD EXPLOSIVES SAFETY STANDARDS	1535	1643	1664

**A. Mission Description and Budget Item Justification:** This program supports the Research, Development, Test, and Evaluation efforts of the DoD Explosive Safety Standards Board. It supports explosive safety effects research and testing to quantify hazards and to develop techniques to mitigate those hazards in all DoD manufacturing, testing, transportation, maintenance, storage, disposal of ammunition and explosives operations, and also to develop risk based explosives safety standards. Results are essential to the development and improvement of quantity-distance standards, hazard classification procedures, cost effective explosion-resistant facility design procedures, and personnel hazard/protection criteria.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Develop improved tri-service design procedures and improved computer codes for explosion-resistant structures. Initiate preparation of revised tri-service manual TM-51300.	279	305	306
Collect and analyze airblast/fragment/thermal data for revising DoD, NATO hazard classification.	245	238	243
Develop improved explosives and munitions tests and characterization data. Specifically, develop improved gap tests for rocket motors.	275	321	340
Develop improved DoD and NATO explosives safety guidelines for munitions storage, explosives and field operation facilities. Prepared revised Dod 6055.9-STD and 4145.26M.	252	215	230
Conduct other hazards analyses and expand/automate explosives safety databases. Develop improved Explosives Safety Mishap Analysis Module with links to accident reports.	275	253	269
Develop and improve risk based analysis tools for explosives safety. Develop sequence of operations prototype.	209	265	276
Small Business Innovative Research/Small Business Technology Transfer Programs		46	
<b>Total</b>	<b>1535</b>	<b>1643</b>	<b>1664</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>PROJECT</b> <b>858</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
858 ARMY EXPLOSIVES SAFETY MANAGEMENT PROGRAM	387	462	469

**A. Mission Description and Budget Item Justification:** This projects purpose is to establish, validate or modify explosives safety requirements. This project promotes RDT&E of new and innovative explosives safety technologies that improve the survivability of Army personnel, facilities, and equipment as well as improve the health, safety and welfare of the general public. It is an Army requirement as defined in AR 385-64.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Development of risk based explosives safety criteria that will aid commanders and safety personnel in the transition from regulation to risk management.	100	100	100
Develop enhanced protective structure designs that improve the survivability of Army personnel, facilities, and equipment.	150	160	180
Develop explosive safety tools for use by Army personnel. Explosive safety tools allow commanders and safety personnel to make explosive safety decisions using risk management rather than regulations.	137	187	189
Small Business Innovative Research/Small Business Technology Transfer Programs		15	
<b>Total</b>	<b>387</b>	<b>462</b>	<b>469</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>PROJECT</b> <b>859</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
859 LIFE CYCLE PILOT PROCESS	22114	30843	4723

**A. Mission Description and Budget Item Justification:** This project supports the implementation of the Single Manager for Conventional Ammunition (SMCA) Industrial Base Strategic Plan through technology investigations, model based process controls, pilot prototyping, and industrial assessments. It will assess life cycle production capabilities required for all ammunition families, address design for manufacturability to facilitate economical production, identify industrial and technology requirements, and address the ability of the production base to rapidly and cost effectively produce quality products. Cost Reduction is an important part of the Life Cycle Pilot Process (LCPP). LCPP provides the resources to prototype critical technologies and develop the knowledge base to establish cost-effective, environmentally safe and modern production processes in support of the Munitions Industrial Base transformation.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue ongoing technology investigations. Developed concept designs and plans to transfer life cycle pilot process technology into the supplier base.	1481	1414	1898
Performed numerous production base readiness assessments to analyze present capabilities and identify trends in munitions and industrial technology. Identified over 700 single points of failure in the supplier base and began assessment of mitigation plans.	727	762	960
Develop "pilot" prototype processes for critical ammunition end items and components necessary to establish quality, affordable, and environmentally safe production.	1374	1440	1865
Developed advanced coating technology and began transfer of process technology to the explosive manufacturing Industrial Base. Continue development of processes to eliminate safety concerns and achieve net-shape manufacturing of advanced cluster energetic materials by developing novel coating and handling processes to support Insensitive Munitions (IM) explosive fill and transfer those processes to the supplier base.	4826	3090	
Established framework for integrated data environment for sharing of manufacturing science. Establish commercial partnership with ARDEC's Center for Manufacturing Science for the prototyping process and capturing of production knowledge in the arena of forged and drawn metal parts.	2317	2510	
Establish a focal point with the Defense Materials Technology Center to investigate innovative technology to support the needs of the munitions industrial base in metals manufacture.	1930	2896	
Establish a focal point for polymer technology to investigate innovative polymer based components and manufacturing processes related to polymer based components for munition applications.	965		
Completed initial facility design for production of atomized magnesium within the National Technology and Industrial Base (NTIB). Develop and prove-out the pilot scale process.	965	772	
Develop and transition flexible manufacturing and inspection processes for thermal batteries used in munition items.	2799		
Continued development of technology for the sensing of depleted uranium munitions residues and investigate technologies for their	4730	3862	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0605805A - Munitions Standardization, Effectiveness and Safety</b>	<b>859</b>	
management and removal from soil and water. Efforts include full scale demonstration of technologies at relevant field site.			
Develop streamline business processes and foster integration across the Joint Munitions and Lethality Ammunition Enterprise to more efficiently and effectively support warfighter needs.		1545	
Establish capability to incorporate new technology solutions for rapid spiral development of select Joint Munitions and Lethality Program Management (PM) programs to support warfighter needs. Utilize strategy of leveraging program requirements and resources with non traditional supplier technologies. Provide small non-traditional businesses collaboration opportunities with the PM's on their technologies effectiveness and performance.		2317	
Develop and transition an information center for advanced manufacturing process knowledge and technology. It will support cost effective production of components at small to medium sized sub-tier suppliers.		965	
Develop, prove-out, and field new prototype protective armor solutions that utilize various lightweight ballistic materials. The configured hybrid solution is optimal for weight reduction, high performance and affordability.		3862	
Establish capability to produce nanodiamonds within National Technology and Industrial Base (NTIB). Assess the effectiveness of incorporating nanodiamonds in prototype parts.		1545	
Congressional Add in support of Titanium Extraction, Mining and Process Engineering Research (TEMPER) was put in this project erroneously. It will be reflected in Program Element 622624 in the next budget cycle.		3000	
Small Business Innovative Research / Small Business Technology Transfer Programs		863	
<b>Total</b>	<b>22114</b>	<b>30843</b>	<b>4723</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>PROJECT</b> <b>862</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
862 Indirect Fire and Fuze Technology	2067	2174	3096

**A. Mission Description and Budget Item Justification:** This program investigates maturing technologies and seeks potential candidates for integration on current fuzing and safe and arm devices. This program will implement these technologies into fuzing systems to preclude obsolescence and enhance performance of existing munitions. The program addresses two major areas: (1) risk mitigation and (2) block upgrades. Risk mitigation efforts will evaluate and demonstrate second sources for fuzing systems that may reduce cost by providing competition, and maintain production when sources or parts are no longer available. It will also allow for the performance enhancement of current ammunition items by conducting aging studies of major fuze components to detect and identify latent defects. The second major area is block upgrades, which will evaluate and perform studies on improvements to fuzes; increase commonality of fuze components and requirements across all hand grenade programs; determine feasibility of common training fuze for 60, 81, and 120mm mortar rounds; determine feasibility of common mortar safe and arm device components for M734A1, M783 Fuzes; improve M759 fuze sensitivity of 30 mm munition. Block upgrades will enable the introduction of the latest technologies into fuzing, keep the fuzing design current to avoid obsolescence issues, and add capabilities.

The M483 Common Carrier program is a range matched family of 155mm ammunition with a maximum range of 22.5 kilometers that will result from a demilitarization cost avoidance utilizing a reutilization of M483 Dual Purpose Improved Conventional Munition (DPICM) projectile bodies. This effort includes the technical integration of a more producible White Phosphorous (WP) canister into the M483 carrier without the need of the M110's current burster tube resulting in savings per round. Also, more effective Infra Red (IR) and Visual Light (VL) Illumination payloads from the XM1066 and M485 will be integrated into the M483 Common Carrier with additional savings.

**Accomplishments/Planned Program:**

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Block Upgrades: Successfully completed the enhancement of the M762A1/M767 Application Specific Integrated Circuit (ASIC), and forwarded the design to PM CAS to incorporate into their Technical data package. Completed the Bunker defeat Munition (BDM) impact sensor upgrade. Provided data and design to PM CCS. Investigate drop in proximity upgrades for current airburst fuzing for mortar, artillery and other munitions. Evaluate proximity sensor upgrades for M734A1. Determining feasibility of a common training fuze for 60, 81, and 120mm mortar rounds. Prototyping a mortar common Safe and arm device for M734A1 and M783 rounds. Performing a study on commonality of fuze components and requirements across all hand grenades (M67, M84, and M18. Enhancing Turbine Alternator (T/A) on the M734A1/M783 mortar fuze to survive high g gun launch environments. Risk Mitigation: Evaluating improvements to stockpiled training and war reserve fuzes to enhance capabilities and/or address deficiencies. Evaluating second source for Digital Signal Processor for the M734A1 fuze, evaluate new battery and electronics sources for current inventory fuzes. Perform study to evaluate potential 2nd source for high -g survivable tuning fork crystals for electronic time fuzes for mortars and artillery. Evaluating storage reliability of current artillery batteries for the Multi Option Fuze for Artillery (MOFA) fuze/determine possible solutions to battery electrolyte storage instabilities.	2067	2112	2189
Indirect Fire: Finite element analyses, strength of design flat fire testing, static testing, engineering and proof of principal testing with the User will be performed. Ballistic testing including firing tables, safety, reliability and performance testing will be conducted. Demilitarization operations will be refined in order to provide for acceptable metal parts for use in the end item.			907



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management support</b>	<b>0605805A - Munitions Standardization, Effectiveness and Safety</b>	<b>862</b>	
Small Business Innovative Research/Small Business Technology Transfer Programs		62	
<b>Total</b>	<b>2067</b>	<b>2174</b>	<b>3096</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>PROJECT</b> <b>F21</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
F21 Direct Fire Technology and NATO Ammo Evaluation	972	1015	3042

**A. Mission Description and Budget Item Justification:** This program assures complete interchangeability of small caliber and automated cannon-caliber ammunition and weapons among all NATO countries with all of the associated logistic, strategic and tactical advantages. Project involves development, maintenance and testing compliance of NATO standardization agreements (STANAGS) and staffing of the NATO North American Regional Test Center (NARTC). The program also includes warhead improvements and capability insertions to enhance lethality and effectiveness of existing cartridges.

FY 2010 funds will continue to maintain the NARTC and support NATO standardization of small and medium caliber ammunition for battlefield interchangeability. Additionally, this funding will be used to support small caliber rifle, 40mm grenade and medium caliber cannon ammunition effectiveness, accuracy and general improvements. Improvements in target practice technology such as spotter technology will be incorporated into training ammunition.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
40mm High/Low Velocity Standardization	45	50	
30mm Assessment Team	20	20	
Maintain standardization of qualified designs	100	100	
New Ammo design qualification & NATO Nominated Weapon Evaluation	125	121	
NARTC Equipment Purchases	80	95	
Staff, Equip, Maintain NARTC	130	140	150
Aeroballistic Study of M856	80	50	
Design & Refine Models	75	95	
Optimize Manufacturing Process	317	316	
Small Caliber Ammunition Standardization Efforts			622
40mm Non-dud Producing Training Cartridge			670
M433 Warhead Improvement			400
Target Practice Spotter Technology Insertion			500
Improved M789 Lethality			700
Small Business Innovative Research/Small Business Technology Transfer Programs		28	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

**6 - Management support**

**0605805A - Munitions Standardization, Effectiveness and Safety**

**F21**

Total

972

1015

3042

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>PROJECT</b> <b>F24</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
F24 CONVENTIONAL MUNITIONS DEMIL	6784	4786	15583

**A. Mission Description and Budget Item Justification:** Under the leadership and oversight of the Product Manager for Demilitarization, this project supports a continuing technology evaluation of demilitarization methods for all types of conventional ammunition in development, production, and storage. Project F24 will complete the development and demonstration of new, safe, and environmentally acceptable alternatives to open burning/open detonation (OB/OD), including recovery/recycle/recycling (R3) equipment, and processes to reduce the extremely large demil stockpile. Beginning in FY10, the Conventional Munitions Demil Project, F24 will incorporate the Explosive Demilitarization Technology Program, a cooperative inter-service, interagency effort dedicated to the maturation of safe, efficient, and environmentally acceptable processes for the closed disposal of conventional munitions including explosives, missiles, missile components, and large rocket motors. The effort employs the highly matured technology base in the DoD Service Laboratories and Technical Centers, the Department of Energy (DOE) national laboratories, industry, and academia. The program is integrated through the leadership of the Product Manager for Demilitarization and the Joint Ordnance Commanders Group Munitions Demilitarization/Disposal Subgroup leveraging support from the Department's Environmental Security Technology Certification Program (ESTCP), the Strategic Environmental Research and Development Program (SERDP) and the Joint DOD/DOE Munitions Technology Program. The program supports an annual global demilitarization symposium for technical review and data evaluation from ongoing projects and advanced demonstrations. The PM Demilitarization R&D Integrated Process Team utilizes a systematic approach for project prioritization.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Advanced Destruction: This effort focuses on destruction of munitions. In FY08 Plasma Ordnance Demilitarization System (PODS) Prove-out testing continued; additional items were selected for continued prove-out and demonstration/validation testing. Technical supervision and support of the (Mobile Plasma Treatment System) MPTS project was executed. Equipment fabrication/procurement for the Mobile Cryofracture Plasma Arc Treatment System (Cryo-Plasma) was conducted as well as sub-system testing on the feed interface. Prove-out testing of the upgraded Cryofracture process for ADAM anti-personnel land mines was conducted. Results indicated need for further minor process modifications and required changes were made. In FY09 PODS prove-out testing will be completed. MPTS technical support will continue. CryoPlasma equipment procurement will be completed, along with sub-system testing. System assembly and installation will begin. Cryofracture final prove-out and dem/val testing will be conducted. In FY10 PODS Dem/Val tests will be completed. MPTS technical supervision and support will be completed. CryoPlasma system assembly and installation will be completed. Cryofracture adaptation to Rock-eye sub-munitions will take place. Destruction of HC Smokes development of technology for demil will begin. Hydrolysis Prototype Processing Plant (HPPP) will initiate fabrication and transition of Acid Hydrolysis technology to CAD/PAD demil. White Phosphorous Felt Wedges will initiate fabrication of demil technology. Demil of Rockeye Munitions will initiate the concept design.	2490	2064	4438
Resource Recovery and Recycling (R3): This effort focuses on enhancing existing methods of munitions R3. In FY08 the Magnesium Recovery (Mg R3) equipment procurement and fabrication for the pilot process was completed. In FY09 Mg R3 equipment installation and prove-out testing will be conducted on the large-scale pilot plant. In FY10, Mg R3 demonstration and validation will be conducted as well as continuing plant fabrication. Munitions Residue Inspection System (MRIS) will transition machine vision for 105MM projectiles; will initiate the design and fabrication of machine vision for 750 lb. bombs. Initiate the design of a high pressure water washout system.	3943	1668	5162

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management support</b>	<b>0605805A - Munitions Standardization, Effectiveness and Safety</b>		<b>F24</b>
Advanced Munitions Disassembly: This effort focuses on the disassembly of conventional munitions. In FY10, will initiate the design of robotics 155mm rocket assisted projectile (RAP) disassembly technology. Will finalize and demonstrate the disassembly of M42, M46, and M77 grenades using Robotics Improved Conventional Munitions (ICM) Disassembly.			4009
Advanced Removal: This effort develops technology to remove propellant. In FY08 Ultrasonic Removal technology development continued at the pilot plant level of operations. In FY09 Ultrasonic Removal pilot plant operation will be completed and design of a prototype facility will be initiated. Development of IM Munitions technology. Autoclave process will be optimized via computer modeling and simulation. In FY10 Ultrasonic Removal Prototype facility equipment will be procured and fabricated. Will Continue with development of IM Munitions technology. Will demonstrate propellant removal technology on missiles utilizing auguring techniques. Initiate the development and fabrication of a technique for the milling of multiple missiles, Flexible Milling of Rocket Motors.	351	920	1974
Small Business Innovative Research / Small Business Technology Transfer Programs		134	
<b>Total</b>	<b>6784</b>	<b>4786</b>	<b>15583</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE		
<b>6 - Management support</b>		<b>0605857A - Environmental Quality Technology Mgmt Support</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	
Total Program Element (PE) Cost	8790	5110	5191	
031 Environmentally Sustainable Acquisition/Logistics	3311	3622	3677	
06E ENVIRONMENTAL RESTORATION TECH SUPPORT	4001			
06H UNEXPLODED ORDNANCE CLEARANCE TECHNOLOGY SUPPORT	1138	1216	1239	
06I POLLUTION PREVENTION TECH SUPPORT	340	272	275	

**A. Mission Description and Budget Item Justification:** This program resources environmental quality technology (EQT) related management support functions including support of RDT&E required for EQT technical integration efforts at demonstration/validation test sites, technical information and activities, test facilities and general test instrumentation, and EQT requirement assessments. Funds required to support the management of technology transfer associated with technology demonstrated and validated as part of Army EQT projects are included in this program element. In addition, support to the Army weapon system acquisition community to address generic pollution prevention related requirements are included under the Environmentally Sustainable Acquisition/Logistics Program.

The Environmentally Sustainable Acquisition/Logistics project includes the program management for developing acquisition strategies that both achieve system key performance parameters and sustain the environment without permanent and unacceptable change in the natural environment or human health from system concept refinement to disposal. It includes systematic consideration of environmental impacts, energy use, natural resource, installation impacts, economics, and quality of life. It provides support to the system acquisition community; e.g., program and project managers, to integrate environmental quality analyses into system acquisition process. The goal is to resolve environmental quality issues related to weapon systems that are identified during design, development, testing, operation, or support to reduce Army environmental liabilities and total ownership cost and includes the following: efforts to eliminate the use of hazardous and ozone-depleting materials from weapon systems and facilities, and helping to ensure the availability of Halon 1301 to support weapon system fire suppression requirements through the year 2020.

The Unexploded Ordnance Detection and Clearance project, beginning in FY 2004, is being overseen by the Army. The project had been overseen by Office of the Secretary of Defense in prior years. This project funds the Unexploded Ordnance Center of Excellence (UXOCOE) to provide for coordination of unexploded ordnance (UXO) technologies across the Department of Defense.

The Pollution Prevention Technology Support project will provide management support for the demonstration and validation of reformulated surface coating materials for weapon systems production and maintenance operations. These materials will increase operational sustainment and warfighter training capabilities by reducing soldier health risks, environmental impacts and compliance enforcement actions against installations while increasing coatings performance and standardization across the Army. This project manages research, development, test and evaluation (RDTE) activities under projects 0603779A, Environmental Quality Technology Dem/Val (E21), and 0603804A, Logistics

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

**6 - Management support**

**0605857A - Environmental Quality Technology Mgmt Support**

and Engineer Equipment Adv Dev (K42), which together serve to transition advanced technologies developed under 0603728A, Environmental Quality Technology Demonstrations (025).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605857A - Environmental Quality Technology Mgmt Support</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	4926	5125	5238
Current BES/President's Budget (FY 2010)	8790	5110	5191
Total Adjustments	3864	-15	-47
Congressional Program Reductions		-15	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	4000		
SBIR/STTR Transfer	-136		
Adjustments to Budget Years			-47

FY2008 - The reprogramming (of \$4.0 million) transferred the Environmental Restoration Components' Operation and Maintenance (O&M) appropriation to Research, Development, Test, and Evaluation, Army (RDT&E,A), FY 2008/2009, appropriation for the proper execution of the approved environmental restoration activities to improve the Army's Business Enterprise Architecture (BEA) System, pursuant to the authorities provided by Public Law 110-116, the Department of Defense (DoD) Appropriations Act, 2008.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605857A - Environmental Quality Technology Mgmt Support</b>		<b>PROJECT</b> <b>031</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
031 Environmentally Sustainable Acquisition/Logistics	3311	3622	3677

**A. Mission Description and Budget Item Justification:** The Environmentally Sustainable Acquisition/Logistics (ESAL) project provides support to the system acquisition community to integrate environmental quality, safety and occupational health, energy efficiency and materials compatibility issues and concerns into the life cycle system acquisition process. The Army Acquisition Executive, the Assistant Secretary of the Army (Acquisition, Logistics, and Technology), and the Commanding General, Army Materiel Command (AMC) have defined the functions of the ESAL project in coordination with the office of the Assistant Secretary of the Army for Installations and Environment [ASA(I&E)]. This project provides direct support to the Army acquisition community to comply with legal statutes, policy and regulations during the life cycle of Army materiel. Direct support is provided to Program Executive Officers and Program, Product and Project Managers to ensure systems integrate ESAL considerations during system design, operation and maintenance. ESAL helps the Army achieve compliance with its weapon systems, industrial base, field and deployed activities directed by international treaties, Federal statutes, Executive Orders, Department of Defense (DoD) and Army policies and regulations.

ESAL funds system acquisition support to the Army's Environmental Technology Technical Council (ETTC) and coordinates environmental quality related systems' needs for expanded research and development efforts. ESAL tasks are executed using appropriate Army research, development, and engineering centers; Army laboratories; and contractor facilities. Technologies are assessed for material compatibility, system safety, toxicity and health hazard risks and are implemented by program managers and life cycle management commands with their resources during design, development, or production; on the shop floor; during operations; and/or through improved materials and processes used by or on their system.

ESAL includes Army efforts to manage the use of ozone-depleting substances and greenhouse gases from weapon systems, to manage the Army ozone-depleting substance reserve, and Army acquisition efforts to eliminate the use of hazardous and toxic materials on Army systems. ESAL works in coordination with tactical units and field commands to leverage lessons-learned from field commanders to reduce the burden of hazardous materials on logistics and to reduce hazardous waste generated during operations and support of weapon systems. This includes supporting National Environmental Policy Act (NEPA) analyses by sharing data at the major command, installation, and unit level as appropriate. The focus of ESAL is on improving readiness, improving acquisition processes, reducing supportability burden, and minimizing total ownership cost.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
- Environmentally Sustainable RDTE program management and oversight of technology integration efforts by Army Life Cycle Management Commands and environmental integrated process teams for new design, new procurement and fielded weapon systems. Participation and technical assistance in integrating sustainable pollution prevention technologies into system engineering activities. Technology management with weapon system environmental management teams to implement DoD/Army policies related to hazardous and toxic materials, ozone depleting substances, greenhouse gases and environmental management systems to reduce environmental risks to acquisition programs. Provide oversight to integrated process teams addressing environmental quality issues from Army commodities, for example the use of perchlorate in the Excalibur artillery projectile. Provide technology management support across all commodity areas and represent the Army acquisition community in development and review of Environmental Analyses. Continued emphasis on	688	783	809

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management support</b>	<b>0605857A - Environmental Quality Technology Mgmt Support</b>		<b>031</b>
supporting Acquisition Category (ACAT) II and ACAT III systems when the Milestone Decision Authority is not the Army Acquisition Executive.			
- Technical management and oversight of the Army's reserve of ozone depleting substances. Includes oversight of Army programs developing alternative chemicals to substitute into mission critical applications in tactical vehicles and aircraft. The reserve contains the Army's strategic resources of Halon used for explosion and fire suppression systems and R-22 used in fielded environmental control units. Technical management includes oversight of operational use of reserve resources, resolution of operational problems affecting reserve resources, coordination with weapon system program managers to affect system replacement and retrofit to eliminate ozone depleting chemicals while minimizing greenhouse gases, coordination and technical assistance to garrison commanders to assure recovery and deposit of excess Halon and R-22 into the reserve and management of resource levels to assure continued availability of Halon and R-22 needed to support combat mission critical applications throughout the life of legacy weapon systems. Includes participation in Federal government and multi-national forums discussing use of ozone depleting substances and greenhouse gases, justifying mission critical applications, and addressing international importation and use regulations. Significant effort supports Army warfighters in Operation Enduring Freedom and Operation Iraqi Freedom assuring adequate supplies of fire/explosion suppression and cooling agents in the theatre of operations.	414	430	456
- Technical management and oversight of safety, health hazard and toxicity assessments of materials and chemicals used in weapon system configuration, production, maintenance and operation. Army regulations require all new materials and chemicals be assessed for health hazards and toxicity prior to introduction into the Army inventory. Technical management and oversight assure "environmentally preferable" materials and chemicals do not introduce unknown risks to soldiers and workers. Technical management is provided to assist in risk mitigation decisions for implementing solutions.	89	92	98
- Technology support to Program Executive Offices and Program Managers to integrate environment, safety and occupational health considerations into systems engineering activities. Includes definition of technology requirements to meeting operational requirements, participation in developing test plans and protocols, oversight of testing efforts, analysis of technical data to support implementation decisions, participation in technical and cost risk assessment and reassessment and revision of contractual and operational requirements for successful technology integration, operation and support. Accomplished through direct participation in weapon system environmental management teams located at major subordinate commands. Includes technology management in Environmental Management Systems and participation in acquisition documentation and review processes supporting weapon system program milestone decisions. Directly support replacement of cadmium, hexavalent chromium, Halon and other pollutants from ground combat systems, aviation systems, communication-electronic systems and other commodities. Review environmental, safety, occupational health and energy statutes and regulations affecting all Army commodity areas, and prepare environmental documentation for initial capability documents and in preparation for milestone reviews.	455	469	499
- Technology management and technical support to logistics initiatives including the environmental, safety and occupational health aspects of the Army Corrosion Program and the DoD Corrosion Program on Acquisition. Includes coordination of technology requirements among service members, coordination of technology and operational requirements among Army program managers, management and oversight for developing joint test protocols, oversight of testing activities, and technical data analysis of test results to support systems engineering decision making.	149	152	162
- Technology management, technical support, and representation of the AMC voting member of the Army Environmental Quality Technology program's ETTC. Includes coordination of Technology Base (RDTE) Budget Activity (BA)-1 and BA-2 requirements among members of the ETTC Pollution Prevention Technology Team, coordination of technology and operational requirements in support of	739	790	818

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management support</b>	<b>0605857A - Environmental Quality Technology Mgmt Support</b>		<b>031</b>
RDTE BA-3 and BA-4 evaluations in support of weapon system platform integration, management and oversight for developing test plans, oversight of testing activities, and technical data analysis of test results to support weapon systems engineering decision making. Participation in performance and cost/risk assessments in support of ASA(I&E) program objectives. Manage development and execution of plans for pollution prevention technology development in four or more technology areas including Sustainable Painting Operations for the Total Army (SPOTA) that address Army compliance with impending National Emission Standards for Hazardous Air Pollutants (NESHAPs) through a pollution prevention solution. Provide oversight RDTE management to recomposition ammunition, rockets and missiles, and pyrotechnics to remove perchlorate and other hazardous constituents. Develop and execute management plans for emerging environmental quality technology programs as necessary, including Zero Footprint Camp, Reductions in Toxic Metals Used in Surface Finishing on Army Weapon Systems, Joint Battlespace Use Fuel of the Future-Ultra Sustainable, and Airborne Lead Reduction in Army Weapon Systems.			
- Technology management and technical support to AMC industrial base and Army field installations for fielding and maintaining pollution prevention technology. Includes coordination of weapon system integration of pollution prevention technology for resolution of industrial base (depots, arsenals and ammunition plants) and garrison environmental issues associated with system fielding (operation and support). Coordination and information transfer supporting materiel fielding. Analysis of impending legal statutes impacting production, operation and support of weapon systems. Assessment of readiness impacts to weapon systems resulting from impacts in capabilities of industrial base and garrisons to support production levels, training and operational tempo and maintenance activities. Participate with ASA(I&E) management and representatives in assessing the readiness implications of impending NESHAPs, greenhouse gas and energy regulations and other environmental, safety and health regulations on Army industrial base and garrison activities. Evaluate impacts of impending regulations on fielded Army weapon systems and future acquisition programs. Provide Army acquisition community representation in Office of Secretary of Defense (OSD) and Department of the Army (DA) committees addressing environmental legislation and rulemaking.	777	805	835
Small Business Innovation Research/Small Business Technology Transfer Programs (SBIR/STTR)		101	
<b>Total</b>	<b>3311</b>	<b>3622</b>	<b>3677</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605857A - Environmental Quality Technology Mgmt Support</b>		<b>PROJECT</b> <b>06E</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
06E ENVIRONMENTAL RESTORATION TECH SUPPORT	4001		

**A. Mission Description and Budget Item Justification:** This project will support the technical integration and transfer of environmental quality technology at RDT&E demonstration sites. These funds will be used to support the technical integration of capabilities, processes, test sets, etc. at the demonstration site until the receiving organization can assume responsibility for operate those capabilities, processes, test sets, etc.

**Accomplishments/Planned Program:** Not applicable for this item.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605857A - Environmental Quality Technology Mgmt Support</b>		<b>PROJECT</b> <b>06H</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
06H UNEXPLODED ORDNANCE CLEARANCE TECHNOLOGY SUPPORT	1138	1216	1239

**A. Mission Description and Budget Item Justification:** This effort was devolved to the Army from the office of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)). This effort funds the Unexploded Ordnance Center of Excellence (UXOCOE), which provides the day-to-day management, coordination, and information clearinghouse functions, and serves as the Department of Defense's (DoD) center for coordinating Unexploded Ordnance (UXO) Research, Development, Test and Evaluation (RDT&E) requirements and programs across DoD; develops and promotes standards for testing, modeling, and evaluation; maintains information on technologies for UXO detection and clearance; publishes an annual report summarizing the activities and accomplishments of the UXOCOE in order to improve the effectiveness and economy of UXO detection and clearance RDT&E efforts throughout DoD; and gathers and maintains a database for the results of these efforts. The Army manages, oversees, and coordinates this effort on behalf of the office of the USD(AT&L).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Conduct review and technology workshops to coordinate and improve the technological thrusts of DoD UXO RDT&E.	125	130	134
Coordinate/collect/analyze UXO RDT&E information via conferences, seminars, and workshops.	355	371	362
Generate an annual UXO Clearance Report focused on UXO RDT&E efforts for countermining, explosive ordnance disposal, UXO remediation, humanitarian demining, and active range clearance.	196	205	215
Maintain and update the UXO clearance/detection databases and computer web site and analyze data from and programs in UXO RDT&E for potential solutions to UXO related needs.	286	280	290
Provide oversight of UXOCOE's Ft. A. P. Hill test site which is used for standardized scientific experiments to help gather data on and model the performance of potential UXO sensors. Data are needed for the acquisition of UXO sensor performance data versus a full system evaluation. Focus is on the sensor itself, not on full-scale operational system capability. Full-scale development would occur during engineering and manufacturing development and be aimed at meeting validated requirements prior to full-rate production.	176	195	238
Small Business Innovative Research/Small Business Technology Transfer Programs		35	
<b>Total</b>	<b>1138</b>	<b>1216</b>	<b>1239</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605857A - Environmental Quality Technology Mgmt Support</b>		<b>PROJECT</b> <b>06I</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
06I POLLUTION PREVENTION TECH SUPPORT	340	272	275

**A. Mission Description and Budget Item Justification:** This project provides RDTE Management Support for the demonstration and validation of new and reformulated paints, paint removers, cleaners and other surface coating materials and processes for weapon systems production and maintenance operations. The project increases operational sustainment and warfighter training capabilities by reducing soldier health risks, environmental impacts and compliance enforcement actions against installations while increasing coatings performance and standardization across the Army. Materials and processes supported by this project are inherently compliant with all applicable National Emissions Standards for Hazardous Air Pollutants that regulate surface coating activities, thereby eliminating the need for Army installations to incur hundreds of millions of dollars in expenses to purchase, install and operate air pollution control devices. This project provides for management of RDTE activities conducted under projects 0603779A, Environmental Quality Technology Dem/Val (E21), and 0603804A, Logistics and Engineer Equipment - Adv Dev (K42), which together serve to transition advanced technologies developed under 0603728A, Environmental Quality Technology Demonstrations (025). The project supports Sustainable Painting Operations for the Total Army (SPOTA) at facilities that produce and maintain Combat Support/Combat Service Support systems, Ground Combat Vehicles and other Army equipment. The project expedites technology transition from the laboratory to operational use by supporting the demonstration of new materials and processes to fulfill the performance requirements outlined in Material Specifications, Depot Maintenance Work Requirements, Technical Manuals and other technical data. The project is managed by the Director of the Environmental Acquisition and Logistics Sustainment Program at the Headquarters, U.S. Army RDECOM.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Manage and oversee demonstration/validation of reformulated surface coating materials	340	266	275
Small Business Innovation Research/Small Business Technology Transfer		6	
<b>Total</b>	<b>340</b>	<b>272</b>	<b>275</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605898A - Management HQ - R&amp;D</b>		
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M65 Army Test and Evaluation Command (ATEC)	14841	15613	15866

**A. Mission Description and Budget Item Justification:** This project provides for the salaries and related personnel benefits for the management headquarters authorized civilian personnel who support the U.S. Army Test and Evaluation Command (ATEC) mission. Personnel are located at Alexandria, VA, and Aberdeen Proving Ground, MD. ATEC plans, conducts, and integrates developmental testing, independent operational testing, independent evaluations, assessments, and experiments to provide essential information to Soldiers and acquisition decision makers supporting the American Warfighter.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management support</b>	<b>0605898A - Management HQ - R&amp;D</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	14797	15665	16317
Current BES/President's Budget (FY 2010)	14841	15613	15866
Total Adjustments	44	-52	-451
Congressional Program Reductions		-52	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	62		
SBIR/STTR Transfer	-18		
Adjustments to Budget Years			-451



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>6 - Management support</b>	<b>PE NUMBER AND TITLE</b> <b>0605898A - Management HQ - R&amp;D</b>		<b>PROJECT</b> <b>M65</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
M65 Army Test and Evaluation Command (ATEC)	14841	15613	15866

**A. Mission Description and Budget Item Justification:** This project provides for the salaries and related personnel benefits for the management headquarters authorized civilian personnel who support the U.S. Army Test and Evaluation Command (ATEC) mission. Personnel are located at Alexandria, VA, and Aberdeen Proving Ground, MD. ATEC plans, conducts, and integrates developmental testing, independent operational testing, independent evaluations, assessments, and experiments to provide essential information to Soldiers and acquisition decision makers supporting the American Warfighter.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Civilian labor and other support required to manage and administer the Army test and evaluation mission at ATEC.	14841	15587	15866
Small Business Innovative Research/Small Business Technology Transfer Programs		26	
<b>Total</b>	<b>14841</b>	<b>15613</b>	<b>15866</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	42374	59552	27693	Continuing	Continuing
090 MLRS HIMARS	4304	3761	1997	Continuing	Continuing
093 Multi-Launch Rocket System (MLRS)	4539	4095	4538	Continuing	Continuing
784 GUIDED MLRS	33531	51696	8957	Continuing	Continuing
78G GMLRS ALTERNATIVE WARHEADS			12201		12400

**A. Mission Description and Budget Item Justification:** The M142 High Mobility Artillery Rocket System (HIMARS) fully supports more deployable, affordable and lethal, Brigade Combat Teams, Fires Brigade, Modular Forces, and Joint Expeditionary Forces. The HIMARS launcher is a C-130 transportable, wheeled, indirect fire, rocket/missile launcher capable of firing all rockets and missiles in the current and future Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM) and Army Tactical Missile System (ATACMS) Family of Munitions (AFOM). The HIMARS launcher has extensive commonality with the MLRS M270A1 tracked launcher and consists of a Fire Control System, a carrier (FMTV XM1140 automotive chassis) and a launcher-loader module (LLM) that performs all operations necessary to complete a fire mission. The MFOM and AFOM are a family of rockets and missiles capable of attacking a variety of tactical and operational targets, providing the requisite range and lethality to support maneuver commanders out to 300 kilometers. HIMARS, when firing ATACMS and GMLRS, is capable of the precise attack of targets in both open and complex/urban terrain, with low collateral damage. HIMARS satisfies the Army's digitization requirements by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS) fire support command and control system. HIMARS is interoperable with existing MLRS units in terms of communications and reloading capabilities. HIMARS is an all-weather, day/night, indirect fire system used in support of light, early and forced entry expeditionary operations using a more deployable, lethal, survivable and tactically mobile long range artillery system. The HIMARS is deployable worldwide and will operate in a wide range of climatic conditions. It is certified by the Air Force for fixed-wing air transport in a fully combat loaded, combat ready configuration. HIMARS, as part of the Fires Brigade, will provide fires that shape, shield and isolate the battle space. Using both precision GMLRS and ATACMS Unitary munitions, HIMARS provides close support fires for Troops in Contact (TIC) in both open and urban terrain. The HIMARS provides Joint Expeditionary Forces a flexible and lethal rocket/missile capability that can be employed by platoon, battery, or battalion, each with the ability to operate independently for a limited period. HIMARS units can be quickly tailored for centralized or decentralized execution throughout the depth and breadth of the battle space in support of distributed forces. The program also includes training devices for tactical training, classroom training, and handling exercises. HIMARS has been deployed to both Operation Iraqi Freedom and Operation Enduring Freedom with great success. HIMARS is also a key component of the Marine Corps Future Fighting Effort.

The M270A1 upgraded MLRS launcher is mounted on a Bradley Fighting Vehicle chassis, and is capable of firing the MFOM and the AFOM, including precision munitions, to a range of 300KM.

GMLRS is a precision munition providing increased range to 70KM, and Global Positioning System (GPS) accuracy. Fired from M270A1 and HIMARS launchers, GMLRS comes in two variants: DPICM contains 414 submunitions, for attacking area targets with improved accuracy and significantly reduced hazardous duds; and GMLRS Unitary has a 200lb High Explosive (HE) warhead for attacking point targets with reduced collateral damage.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	53712	59749	20648
Current BES/President's Budget (FY 2010)	42374	59552	27693
Total Adjustments	-11338	-197	7045
Congressional Program Reductions		-197	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-9901		
SBIR/STTR Transfer	-1437		
Adjustments to Budget Years			7045
Change Summary Explanation: Funding - FY 2008 - Funds reprogrammed (-9,901) to higher priority requirements. FY 2010: Funds increased to support GMLRS Alternative Warhead.			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>			<b>PROJECT</b> <b>090</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
090 MLRS HIMARS	4304	3761	1997	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The M142 High Mobility Artillery Rocket System (HIMARS) fully supports more deployable, affordable, and lethal Brigade Combat Teams, Fires Brigade, Modular Forces and Joint Expeditionary Forces. It is a light weight, deployable system which provides long range precision strike capability in both early and forced entry scenarios. Mounted on a medium tactical wheeled vehicle chassis, HIMARS is transportable in a C-130 aircraft, and is self-loading and self-locating using Global Positioning System (GPS) technology. It fires the full Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM) and Army Tactical Missile System (ATACMS) Family of Munitions (AFOM). Additionally a HIMARS battery requires significantly reduced airlift resources that are required to transport a battery of the tracked M270/M270A1 MLRS. HIMARS, as part of the Fires Brigade, provides fires that shape, shield and isolate the battle space. Using both Precision Guided Multiple Launch Rocket System (GMLRS) and ATACMS Unitary munitions, HIMARS provides close support fires for Troops In Contact (TIC) in both open and urban terrain. HIMARS has been deployed to both Operation Iraqi Freedom and Operation Enduring Freedom with great success. HIMARS is also a key component of the Marine Corps Future Fighting Effort.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue system design and Production Qualification Testing (PQT), conduct Functional Configuration Audit (FCA), and develop Integrated Logistics Products (ILP); integrate and test Horizontal Technology Insertion (HTI) upgrades including Increased Crew Protection Cab, Enhanced Command and Control, Improved Initialization, Obsolescence Mitigation, Tactical Fire Control, Embedded Training Launcher Loader Module (LLM) electric drive, Diagnostics/Pronostics, Alternate Coupling, Situational Awareness, Long Range Communication and future munition integration. Perform technical assessments, concept studies, cost reduction, risk reduction, field issue resolution and required documentation.	4304	3655	1997
Small Business Innovative Research (SBIR)/Small Business Technology Transfer (STTR) Programs		106	
<b>Total</b>	<b>4304</b>	<b>3761</b>	<b>1997</b>

<b><u>B. Other Program Funding Summary</u></b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>To Compl</b>	<b>Total Cost</b>
HIMARS Launcher (C02901)	225133	245315	209061	Continuing	Continuing
HIMARS Modifications (C67501)	10470	16360	71081	Continuing	Continuing
HIMARS Modifications: Initial Spares (CA0289)	1591	1053	1807	Continuing	Continuing
Initial Spares, HIMARS (CA0288)	12563	11911	8943	Continuing	Continuing

Comment:

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM**

PROJECT

**090**

**C. Acquisition Strategy** The HIMARS program is currently in Full Rate Production (FRP) and awarded the FRP-3 contract December 2007. HIMARS follow-on Horizontal Technology Insertion (HTI) efforts include the Increased Crew Protection, Enhanced Command and Control, Improved Initialization, and Long Range Communications.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM							090		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Risk Reduction/ Maturation Contract	SS/CPIF & CPAF	LMMFC, Texas	113610							Cont.	Cont.	
Path through Operational Test	SS/CPFF	LMMFC, Texas	11809							Cont.	Cont.	
Work Directives/ Chassis and Cab	N/A	TACOM (S&S)	5733							Cont.	Cont.	
Battle Command	SS/CPFF	CECOM, STRICOM, AMRDEC, Techrizon, LMMFC, Texas	9612	1077	2-3Q	2018	2-3Q	1054	2-3Q	Cont.	Cont.	
Government Support	N/A	AMCOM/ GSA, RSA & TSM	17032	194	2-3Q	316	2-3Q	256	2-3Q	Cont.	Cont.	
Increased Crew Protection	SS/CPFF	LMMFC, Texas	24430	1611	2-3Q	201	2-3Q			Cont.	Cont.	
Subtotal:			182226	2882		2535		1310		Cont.	Cont.	

Remarks: TACOM - Tank Automotive & Armaments Command; AMCOM - Aviation & Missile Command  
 RSA - Redstone Arsenal Alabama; STRICOM - Simulation Training and Instrument Command  
 S&S - Stewart & Stevenson; GSA - General Services Administration  
 LMMFC - Lockheed Martin Missile and Fire Control  
 TSM - TRADOC System Manager; TBD - To Be Determined; N/A - Not Applicable  
 CECOM - US Army Communication - Electronics Command  
 AMRDEC - Aviation and Missile Research Development and Engineering Center  
 SS - Sole Source; CPIF - Cost Plus Incentive Fee; CPAF - Cost Plus Award Fee  
 CPFF - Cost Plus Fixed Fee; UA - Unit of Action

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Support Contract	C /CPFF	Camber Research/S3/TMI, Alabama	2582	385	2-3Q	354	2-3Q	325	2-3Q	Cont.	Cont.	
Subtotal:			2582	385		354		325		Cont.	Cont.	

Remarks: S3 - Systems Studies Simulation, Inc., TMI - Tec Masters Inc

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>	<b>PROJECT</b> <b>090</b>
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III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support	N/A	Fort Hood,ATEC,APG MD,WSMR NM & RTTC RSA	42859	916	2-4Q	743	2-4Q	224	2-4Q	Cont.	Cont.	
Subtotal:			42859	916		743		224		Cont.	Cont.	

Remarks: APG MD - Aberdeen Proving Ground, Maryland  
 WSMR NM - White Sands Missile Range, New Mexico  
 RTTC RSA - Redstone Technical Test Center  
 ATEC - US Army Test and Evaluation Command

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
In-House Support	N/A	PFRMS Project Office, Redstone Arsenal, AL	9015	121	1-4Q	129	1-4Q	138	1-4Q	Cont.	Cont.	
Subtotal:			9015	121		129		138		Cont.	Cont.	

Remarks: PFRMS - Precision Fires Rocket and Missile Systems

<b>Project Total Cost:</b>	<b>236682</b>	<b>4304</b>		<b>3761</b>		<b>1997</b>		<b>Cont.</b>	<b>Cont.</b>	
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# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
<b>7 - Operational system development</b>		<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>																<b>090</b>														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Increased Crew Protection Development and Live Fire Test and Evaluation (LFT&E)	Increased Crew Protection & LFT&E																															
Central Technical Support Facility Certification	Central Tech Spt Facility Certification																															
Enhanced Command and Control Development and Testing	Enhanced Cmd and Ctrl Dev/Test																															



**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>					PROJECT <b>090</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
Increased Crew Protection Development and Live Fire Test and Evaluation (LFT&E)	1Q - 4Q	1Q - 3Q						
Central Technical Support Facility Certification	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Enhanced Command and Control Development and Testing	1Q - 4Q	1Q - 4Q	1Q - 4Q					

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>			<b>PROJECT</b> <b>093</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
093 Multi-Launch Rocket System (MLRS)	4539	4095	4538	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Multiple Launch Rocket System (MLRS) product improvement program provides funding for research, development, and integration efforts on the MLRS necessary for sustainment, obsolescence mitigation, reliability improvements, incorporation of advanced technologies, and decreasing the logistics footprint. This effort includes performing technical assessments, concept studies and risk reduction efforts for incorporation of future requirements. The MLRS product improvement program maintains compliance with Intra-Army Interoperability and Digital Communications via Joint Variable Message Format.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Command, Control, Communications, Computers, and Intelligence (C4I)/Interoperability Certification Tests, Improved Operational Timeline.	2370	1769	2150
Network interoperability Testing/Certification.	558	356	376
Perform technical assessments, concept studies, and risk reduction.	1611	1855	2086
Small Business Innovative Research/Small Business Technology Transfer Program		115	
<b>Total</b>	<b>4539</b>	<b>4095</b>	<b>4612</b>

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
MLRS Mods(C67500)	4802	1866	22434	Continuing	Continuing
MLRS Mod Initial Spares (CA0265)	1036	1037	1021	Continuing	Continuing

Comment:

**C. Acquisition Strategy** The Multiple Launch Rocket System (MLRS) product improvement program ensures compliance as defined in the Department of Defense (DoD) Information Technical Standards. Funding is provided to several Government Agencies/Laboratories each Fiscal Year in support of this program. Support efforts include Enhanced C2, Interoperability Certifications, and Information Assurance compliance.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>								<b>093</b>	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contract	CPFF	LMMFC-D, Dallas, Texas	22028	200	1-3Q	442	1-3Q	425	1-3Q	Cont.	Cont.	
Government Support	N/A	AMRDEC-RSA AL, FT SILL OK, CECOM-NJ	6678	2411	1-3Q	2209	1-3Q	3165	1-3Q	Cont.	Cont.	
Subtotal:			28706	2611		2651		3590		Cont.	Cont.	
Remarks: CPFF - Cost Plus Fixed Fee LMMFC-D - Lockheed Martin Missile and Fire Control-Dallas N/A - Not Applicable AMRDEC - United States Army Research, Development, and Engineering Command RSA AL - Redstone Arsenal, Alabama OK - Oklahoma CECOM - United States Army Communication - Electronics Command												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Support Contract	Various	Multiple	673	1074	1-3Q	548	1-3Q	451	1-3Q	Cont.	Cont.	
Subtotal:			673	1074		548		451		Cont.	Cont.	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support, Joint Interoperability Test Certificate	N/A	CTSF, Ft. Hood, Texas	1308	429	1-3Q		1-3Q	376	1-3Q	Cont.	Cont.	
Test Support	N/A	AMCOM, RTTC, Redstone Arsenal, Alabama	308			725	1-3Q			Cont.	Cont.	
Test Support	N/A	WSMR, New Mexico	442							Cont.	Cont.	
Subtotal:			2058	429		725		376		Cont.	Cont.	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>	PROJECT <b>093</b>
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Remarks: CTSF - Central Test Support Facility    AMCOM - Army Missile Command    RTTC-Redstone Technical Test Center  
WSMR - White Sands Missile Range

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
In-House Support	N/A	PFRMS Proj Ofc, Redstone Arsenal, Alabama	3115	425	1-4Q	171	1-4Q	121	1-4Q	Cont.	Cont.	
Subtotal:			3115	425		171		121		Cont.	Cont.	

Remarks: PFRMS - Precision Fires Rocket and Missile Systems

<b>Project Total Cost:</b>	<b>34552</b>	<b>4539</b>		<b>4095</b>		<b>4538</b>		<b>Cont.</b>	<b>Cont.</b>	
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# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
<b>7 - Operational system development</b>		<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>																<b>093</b>														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Comd, Cntrl, Com, Comp, and Intell (C4I)/Interop Cert Tests, Imp Oper Timeline	[Redacted]																															
Network Interoperability Testing/Certification	[Redacted]																															
Technical Assessments, Concept Studies, and Risk Reduction	[Redacted]																															
	[Redacted]																															

## Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>					PROJECT <b>093</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
Comd, Cntrl, Com, Comp, and Intell (C4I)/Interop Cert Tests, Imp Oper Timeline	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Network Interoperability Testing/Certification	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Technical Assessments, Concept Studies, and Risk Reduction	1Q - 4Q	1Q - 4Q	1Q - 4Q					

Command, Control, Communications, Computers, and Intelligence (C4I)/Interoperability Certification Tests, Improved Operational Timeline.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>			<b>PROJECT</b> <b>784</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
784 GUIDED MLRS	33531	51696	8957	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Guided Multiple Launch Rocket System (GMLRS) munitions are the Army's primary organic Joint Expeditionary, all-weather, all-terrain, 24/7, tactical range precision guided rockets employed by modular Fires Brigades supporting Brigade Combat Teams (BCT), Divisions, Joint Special Operations Force (JSOF), and Joint Force combatant commanders. GMLRS are the primary munitions for units fielded with the High Mobility Artillery Rocket System (HIMARS) and Multiple Launch Rocket System (MLRS) M270A1 rocket and missile launcher platforms. GMLRS provides close, medium and long range pin point precision and area fires to destroy, suppress and shape threat forces and protect friendly forces against: cannon, mortar, rocket and missile artillery; light materiel and armor; personnel; command and control; and air defense surface targets. GMLRS is a major upgrade/replacement for the aging M26/A1/A2 rocket inventory that integrates a guidance and control package and an improved rocket motor achieving greater range and precision accuracy requiring fewer rockets to defeat targets than current artillery rockets, thereby reducing the logistics burden. There are two variants of GMLRS; GMLRS with Dual Purpose Improved Conventional Munitions (DPICM) and GMLRS with a 200 pound class high explosive warhead (Unitary). The GMLRS DPICM is a five nation cooperative program among France, Germany, Italy, United Kingdom and the United States. The GMLRS Unitary is a modification to the GMLRS DPICM integrating a multi-mode fuze and high explosive Insensitive Munition (IM) designed warhead making it an all-weather, low collateral damage, precision rocket. This expands the MLRS target set into urban and complex environments, adds point targets, and supports Troops in Contact (TIC). The alternative warhead will replace DPICM and service the DPICM target set and leave zero unexploded ordnance on the battlefield. This effort includes development and test activities. To meet Central Command Operational Need Statements, two quantities (486/972) of limited capability GMLRS Unitary rockets were accelerated and fielded in Iraq between June 2005 and December 2007. In the more than 1200 missions fired in Operation Iraqi Freedom (OIF)/Operation Enduring Freedom (OEF), the GMLRS Unitary Rocket has demonstrated high effectiveness and low collateral damage while supporting TIC. Continued GMLRS Unitary development efforts will incorporate trajectory shaping capability into the flight software. Additional material changes will provide operational flexibility and capability against an expanded target set. GMLRS is also a key component of the Marine Corps Future Fighting Effort.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Perform technical assessments, concept studies, prepare milestone documentation and risk reduction	5610	4709	1479
Conduct Development and Engineering for Insensitive Munitions (IM) Program	7928	4579	3721
Conduct Development Engineering; Design and Develop; Perform Integration and Test of Multi-Mode Fuzes and Alternative Warheads	15426	13792	
Conduct Engineering Development Test (EDT) and Production Qualification Test (PQT) Tests, Test Analysis, Functional Configuration Audit, Final Product Data Definition Package (PDDP), and System Integration Test		15194	1274
Conduct system test and evaluation activities	4567	12045	2483
Small Business Innovative Research/Small Business Technology Transfer Programs		1377	
<b>Total</b>	<b>33531</b>	<b>51696</b>	<b>8957</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>			PROJECT <b>784</b>
<b><u>B. Other Program Funding Summary</u></b>		FY 2008	FY 2009	FY 2010	To Compl
Missile Procurement Army - GMLRS (C64400)		263712	309205	354217	Continuing
		Total Cost			
		Continuing			

Comment:

**C. Acquisition Strategy** The Guided Multiple Launch Rocket System (GMLRS) Dual Purpose Improved Conventional Munitions (DPICM) is currently in Full Rate Production (FRP). The primary objective of the GMLRS DPICM System Development and Demonstration (SDD) was to develop a rocket with greater range and significantly enhanced accuracy with minimum impact on existing MLRS companion hardware and software. Other GMLRS development efforts include desired new rocket motor capabilities; design, evaluation, and test of alternative warhead technologies; and increased range.

The GMLRS Unitary Acquisition Strategy is a streamlined product improvement program. Initial configuration hardware maximizes commonality with GMLRS DPICM and incorporate a new warhead and multi-mode fuze (point detonation, airburst and delay). The European Cooperative Development Partners for GMLRS have expressed a desire to join the GMLRS Unitary program during the Production and Deployment Phase. In December 2004, the Army received an urgent need statement from Central Command requesting limited capability GMLRS Unitary rockets by fourth quarter FY06. In FY05, Congress encouraged the Army to accelerate the GMLRS Unitary program to field a quantity of not less than 450 rockets with limited capability no later than fourth quarter FY06. The first 72 limited capability GMLRS Unitary Rockets were fielded in theater during June 05. In the more than 1000 missions flown in Operation Iraqi Freedom (OIF)/Operation Enduring Freedom (OEF), the GMLRS Unitary Rocket has demonstrated high effectiveness and low collateral damage while supporting Troops in Contact (TIC).



# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM							784		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
SDD DPICM Contract	SS/CPAF	LMMFCS Dallas, TX	91194								91194	
SDD Unitary Contract	SS/CPFF	LMMFCS Dallas, TX	226322	26239	1Q	36029	1Q	3860	1Q	Cont.	Cont.	
Government Support	N/A	AMCOM/AMRDEC, RSA	85401	1447	1-4Q	2690	1-4Q	800	1-4Q	Cont.	Cont.	
Subtotal:			402917	27686		38719		4660		Cont.	Cont.	

Remarks: DPICM - Dual Purpose Improved Conventional Munitions; SS/CPAF - Sole Source/Cost Plus Award Fee; SS/CPFF - Sole Source/Cost Plus Fixed Fee; LMMFCS - Lockheed Martin Missile and Fire Control System; TX - Texas; AMCOM-Aviation & Missile Command; AMRDEC - U.S. Army Research, Development & Engineering Command; RSA - Redstone Arsenal, Alabama; N/A - Not Applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Support Contract	C/CPFF	Camber Research/S3/TMI, Alabama	22196	1446	1-3Q	1175	1-3Q		1-3Q	Cont.	Cont.	
Subtotal:			22196	1446		1175				Cont.	Cont.	

Remarks: C/CPFF-Cost/Cost Plus Fixed Fee  
S3-Systems Studies Simulation, Inc.  
TMI-Tec Masters, Inc.

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support	N/A	WSMR, NM	115347	1696	1-4Q	8343	1-4Q	3618	1-4Q	Cont.	Cont.	
Subtotal:			115347	1696		8343		3618		Cont.	Cont.	

Remarks: WSMR, NM - White Sands Missile Range, New Mexico

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>			PE NUMBER AND TITLE <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>							PROJECT <b>784</b>		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
In-House Support	N/A	PFRMS Proj Ofc, RSA	23615	2703	1-4Q	3459	1-4Q	679	1-4Q	Cont.	Cont.	
Subtotal:			23615	2703		3459		679		Cont.	Cont.	
Remarks: PFRMS - Precision Fires Rocket and Missile Systems												
<b>Project Total Cost:</b>			<b>564075</b>	<b>33531</b>		<b>51696</b>		<b>8957</b>		<b>Cont.</b>	<b>Cont.</b>	

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM**

PROJECT  
**784**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Alternative Warhead																																
UNITARY FRP IOTE																																
(1) UNITARY IOC																																
UNITARY FRP																																
Technical Assessment/Concept Studies/Cost Reduction Studies																																

**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>					PROJECT <b>784</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
Alternative Warhead	1Q - 4Q	1Q - 4Q						
UNITARY FRP IOTE	2Q - 3Q							
UNITARY IOC		1Q						
UNITARY FRP		1Q						
Technical Assessment/Concept Studies/Cost Reduction Studies			1Q - 4Q					

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational system development</b>	<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>	<b>784</b>	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
Guided MLRS			
<b>Total Termination Liability Funding:</b>			
<p><b>Remarks:</b>            The GMLRS Program Prime Contract Incorporates the "Limitation Of Funds" Clause (DFARS 52.232-22) to limit the government's liability. For the GMLRS Program, The "Limitation of Funds" Clause limits the government's financial liability per the Contract to those funds placed on contract plus any outstanding commitments plus costs associated with the orderly termination of contractual actions.</p>			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>			<b>PROJECT</b> <b>78G</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
78G GMLRS ALTERNATIVE WARHEADS			12201		12400

**A. Mission Description and Budget Item Justification:** Guided Multiple Launch Rocket System (GMLRS) munitions are the Army's primary organic Joint Expeditionary, all-weather, all-terrain, 24/7, tactical range precision guided rockets employed by modular Fires Brigades supporting Brigade Combat Teams (BCT), Divisions, Joint Special Operations Force (JSOF), and Joint Force combatant commanders. GMLRS are the primary munitions for units fielded with the High Mobility Artillery Rocket System (HIMARS) and Multiple Launch Rocket System (MLRS) M270A1 rocket and missile launcher platforms. GMLRS provides close, medium and long range pin point precision and area fires to destroy, suppress and shape threat forces and protect friendly forces against: cannon, mortar, rocket and missile artillery; light materiel and armor; personnel; command and control; and air defense surface targets. GMLRS is a major upgrade/replacement for the aging M26/A1/A2 rocket inventory that integrates a guidance and control package and an improved rocket motor achieving greater range and precision accuracy requiring fewer rockets to defeat targets than current artillery rockets, thereby reducing the logistics burden. There are two variants of GMLRS; GMLRS with Dual Purpose Improved Conventional Munitions (DPICM) and GMLRS with a 200 pound class high explosive warhead (Unitary). The GMLRS Alternative Warhead (AW) is a material replacement for Dual Purpose Improved Conventional Munition (DPICM) warheads that are currently present in the M-26, the M-26A2, and M-30 (GMLRS DPICM) rockets. The GMLRS AW is being developed to reduce or eliminate the risks of Unexploded Ordnance (UXO) to a threshold level of less than one (1)percent (Objective zero (0) percent) in accordance with (IAW) recent Department of Defense (DoD) policy. It fills a Warfighting Capability Gap left by the future removal of current cluster munitions from the battlefield. In a memorandum dated 25 Jun 2008, the Office of the Deputy Chief of Staff, G-3/5/7 directed that an GMLRS DPICM AW program should be developed to satisfy the requirements stated in the 19 Jun 2008 DoD Policy on Cluster Munitions and Unintended Harm to Civilians memo. This memo called for less than 1% unexploded ordnance (UXO) after 2018. As a result, a Configuration Steering Board (CSB) was convened on 22 Oct 2008 to consider potential changes to the GMLRS DPICM program and address the concept refinement of GMLRS AW program. The outcome of the CSB was the signature of two Acquisition Decision Memorandums signed on 7 NOV 2008, which directed the cessation of U.S. Army DPICM production after FRP-III deliveries, and the development of a competitive procurement strategy for the GMLRS AW Program. The AW Program strategy will consist of a Technology Development phase and authorize the Army to release competitive request for proposals (RFP) leading to two or more competing contractors to provide technology solutions, demonstrating an alternative warhead for DPICM that satisfies the MLRS ORD, dated 14 Nov 2003. The GMLRS AW will be effective against the DPICM target set. This effort includes development, integration and test activities for the payload, dispense mechanism (if required), proximity sensor (if required), electronic safe and arm device/fuze, and associated flight software.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Conduct Development Engineering, Design Component Testing, and Performance Analysis			2277
Perform Technical Assessments and Concept Studies			3690
Prepare Milestone Documentation, Risk Reduction and Program Reviews			2229
Conduct System Test and Evaluation Activities			4005
<b>Total</b>			<b>12201</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM**

PROJECT

**78G**

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** The Guided Multiple Launch Rocket System (GMLRS) Alternative Warhead (AW) rocket will also be a product improved version of the current GMLRS Dual Purpose Improved Conventional Munitions (DPICM) rocket. As with the Unitary rocket, the GMLRS AW rocket will leverage technological opportunities from those demonstrated in the DPICM and Unitary development efforts as well as current efforts from other programs. The GMLRS Program strategy relative to design technology is to identify leading technologies, offerors, and hardware through an open competition between at least two potential warheads. An Request for Proposal (RFP) process will be used to solicit offerors, with the most mature, cost effective and capable choices chosen for further development. At the conclusion of the Technical Development (TD) Phase, the government will make a downselect to one technology to be fully developed and integrated during Engineering and Manufacturing Development (EMD) Phase.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>							<b>78G</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
AWP Contracts	SS/CPFF	LMMFCS Dallas, TX						5494	1Q		5494	
Government Support	N/A	AMCOM/AMRDEC, RSA						1461	1-4Q		1461	
Subtotal:								6955			6955	
Remarks: AWP-Alternative Warhead Program; SS/CPFF-Sole Source/Cost Plus Fixed Fee; LMMFCS-Lockheed Martin Missile and Fire Control System; TX-Texas; AMCOM-Army Materiel Command;AMRDEC-U.S. Army Research, Development & Engineering Command; RSA-Redstone Arsenal, Alabama; N/A-Not Applicable												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Support Contract	C/CPFF	Camber Research/S3/TMI, Alabama						506	1-3Q		506	
Subtotal:								506			506	
Remarks: c/CPFF-Cost/Cost Plus Fixed Fee;S3-Systems Studies Simulation, Inc.;TMI-Tec Master, Inc.												
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support	N/A	WSMR,NM						1976	1-4Q		1976	
Subtotal:								1976			1976	
Remarks: WSMR,NM-White Sands Missile Range, New Mexico												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
In-House Support	N/A	PFRMS Proj Ofc, RSA						2764			2764	




# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT		
<b>7 - Operational system development</b>	<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>						<b>78G</b>		
Subtotal:						2764		2764	
Remarks: PFRMS-Precision Fires Rocket and Missile Systems									
<b>Project Total Cost:</b>						<b>12201</b>		<b>12201</b>	

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																														
<b>7 - Operational system development</b>	<b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>	<b>78G</b>																														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) System PDR									 <b>PDR</b>																							

**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>			PE NUMBER AND TITLE <b>0603778A - MLRS PRODUCT IMPROVEMENT PROGRAM</b>				PROJECT <b>78G</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
System PDR			3Q					

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0603820A - Weapons Capability Modifications UAV</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
D20 UAV WEAPONIZATION CAPABILITY MOD	3766				3766

**A. Mission Description and Budget Item Justification:** The Extended Range Multi-Purpose (ERMP) Unmanned Aircraft System (UAS) includes and addresses the full scale development and integration of a weapon system capability.

These modifications include the refinement of requirements, the selection of the weapons matched to the aircraft capabilities, hardware and software design, development, and integration with the system.

This will include requisite airframe, mission management software and weapon compatibility modifications necessary to carry and employ weapons. Tests are required to ensure reliable, safe, accurate, and timely weapons stowage and delivery. Weaponization of ERMP includes the full scale development and integration of a modified HELLFIRE missile into the ERMP UAS. Missile development will include type classification and formal materiel release.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0603820A - Weapons Capability Modifications UAV</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	3875		
Current BES/President's Budget (FY 2010)	3766		
Total Adjustments	-109		
Congressional program reductions			
Congressional rescissions			
Congressional increases			
Reprogrammings			
SBIR/STTR Transfer	-109		
Adjustments to Budget Years			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0603820A - Weapons Capability Modifications UAV</b>			<b>PROJECT</b> <b>D20</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
D20      UAV WEAPONIZATION CAPABILITY MOD	3766				3766

**A. Mission Description and Budget Item Justification:** The Extended Range Multi-Purpose (ERMP) Unmanned Aircraft System (UAS) includes and addresses the full scale development and integration of a weapon system capability.

These modifications include the refinement of requirements, the selection of the weapons matched to the aircraft capabilities, hardware and software design, development, and integration with the system.

This will include requisite airframe, mission management software and weapon compatibility modifications necessary to carry and employ weapons. Tests are required to ensure reliable, safe, accurate, and timely weapons stowage and delivery. Weaponization of ERMP includes the full scale development and integration of a modified HELLFIRE missile into the ERMP UAS. Missile development will include type classification and formal materiel release.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Launcher Modification / Test Equipment / Integration	3766		
Total	3766		

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** Development/integration of an extended range unmanned aircraft includes a two phased approach. Phase I was a paper downselect to two vendors. Phase II consisted of a competition with a flyoff and downselect to one qualified airframe vendor which occurred on 6 Aug 05. PM UAS in coordination with PM JAMS will integrate the modified HELLFIRE missile system into the ERMP UAS. PM JAMS will design, develop, test, and deliver the modified HELLFIRE missile.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0102419A - Aerostat Joint Project Office</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
E55 Jnt Land Atk Msl Def Elevated Netted Sensor-JLENS	464877	355257	360076	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** U The mission of the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) is to provide elevated, persistent, Over-The-Horizon (OTH) surveillance and fire control quality data on Army and Joint networks enabling protection of the United States, Allied and Coalition forces, as well as critical geo-political assets from Cruise Missiles, Aircraft, Unmanned Aerial Vehicles (UAVs), Tactical Ballistic Missiles (TBMs), Large Caliber Rockets (LCRs), and Surface Moving Targets (SMTs). JLENS is a critical part of the Army's future Integrated Air and Missile Defense (IAMD) architecture and is a Joint Service interest program. A JLENS orbit consists of two systems: a fire control radar system and a wide-area surveillance radar system. Each radar system employs a separate 74-meter tethered aerostat, mobile mooring station, radar and communications payload, processing station, and associated ground equipment. JLENS uses advanced sensor and networking technologies to provide 360-degree, wide-area surveillance and precision tracking of land-attack cruise missiles. This JLENS information is distributed via joint service networks and contributes to the single integrated air picture. JLENS has the capability of detecting and tracking surface moving targets, detecting Tactical Ballistic Missiles at boost phase and Large Caliber Rockets during the ascent phase. JLENS also performs as a multi-role platform to enable extended range command and control linkages, communications relay, and battlefield situational awareness.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0102419A - Aerostat Joint Project Office</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	478204	356434	335071
Current BES/President's Budget (FY 2010)	464877	355257	360076
Total Adjustments	-13327	-1177	25005
Congressional Program Reductions		-1177	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-12		
SBIR/STTR Transfer	-13315		
Adjustments to Budget Years			25005

Change Summary Explanation: Adjustments to Budget Year FY 2010 - The FY2010 President's Budget reflects the decision to extend the SDD program and redirect JLENS FY11 Production funding.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0102419A - Aerostat Joint Project Office</b>			<b>PROJECT</b> <b>E55</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
E55 Jnt Land Atk Msl Def Elevated Netted Sensor-JLENS	464877	355257	360076	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** (U) The mission of the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) is to provide elevated, persistent, Over-The-Horizon (OTH) surveillance and fire control quality data on Army and Joint networks enabling protection of the United States, Allied and Coalition forces, as well as critical geo-political assets from Cruise Missiles, Aircraft, Unmanned Aerial Vehicles (UAVs), Tactical Ballistic Missiles (TBMs), Large Caliber Rockets (LCRs), and Surface Moving Targets (SMTs). JLENS is a critical part of the Army's future Integrated Air and Missile Defense (IAMD) architecture and is a Joint Service interest program. A JLENS orbit consists of two systems: a fire control radar system and a wide-area surveillance radar system. Each radar system employs a separate 74-meter tethered aerostat, mobile mooring station, radar and communications payload, processing station, and associated ground equipment. JLENS uses advanced sensor and networking technologies to provide 360-degree, wide-area surveillance and precision tracking of land-attack cruise missiles. This JLENS information is distributed via joint service networks and contributes to the single integrated air picture. JLENS has the capability of detecting and tracking surface moving targets, detecting Tactical Ballistic Missiles at boost phase and Large Caliber Rockets during the ascent phase. JLENS also performs as a multi-role platform to enable extended range command and control linkages, communications relay, and battlefield situational awareness.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue System Development and Demonstration (SDD) phase contract activity.	399795	289134	287539
Government System Test and Evaluation	10272	13747	28723
Other contracts and Other Government Agencies (OGAs).	26123	28816	30374
Government Project Management	3242	4056	4054
Government Furnished Equipment(GFE)	25445	9621	9386
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)		9883	
<b>Total</b>	<b>464877</b>	<b>355257</b>	<b>360076</b>

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PE 0604869A, Proj M06, Patriot/MEADS Combined Aggregate Program (CAP)	401565	429846	569182	Continuing	Continuing
SSN C50001, Patriot/MEADS CAP		30957	16406	Continuing	Continuing
PE 0604802A, ProjS23, SLAMRAAM	33570	33662	11736	Continuing	Continuing
SSN C81001, SLAMRAAM Production		40349	72920	Continuing	Continuing

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT
<b>7 - Operational system development</b>	<b>0102419A - Aerostat Joint Project Office</b>			<b>E55</b>
PE 0604820A, Proj E10, SENTINEL	6828			Continuing
PE 060327S34, Proj S34, AMD System of System Engineering and Integration	123712	114673	209531	Continuing

Comment: This program is an integral part of the PEO, Missiles and Space Integrated Air and Missile Defense (IAMMD) architecture.

**C. Acquisition Strategy** The JLENS Operational Requirements Document (ORD) calls for initial fielding to Block I requirements (tethered aerostat platforms for Fire Control and Surveillance radars); followed by fielding of Block II (untethered platforms for Fire Control and Surveillance radars); and Block III (both radars on a single untethered platform). There is currently no funding beyond Block I.

On 28 Jun 05, the Defense Acquisition Board (DAB) approved the JLENS program for entry into System Development and Demonstration (SDD) as recommended by the Army Acquisition Executive. The DAB elected to maintain oversight of JLENS as an ACAT 1D program as stated in the Acquisition Decision Memorandum signed on 5 Aug 05.

The FY2010 President's Budget reflects the Army's POM 10-15 decision to extend the SDD program and redirect JLENS FY11 Production funding. The SDD schedule extension and associated cost growth, as reflected in this submission, result in an Acquisition Program Baseline (APB) breach for both cost and schedule. These impacts will be presented in the next JLENS Selected Acquisition Report (SAR) submitted after the Presidents Budget and a revised APB which will be submitted for approval in FY2009.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0102419A - Aerostat Joint Project Office							E55		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Technology Development (TD) Phase Contracts and Government	Sole Source/Cost Plus Incentive Fee (SS/CPIF)	Raytheon Systems Co. (MA/CA/FL/TX)	301083								301083	301083
Lightweight X-band Radar Antenna	Not Applicable (N/A)	Multiple	7811								7811	
Contractor System Development and Demonstration (SDD) Hardware/Software	SS/CPIF	Raytheon Systems Co. (MA/CA/FL/TX)	242444	373569	1Q	271713	1Q	258816	1Q	Cont.	Cont.	Cont.
SDD OGA System Engineering	N/A	Multiple	7037	4575	1Q	6130	1Q	5558	1Q	Cont.	Cont.	
SDD System Engineering Contracts	N/A	Multiple	23455	20488	1-2Q	21266	1-2Q	23340	1-2Q	Cont.	Cont.	
SDD GFE Various	N/A	Multiple	4105	13986	1Q	2769	1-2Q	1386	1-2Q	Cont.	Cont.	
SDD GFE - Cooperative Engagement Transmission Processing Set (CETPS)	N/A	Multiple	3930	11459	1Q	6852	1Q	8000	1Q	Cont.	Cont.	
Subtotal:			589865	424077		308730		297100		Cont.	Cont.	Cont.
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
TD Phase Misc Support	N/A	Multiple	2084								2084	
SDD Govt Intergrated Logistics Support	N/A	Multiple	1440	1060	1Q	1420	1Q	1476	1Q	Cont.	Cont.	
SDD Organizational Support Equipment	N/A	Multiple								Cont.	Cont.	
Subtotal:			3524	1060		1420		1476		Cont.	Cont.	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0102419A - Aerostat Joint Project Office</b>	<b>PROJECT</b> <b>E55</b>
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III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
TD Phase Maintain Test Bed	Sole Source/Cost Plus Fixed Fee (SS/CPFF)	CAS-TX, NM	3056								3056	
SDD Contractor System Test and Evaluation	SS/CPIF	Raytheon Systems Co. (MA/CA/FL/TX)	3787	3838	1Q	2604	1Q	11560	1Q	Cont.	Cont.	Cont.
SDD Government System Test and Evaluation	N/A	Multiple	10117	10272	1Q	13747	1Q	28723	1Q	Cont.	Cont.	
Subtotal:			16960	14110		16351		40283		Cont.	Cont.	Cont.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
SDD Contractor Program Management	SS/CPIF	Raytheon Systems Co. (MA/CA/FL/TX)	33030	22388	1Q	14817	1Q	17163	1Q	Cont.	Cont.	Cont.
SDD Government Program Management	N/A	PEO Missiles and Space, HSV, AL	6301	3242	1-4Q	4056	1-4Q	4054	1Q	Cont.	Cont.	
SBIR/STTR						9883					9883	
Subtotal:			39331	25630		28756		21217		Cont.	Cont.	Cont.

<b>Project Total Cost:</b>	<b>649680</b>	<b>464877</b>		<b>355257</b>		<b>360076</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>
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# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0102419A - Aerostat Joint Project Office**

PROJECT  
**E55**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Program Milestones:</b>																																
(1) Orbit PDR, (2) Orbit CDR	<b>PDR</b> ▲ 1				<b>CDR</b> ▲ 2																											
<b>Platform Development</b>	Platform Fabrication, Integration and Test																															
<b>Fire Control Radar (FCR) Development</b>	FCR Fabrication, Integration and Test																															
<b>Surveillance Radar (SuR) Development</b>	SuR Fabrication, Integration and Test																															
<b>Communication and Processing Group (CPG) Development</b>	CPG Fabrication, Integration and Test																															
<b>Software Development, Integration and Test</b>	Software Development, Integration and Test																															
<b>Subsystem/System Level Integration</b>									Ss/Sys Level Integration																							

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0102419A - Aerostat Joint Project Office</b>						<b>E55</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Program Milestones:									
Orbit SRR (4Q FY06)									
Orbit SFR									
Orbit PDR	2Q								
IBR									
Orbit CDR		1Q							
Platform Development	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Fire Control Radar (FCR) Development	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Surveillance Radar (SuR) Development	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Communication and Processing Group (CPG) Development	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Software Development, Integration and Test	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Subsystem/System Level Integration			3Q - 4Q						

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational system development</b>	<b>0102419A - Aerostat Joint Project Office</b>	<b>E55</b>	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
<b>Total Termination Liability Funding:</b>			
<p><b>Remarks:</b>  The JLENS Prime Contract Incorporates The "Limitation Of Funds" Clause (DFARS 52.232-22) To Limit The Government's Liability.</p> <p>For The JLENS Program, The "Limitation Of Funds" Clause Limits The Government's Financial Liability Per The Contract To Those Funds Placed On Contract Plus Any Outstanding Commitments Plus Costs Associated With The Orderly Termination Of Contractual Actions.</p>			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203726A - Adv Field Artillery Tactical Data System</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	16146	16605	23727	Continuing	Continuing
322 Adv Fa Tac Data Sys/Eff Cntrl Sys (AFATDS/ECS)	16146	16605	11821	Continuing	Continuing
F19 JADOCS			11906	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Advanced Field Artillery Tactical Data System (AFATDS) is the tool that performs automated fire support coordination for the Army, Navy, Air Force, and Marine Corps. Fire support is the effects of lethal and non-lethal weapons (fires) that directly support land, maritime, amphibious, and special operation forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives. Fire support coordination is the planning and execution of fires so that a suitable weapon or group of weapons adequately covers targets.

AFATDS performs the attack analysis necessary to determine the optimal weapon target pairing to provide maximum use of the fire support assets. AFATDS will automatically implement detailed Commander's guidance in the automation of operational planning, movement control, targeting, target value analysis and fire support planning. This project is a replacement system for the Initial Fire Support Automated System, the Battery Computer System, and the Fire Direction System. AFATDS will interoperate with the other Army Battle Command Systems, current and future Army, Navy and Air Force Command and Control weapon systems, and the German, French, British, and Italian fire support systems. AFATDS automates the planning, coordinating and controlling of all fire support assets in the Joint battlespace (field artillery, mortars, close air support, naval gunfire, attack helicopters, and offensive electronic warfare). AFATDS will perform the Fire Support Command, Control, and Coordination requirements at all echelons of field artillery and maneuver, from Echelons Above Corps to Battery or Platoon in support of all levels of conflict. The system is composed of Common Hardware/Software employed in varying configurations at different operational facilities (or nodes) and unique system software interconnected by tactical communications in the form of a software-driven, automated network.

Joint Automated Deep Operations Coordination System (JADOCS) is a Joint, Interagency, and Multinational (JIM) Targeting, Mission Management, and Common Operational Picture (COP) Windows based software suite which functions as a complementary system to the Advanced Field Artillery Tactical Data System (AFATDS). JADOCS provides integration and synergy between multiple Command & Control (C2) systems of the uniformed services, and joint and combined elements involved in the targeting process and performs coordination and calculates collateral damage. JADOCS Mission Managers support this coordination amongst Warfighter functional areas to rapidly execute critical missions.

JADOCS is a component of the Integrated Fires Family of Systems (FOS) and complementary to the Army Battle Command Systems (ABCS) System of Systems (SoS).



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203726A - Adv Field Artillery Tactical Data System</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	16730	15860	11951
Current BES/President's Budget (FY 2010)	16146	16605	23727
Total Adjustments	-584	745	11776
Congressional Program Reductions		-55	
Congressional Rescissions			
Congressional Increases		800	
Reprogrammings	-152		
SBIR/STTR Transfer	-432		
Adjustments to Budget Years			11776

Change Summary Explanation: Funding - FY 2010: Increase to support the Joint Automated Deep Operations Coordination System (JADOCS) program.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203726A - Adv Field Artillery Tactical Data System</b>			<b>PROJECT</b> <b>322</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
322 Adv Fa Tac Data Sys/Eff Cntrl Sys (AFATDS/ECS)	16146	16605	11821	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Advanced Field Artillery Tactical Data System (AFATDS) performs Command and Control, increases Situational Awareness and automates fire support coordination for the Army, Navy, Air Force, and Marine Corps. Fire support is the effects of lethal and non-lethal weapons (fires) that directly support land, maritime, amphibious, and special operation forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives. Fire support coordination is the planning and execution of fires so that a suitable weapon or group of weapons adequately covers targets.

AFATDS performs the attack analysis necessary to determine the optimal weapon target pairing to provide maximum use of the fire support assets. As a result of Operation Iraqi Freedom (OIF)/Operation Enduring Freedom (OEF), AFATDS has implemented precision fires capabilities in new/improved munitions such as Multiple Launch Rocket System (MLRS) Unitary Vertical Attack, Excalibur, Smart and 155 Bonus. Additional implemented capabilities include automatic conduct of Unit Fratricide Avoidance Checks and Collateral Damage Avoidance. AFATDS will field New Non Line of Sight - Launch System (NLOS-LS) Precision Attack Munition (PAM) and improved Command and Control (C2) for the United States Marine Corp (USMC) Firing platform and its new munitions. Development to port AFATDS to a windows based operating system was completed in FY 08. AFATDS will automatically implement detailed Commander's guidance in the automation of operational planning, movement control, targeting, target value analysis and fire support planning. This project is a replacement system for the Initial Fire Support Automated System (IFSAS), the Battery Computer System (BCS), and the Fire Direction System (FDS). AFATDS will interoperate with the other Army Battle Command Systems (ABCS), current and future Army, Navy and Air Force Command and Control weapon systems, and the German, French, British and Italian fire support systems.

AFATDS automates the planning, coordinating and controlling of all fire support assets in the Joint battlespace (field artillery, mortars, close air support, naval gunfire, attack helicopters and offensive electronic warfare). AFATDS will perform the Fire Support Command, Control, and Coordination requirements at all echelons of field artillery and maneuver, from Echelons Above Corps to Battery or Platoon in support of all levels of conflict. The system is composed of Common Hardware/Software employed in varying configurations at different operational facilities (or nodes) and unique system software interconnected by tactical communications in the form of a software-driven, automated network.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide program support for AFATDS (V6.5 (BC 09.0)), (V6.6 (BC 10-Marshall)), (V6.7 (BC 11 - MacArthur)) and (V6.8 (BC 13 - Eisenhower)).	897	947	997
Complete AFATDS (V 6.6). Continue development of (V6.7) and (V6.8). Initiate (V6.9) development efforts.	12749	12630	8124
Conduct and support test activities	2500	2600	2700
Small Business Innovative Research/Small Business Technology transfer program		428	
<b>Total</b>	<b>16146</b>	<b>16605</b>	<b>11821</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203726A - Adv Field Artillery Tactical Data System</b>	<b>PROJECT</b> <b>322</b>
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<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA (B28600)	17490	23171	1540	Continuing	Continuing
OPA (B28620)	14694	15387	35323	Continuing	Continuing
Spares				Continuing	Continuing

Comment: Beginning in FY08, procurement funding for AFATDS (B28600) and MIS-AFATDS (B28620) fall under the parent line Fire Support C2 Family - SSN: B28501.

**C. Acquisition Strategy** AFATDS has been fielded since 1996, with the original AFATDS Version 96 Materiel Release. It has been updated with subsequent releases reflecting the Spiral development strategy of the program. AFATDS Version 6.3.2 was released in January 2004, and AFATDS Version 6.4.0.1 (out of cycle) was released in May 2007 and AFATDS Version 6.4.0.2 (out of cycle) released in Sep 2007. Full Materiel Release of AFATDS V6.5 (Software Block 2) was achieved in December 2008.

As a result of Operation Iraqi Freedom (OIF)/Operation Enduring Freedom (OEF), AFATDS has implemented precision fires capabilities in new/improved munitions such as Multiple Launch Rocket System (MLRS) Unitary Vertical Attack, Excalibur, Smart and 155 Bonus. Additional implemented capabilities include automatic conduct of Unit Fratricide Avoidance Checks and Collateral Damage Avoidance. AFATDS will field New Non Line of Sight-Launch System (NLOS-LS) Precision Attack Munition (PAM) and improved Command and Control (C2) for the United States Marine Corp (USMC) Firing platform and its new munitions. Development to port AFATDS to a Windows based operating system was completed in FY 08.

Development efforts will continue to enhance Command and Control for precision weapons. Excalibur Height above Ellipsoid (HAE), Active Weapon Target pairing and Unexploded Ordnance (UXO) area computations. It will also provide backward interoperability to Pass and Subscribe Services (PASS) and AFATDS XML Engine (AXE) for Software Block 2 (SWB2) to enable connection to SWB1/1+ versions. Requirements documents for NLOS-Cannon are in process. AFATDS continues to develop to Battle Command Capability sets.

In accordance with the TRADOC requirements document approved in 2008, entitled Battle Command Essential Capability, software capability will be developed in 2-year increments as capability sets designed to Collaborate, Collapse and Converge Battle Command products. The product development funded under this R-Form is an integral part of the Army Battle Command System (ABCS), a system of systems, under a strategy designed to optimize opportunity for improved interoperability among the systems, to capture the benefits of competition where possible and to ensure the rapid integration of new capability into warfighter systems. This strategy is designed to reduce the physical footprint, logistics support requirements and increase operational efficiency.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0203726A - Adv Field Artillery Tactical Data System</b>							<b>322</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Software Development	CPAF	Raytheon Systems Corp, Ft. Wayne, IN	244378	12689	2-3Q	12565	2-3Q	8054	2-3Q	Cont.	Cont.	
Subtotal:			244378	12689		12565		8054		Cont.	Cont.	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Information Assurance	T&M	Telos, Shrewsbury, NJ		60	2-3Q	65	2-3Q	70	2-3Q		270	
Subtotal:				60		65		70			270	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support	MIPR	Titan, Ft. Sill, OK and various contractors	9254	1500	2Q	1600	2Q	1700	2Q	Cont.	Cont.	
Limited User Test/Government Confidence Demo	MIPR	Army Test & Evaluation Command (ATEC)/Fire Support Test Directorate (FSTD)	8052	1000	2-3Q	1000	2-3Q	1000	2Q	Cont.	Cont.	
Subtotal:			17306	2500		2600		2700		Cont.	Cont.	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT	
<b>7 - Operational system development</b>			<b>0203726A - Adv Field Artillery Tactical Data System</b>							<b>322</b>	
Program Management	MIPR	PM Battle Command (BC), Ft. Monmouth, NJ	11438	897	1-4Q	1375	1-4Q	997	1-4Q	Cont.	Cont.
Subtotal:			11438	897		1375		997		Cont.	Cont.
<b>Project Total Cost:</b>			<b>273122</b>	<b>16146</b>		<b>16605</b>		<b>11821</b>		<b>Cont.</b>	<b>Cont.</b>

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																														
<b>7 - Operational system development</b>	<b>0203726A - Adv Field Artillery Tactical Data System</b>	<b>322</b>																														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Development V6.5 (BC 09.0)	█																															
(1) Materiel Release V6.5 (BC 09.0)					▲																											
Fielding V6.5 (BC 09.0)					█																											
Development V6.6 (BC 10 - Marshall)	█																															
(2) Materiel Release V6.6 (BC 10 - Marshall)									▲																							
Fielding V6.6 (BC 10 - Marshall)									█																							
Development V6.7 (BC 11 - MacArthur)	█																															
(3) Materiel Release V6.7 (BC 11 - MacArthur)													▲																			
Fielding V6.7 (BC 11 - MacArthur)													█																			
Development V6.8 (BC 13 - Eisenhower)									█																							
(4) Materiel Release V6.8 (BC 13 - Eisenhower)																	▲															
Fielding V6.8 (BC 13 - Eisenhower)																	█															
Development V6.9 (BC 15 - Arnold)																					█											
(5) Materiel Release V6.9 (BC 15 - Arnold)																									▲							

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0203726A - Adv Field Artillery Tactical Data System</b>						<b>322</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Development V6.5 (BC 09.0)	1Q - 4Q								
Materiel Release V6.5 (BC 09.0)		1Q							
Fielding V6.5 (BC 09.0)		2Q - 3Q							
Development V6.6 (BC 10 - Marshall)	1Q - 4Q	1Q - 3Q							
Materiel Release V6.6 (BC 10 - Marshall)			1Q						
Fielding V6.6 (BC 10 - Marshall)			1Q - 2Q						
Development V6.7 (BC 11 - MacArthur)	1Q - 4Q	1Q - 4Q	1Q - 2Q						
Materiel Release V6.7 (BC 11 - MacArthur)				1Q					
Fielding V6.7 (BC 11 - MacArthur)				1Q - 3Q					
Development V6.8 (BC 13 - Eisenhower)			1Q - 4Q	1Q - 3Q					
Materiel Release V6.8 (BC 13 - Eisenhower)					1Q				
Fielding V6.8 (BC 13 - Eisenhower)					3Q				
Development V6.9 (BC 15 - Arnold)						1Q - 4Q	1Q		
Materiel Release V6.9 (BC 15 - Arnold)								1Q	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203726A - Adv Field Artillery Tactical Data System</b>			<b>PROJECT</b> <b>F19</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
F19 JADOCS			11906	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** Joint Automated Deep Operations Coordination System (JADOCS) is a Joint, Interagency, and Multinational (JIM) Targeting, Mission Management, and Common Operational Picture (COP) Windows based software suite which functions as a complementary system to the Advanced Field Artillery Tactical Data System (AFATDS). JADOCS provides integration and synergy between multiple Command & Control (C2) systems of the uniformed services, and joint and combined elements involved in the targeting process and performs coordination and calculates collateral damage. JADOCS Mission Managers support this coordination amongst Warfighter functional areas to rapidly execute critical missions.

JADOCS enables coordination and de-confliction of conventional and asymmetric war-fighting missions. JADOCS uses a map-oriented Graphical User Interface (GUI) and overlays as a framework for information display. JADOCS is fielded to Air Force, Navy and Marine Corps units and the Army staff sections involved in the targeting process at Army Service Component Command, Corps, Division and Brigade Combat Team levels.

JADOCS provides the Combatant Commands with the capability to plan and direct theater counter-fire and precision strike operations through the real time synchronization of US and Coalition assets. The application provides the Warfighter with a combination of tools, services and Mission Managers for rapid "system of systems" integration, visualization, coordination and deconfliction of critical mission information. It not only enhances C4ISR systems in the areas of strike planning but also in situational awareness, joint and combined interoperability and force transition in war.

JADOCS is a component of the Integrated Fires Family of Systems (FOS) and complementary to the Army Battle Command Systems (ABCS) System of Systems (SoS).

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Provide program support for JADOCS software blocks (BC 10), (BC 11-MacArthur) and (BC 13 - Eisenhower)			650
Provide development for JADOCS software blocks (BC 10), (BC 11-MacArthur) and (BC 13 - Eisenhower)			8800
Conduct and Support Test Activities			2456
<b>Total</b>			<b>11906</b>

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Office Secretary of Defense (OSD)/Defense Acquisition Executive (DAE)	5800	5800			11600
Joint Forces Command (JFCOM)	2000	2000			4000



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0203726A - Adv Field Artillery Tactical Data System**

PROJECT

**F19**

Comment: Funding to maintain the program to date has been provided by Office Secretary of Defense (OSD) and Defense Acquisition Executive (DAE). In addition, the program is supported by customer funding.

**C. Acquisition Strategy** In FY 03 the Automated Deep Operations Coordination System (ADOCS) was renamed the Joint Automated Deep Operations Coordination System (JADOCS) and was transitioned to Product Manager, Fire Support Command and Control (FSC2). Currently, operational control resides with Product Director, FSC2 under Army Project Manager, Battle Command.

JADOCS has operated as a graduated Advanced Concept Technology Demonstration (ACTD) program since 2005. In 2008, the Vice Chief of Staff Army approved JADOCS for Acquisition program Status under the Capabilities Development for Rapid Transition (CDRT) program. Commencing in FY 10 and continuing through FY 15, the Army will provide funding for its requirements under JADOCS; however, as a joint program, additional funding from the Air Force, Navy and Marine Corp is required.

JADOCS is presently heavily embedded in the architecture at USCENTCOM, USPACOM, USFK and USEUCOM, including their subordinate commands. JADOCS is distributed to over 200 servers, 2600 workstations and 4000 users worldwide. Additionally, JADOCS is established within the coalition community. The Republic of Korea, the United Kingdom and NATO have FMS cases.

In accordance with the TRADOC requirements document approved in 2008, entitled Battle Command Essential Capability, software capability will be developed in 2-year increments as capability sets designed to Collaborate, Collapse and Converge Battle Command products. The product development funded under this R-Form is an integral part of the Army Battle Command System (ABCS), a system of systems, under a strategy designed to optimize opportunity for improved interoperability among the systems, to capture the benefits of competition where possible and to ensure the rapid integration of new capability into Warfighter systems. This strategy is designed to reduce the physical footprint, logistics support requirements and increase operational efficiency.

The combat developer, TCM FSC3, is developing a Capabilities Production Document(CPD). Estimated JROC approval is in FY2010.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0203726A - Adv Field Artillery Tactical Data System							F19		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Software Development & Test	CPFF	Raytheon Systems VTC, Alexandria, VA						8800	1-4Q		8800	
Subtotal:								8800			8800	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management - Government	MIPR	Topographic Engineering Center (TEC), Ft. Belvoir, VA						185	1-4Q		385	
Subtotal:								185			385	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support	MIPR	Army/Navy/Air Force - Various Locations						2456	1-4Q		2456	
Subtotal:								2456			2456	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Business/Technical Services	T&M	Chenega Federal Systems, Alaska						465	1-2Q		931	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT		
<b>7 - Operational system development</b>	<b>0203726A - Adv Field Artillery Tactical Data System</b>						<b>F19</b>		
Subtotal:						465		931	
<b>Project Total Cost:</b>						<b>11906</b>		<b>12572</b>	

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																														
<b>7 - Operational system development</b>	<b>0203726A - Adv Field Artillery Tactical Data System</b>	<b>F19</b>																														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
OSD/DAE/JFCOM /Program Funded																																
Software Development (BC 10) - Capability Set 10 (Marshall)																																
(1) Materiel Release - Marshall																																
Fielding - Marshall																																
Software Development (BC 11) Capability Set 11-12 (McArthur)																																
(2) Materiel Release - McArthur																																
Fielding - McArthur																																
Software Development (BC 13) Capability Set 13-14 (Eisenhower)																																
(3) Materiel Release - Eisenhower																																
Fielding - Eisenhower																																
Software Development (BC 15) Capability Set 15-16 (Arnold)																																
(4) Materiel Release - Arnold																																
Fielding - Arnold																																

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0203726A - Adv Field Artillery Tactical Data System</b>						<b>F19</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
OSD/DAE/JFCOM /Program Funded									
Software Development (BC 10) - Capability Set 10 (Marshall)	1Q - 4Q	1Q - 3Q							
Materiel Release - Marshall			1Q						
Fielding - Marshall			1Q - 2Q						
Software Development (BC 11) Capability Set 11-12 (McArthur)		1Q - 2Q	4Q						
Materiel Release - McArthur				1Q					
Fielding - McArthur				1Q - 3Q					
Software Development (BC 13) Capability Set 13-14 (Eisenhower)				1Q - 4Q	1Q				
Materiel Release - Eisenhower						1Q			
Fielding - Eisenhower						2Q - 4Q			
Software Development (BC 15) Capability Set 15-16 (Arnold)							1Q		
Materiel Release - Arnold								1Q	
Fielding - Arnold								2Q - 4Q	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203735A - Combat Vehicle Improvement Programs</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	42809	143041	190301	Continuing	Continuing
330 ABRAMS TANK IMPROVE PROG	29130	36974	101743	Continuing	Continuing
371 BRADLEY BASE SUSTAIN	13679	106067	88558	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This Program Element (PE) corrects vehicle deficiencies identified in Army operations; continues technical system upgrades to include the integration of applicable Future Combat Systems technologies on ground systems; addresses needed evolutionary enhancements to tracked combat vehicles; and, develops technology improvements which have application to or insertion opportunities across multiple Ground Combat Systems vehicles. This PE provides combat effectiveness and Operating and Support (O&S) cost reduction enhancements for the Abrams tanks and Bradley Fighting Vehicles through a series of product improvements.

This project funds improvements to the Abrams Main Battle Tank (M1 series) and the Abrams Family of Vehicles (FOV). The Abrams mission is to provide necessary firepower, mobility, and survivability to overmatch all current and emerging enemy threats in achieving decisive dominant maneuver. The M1A2 SEP (current production model) refers to a System Enhancement Package, which upgraded the M1A2's computer systems and its night vision capabilities. Post SEP development efforts are focusing on improvements yielding significant life cycle cost reductions, survivability enhancements and integration of Future Combat Systems (FCS) technologies. M1A2 SEP has virtually reached the upper limits for space, weight, and power (SWaP). Future enhancements may require trade-offs in capabilities or re-architecting existing systems in order to add new capabilities. This could include items such as Survivability Enhancements, Power Management, Interoperability/networking capabilities and lethality. The Abrams tank is expected to be in service through 2045. The Abrams tank must embark on a modernization effort in order to remain relevant, maintain threat overmatch capability, and be interoperable with Future Combat Systems FCS on the battlefield. The objective is to maintain Survivability, Combat Overmatch and reduce Operational and Support (O&S) costs.

The Bradley Fighting Vehicle System (BFVS) improvements will provide the Heavy Brigade Combat Team (HBCT) with an improved capability to effectively fight in current and future environments. The BFVS improvements will return the A3 to the existing Operational Requirement Document and maintain combat over match through a combination of enhanced survivability, mobility and situational awareness subsystems. Improved survivability will leverage and build on lessons learned from Operation Iraqi Freedom to ensure protection against current and future threats in both asymmetric and full spectrum warfare. This provides the Bradley fleet the capability to complement the Abrams Tank in the HBCT. This also provides the HBCT commander with the necessary capabilities to employ the Bradley and Abrams in a combined arms approach as well as appropriate mounted and dismounted schemes of maneuver on current and future battlefields.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203735A - Combat Vehicle Improvement Programs</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	41192	141114	227194
Current BES/President's Budget (FY 2010)	42809	143041	190301
Total Adjustments	1617	1927	-36893
Congressional Program Reductions		-475	-3099
Congressional Rescissions			
Congressional Increases		2400	
Reprogrammings	2770	2	
SBIR/STTR Transfer	-1153		
Adjustments to Budget Years			-114794

Change Summary Explanation: Funding - FY 2010: Funds realigned to higher priority Army programs.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203735A - Combat Vehicle Improvement Programs</b>			<b>PROJECT</b> <b>330</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
330 ABRAMS TANK IMPROVE PROG	29130	36974	101743	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This project funds improvements to the Abrams Main Battle Tank (M1 series) and the Abrams Family of Vehicles. The M1A2 SEP (Current Production Model) refers to a System Enhancement Package incorporated on the tank in 1998, which upgraded the M1A2's computer systems and night vision capabilities. Since that time, the M1A2 SEP has virtually reached its upper limits in space, weight and power. The Abrams Tank is planned to be in service beyond 2045 and will be modernized in accordance with a revised capabilities document to: (1) posture the tank infrastructure to enable incremental growth as a hedge against other risks and contingencies, (2) maintain threat overmatch to deter aggression, project power and protect US interests and allies around the globe - especially with regard to the lessons of counterinsurgency learned during tanks successful campaigns during Operation Iraqi freedom, and (3) leverage the mature and relevant technology enhancements from Future Combat System (spin-outs) to enable interoperability with the Army's networked Future Combat System

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Systems Engineering/project management, to include requirements decomposition & flow down, trade studies, modeling & simulation, risk management			22500
Vehicle Architecture & Software, to include architecture synthesis and concepting, vetronics and software subsystem definition, power distribution architecture definition, specification development, Net-Centric and IA compliance activities			17043
Lethality Systems, to include cannon integration & characterization, fire control enhancements, future munitions integration, sensor development and integration, specification development			13200
Survivability Systems, to include armor modeling and analysis, system design and integration, hit avoidance and signature management analysis, specification development			9200
Mobility Systems, to include fuel efficiency improvement analysis, reliability/maintainability analysis, track & suspension design, specification development			12700
Auxiliary Systems, to include Auxiliary Power Unit development, Nuclear/ Biological/Chemical detection & protection technology investigation, specification development			12000
Battle Command/Communication Integration			3000
Mobility, Survivability, Vetronics and Software Integration			2500
Improved Lethality (Sensor Integration, Advanced Munitions, Cannon Integration).		1000	5100
Government Engineering Support		1310	4500
Improved Situational Awareness/Supportability/Survivability (e.g. Driver's Rear Facing Camera, 360 Situational Awareness (SA), Active Protection System (APS), Environmental Systems (TMS/NBC), Improved Diagnostics and Embedded Training).	10376	6020	
Power Train Improvement & Integration Optimization Program (e.g., Total Integrated Engine Revitalization (TIGER), Transmission,	1500		



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203735A - Combat Vehicle Improvement Programs</b>		<b>PROJECT</b> <b>330</b>
Common Controller, Auxilliary power Unit (APU), Common Power Management			
Advanced Technology Assessments and Insertion (System Engineering/ Electronic Architecture/Battle Command/Communications)	8015	22276	
Test and Evaluation	999	3000	
Transmission Improvement Program (e.g.Electronic Controls for the Abrams X1100 Transmission)	3840		
Component Optimization for Ground Systems	1600		
GCS Open Architecture Electronic Enhancements (Engineering analysis and investigation in advanced electronic architecture technology opportunities for ground combat systems modernization.	2800	2400	
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)		968	
<b>Total</b>	<b>29130</b>	<b>36974</b>	<b>101743</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Abrams Upgrade Program (GA0750)	1238672	580543	185611		2004826
Abrams Vehicle Modification (GA0700)	1123087	766462	183829		2073378
Items Less Than \$5.0M (TCV-WTCV) (GL3100)		1595			1595
M1A2 Training Device (GB1300)		2991			2991

Comment: FY2009 Congressional increase of \$2.400M was placed in wrong project. Should be in project 371, same PE.

**C. Acquisition Strategy** Contractor selection for FY2010 and beyond pending contractor award.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0203735A - Combat Vehicle Improvement Programs</b>								<b>330</b>	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering/project management	CPFF	TBD						22500	2Q		22500	
Vehicle Architecture & Software	CPFF	TBD						17043	2Q		17043	
Lethality Systems	CPFF	TBD						13200	2Q		13200	
Survivability Systems	CPFF	TBD						9200	2Q		9200	
Mobility Systems	CPFF	TBD						12700	2Q		12700	
Auxiliary Systems	CPFF	TBD						12000	2Q		12000	
Cannon Integration	MIPR	ARDEC						4600	2Q		4600	
Sensor Integration	MIPR	CECOM-NVESD						500	2Q		500	
Battle Command/Communication Integration	MIPR	CECOM/PEO C3T						3000	2Q		3000	
Mobility/Survivability/Vetronics/Software Integration	MIPR	TARDEC						2500	2Q		2500	
Common Power Management	TBD			1500	2Q						1500	
Improved Situational Awareness/Supportability/Survivability	CPIF	General Dynamics, Sterling Heights, MI	18500	10376	2Q	6020	2Q				34896	
Improved Lethality	MIPR	PM, MAS	1430			1968					3398	
Advance Technology Insertion/Systems Engineering, Electronic Architecture, Battle Command/Comms	CPIF	General Dynamics, Sterling Heights, MI/To Be Determined	12020	8015	2Q	22276	2Q				42311	
Transmission Improvement Program		Allison Transmission, Indianapolis , IN		3840	2Q						3840	
Component Optimization for Ground Systems		Various		1600	3Q						1600	
Ground Combat Systems (GCS) Open Architecture Electronic Enhancements		Curtis Wright Roseland, NJ		2800	3Q	2400					5200	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY				PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>				<b>0203735A - Combat Vehicle Improvement Programs</b>							<b>330</b>		
Subtotal:				31950	28131		32664		97243			189988	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
Engineering Support	MIPR	Various	5068			1310	1Q	4500	2Q		10878		
Subtotal:			5068			1310		4500			10878		
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
Advance Technology Preparation and Testing	MIPR	Aberdeen Proving Ground, MD; Yuma Proving Ground, AZ; White Sands Missile Range, NM	7000	999	2-4Q	3000	2-4Q				10999		
Subtotal:			7000	999		3000					10999		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
Subtotal:													
<b>Project Total Cost:</b>			<b>44018</b>	<b>29130</b>		<b>36974</b>		<b>101743</b>			<b>211865</b>		



# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0203735A - Combat Vehicle Improvement Programs</b>						<b>330</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Complete Draft Vehicle Concept		3Q							
Material Development Decision		4Q							
Milestone A		4Q							
System Requirements Review			1Q						
System Functional Review			2Q						
Trade Studies and Analysis		1Q - 4Q	1Q - 4Q	1Q					
Preliminary Design Review		3Q							
Milestone B				1Q					
Critical Design Review (CDR)				2Q					
Prototype Vehicle Build				1Q - 4Q	1Q - 2Q				
Development Test					3Q - 4Q	1Q - 4Q			
Milestone C							1Q		
Low Rate Initial Production							1Q - 4Q	1Q - 4Q	
Full Rate Production Decision									

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203735A - Combat Vehicle Improvement Programs</b>			<b>PROJECT</b> <b>371</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
371 BRADLEY BASE SUSTAIN	13679	106067	88558	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Bradley Fighting Vehicle System (BFVS) improvements will provide the Heavy Brigade Combat Team (HBCT) with an improved capability to effectively fight in current and future environments. The BFVS improvements will return the A3 to the Operational Requirement Document and maintain combat over match through a combination of enhanced survivability, mobility and situational awareness subsystems. Improved survivability will leverage and build on lessons learned from Operation Iraqi Freedom to ensure protection against current and future threats in both asymmetric and full spectrum warfare. This provides the Bradley fleet the capability to complement the Abrams Tank in the HBCT. This also provides the HBCT commander with the necessary capabilities to employ the Bradley and Abrams in a combined arms approach as well as appropriate mounted and dismounted schemes of maneuver on current and future battlefields.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Electronic System Modeling, electronics modeling framework capable of executing a system model of the entire Bradley electronics.	1408		
Vehicle Health Management System Development	4000		
Bradley A3 Block 2	8271	88221	68658
Support Costs		14808	19900
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)		3038	
<b>Total</b>	<b>13679</b>	<b>106067</b>	<b>88558</b>

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
G80718 Bradley Program	1677885	394800			2072685
GZ2400 Bradley Program (MOD)	181893	852005	769956		1803854
GZ2500 Bradley Training Devices (MOD)	4652	10954			15606

Comment:

**C. Acquisition Strategy** The Acquisition Strategy for the Bradley A3 Block 2 Program plans to award a contract for research, development and system integration of the Bradley Fighting Vehicle. The type of contract awarded would be a Cost Reimbursement/Cost Plus Incentive Fee.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0203735A - Combat Vehicle Improvement Programs</b>							<b>371</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Bradley A3 Block 2 Program	SS/CPIF	To be determined				91259	3Q	68658	2-3Q		159917	
Electronic System Modeling	SS/FFP	BAE, San Jose, CA		1408	2Q						1408	
Vehicle Health Management	SS/FFP	DRS TEM, Huntsville, AL		4000	2Q						4000	
Subtotal:				5408		91259		68658			165325	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PMO	MIPR	PMO, Warren, MI			1Q	1858	1Q	10900	1Q		12758	
Contractor Engineering Support	SS/FFP	BAE, San Jose, CA		8271	2Q	10600	3Q	5000	2Q		23871	
Government Engineering Support	MIPR	Various sites			1Q	2350	1Q	4000	1Q		6350	
Subtotal:				8271		14808		19900			42979	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												

**ARMY RDT&E COST ANALYSIS (R3)****May 2009**

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0203735A - Combat Vehicle Improvement Programs**

PROJECT

**371****Project Total Cost:****13679****106067****88558****208304**



# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																														
<b>7 - Operational system development</b>	<b>0203735A - Combat Vehicle Improvement Programs</b>	<b>371</b>																														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Bradley A3 Block 2 Program</b>																																
(1) Complete Draft Tech Insertion Concept									▲ 1																							
(2) Material Development Decision									▲ 2																							
(3) Milestone A									▲ 3																							
(4) System Requirements Review									▲ 4																							
(5) System Functional Review									▲ 5																							
<b>Trade Studies</b>																																

**Schedule Detail (R4a Exhibit)**

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203735A - Combat Vehicle Improvement Programs</b>	<b>PROJECT</b> <b>371</b>
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<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
Bradley A3 Block 2 Program		3Q - 4Q	1Q - 4Q	1Q - 4Q				
Complete Draft Tech Insertion Concept			1Q					
Material Development Decision			2Q					
Milestone A			3Q					
System Requirements Review			4Q					
System Functional Review				1Q				
Trade Studies		1Q - 4Q	1Q - 4Q					

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203740A - Maneuver Control System</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
484	MANEUVER CONTROL SYSTEM (MCS)	43601	37028	21394	Continuing

**A. Mission Description and Budget Item Justification:** Tactical Battle Command (TBC) is a suite of products and services that provide commanders and staffs executive decision making capability in a collaborative environment, planning tools, and common operational picture management and other maneuver functional tools. TBC satisfies requirements and capabilities identified in the MCS GE ORD and MCS 6.4 CPD which includes Army migration to DoD net-centric environment. The overarching capability includes a user-defined Common Operational Picture (COP) with integrated Command and Control (C2) and Situational Awareness (SA), map-centric collaboration, Army Battle Command System (ABCS) and other enabling system interoperability, data management, and enterprise services that include e-mail, active directory, security, data backup and failover capabilities. The suite of products include the Maneuver Control System (MCS), Battalion and Above Joint Convergence with the Marine Corps, Command Post of the Future (CPOF), Tactical Web Portal for Knowledge management, and Battle Command Common Services (BCCS) that provides the consolidate server and services infrastructure for systems supporting Army Battle Command from Battalion to Army Component Command. TBC products and services are compliant with the joint technical architecture.

FY10 funding will provide for the continuing development of the products and services that will satisfy the Tactical Battle Command capability requirements, while migrating to a service oriented architecture supporting the Battle Command Essential Capability Sets. Funding also provides for the development of Battle Command Common Services (BCCS) enabling infrastructure for Tactical Battle Command.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203740A - Maneuver Control System</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	45191	37151	13083
Current BES/President's Budget (FY 2010)	43601	37028	21394
Total Adjustments	-1590	-123	8311
Congressional Program Reductions		-123	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-404		
SBIR/STTR Transfer	-1186		
Adjustments to Budget Years			8311

Change Summary Explanation: Funding - FY10: \$8.659 million was increased in order to fully fund the development requirements in FY2010 for costs associated with the implementation of the Battle Command Essential Capability Sets.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203740A - Maneuver Control System</b>			<b>PROJECT</b> <b>484</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
484	MANEUVER CONTROL SYSTEM (MCS)	43601	37028	21394	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Tactical Battle Command (TBC) is a suite of products and services that provide commanders and staffs executive decision making capability in a collaborative environment, planning tools, and common operational picture management and other maneuver functional tools. TBC satisfies requirements and capabilities identified in the MCS GE ORD and MCS 6.4 CPD which includes Army migration to DoD net-centric environment. The overarching capability includes a user-defined Common Operational Picture (COP) with integrated Command and Control (C2) and Situational Awareness (SA), map-centric collaboration, Army Battle Command System (ABCS) and other enabling system interoperability, data management, and enterprise services that include e-mail, active directory, security, data backup and failover capabilities. The suite of products include the Maneuver Control System (MCS), Battalion and Above Joint Convergence with the Marine Corps, Command Post of the Future (CPOF), Tactical Web Portal for Knowledge management, and Battle Command Common Services (BCCS) that provides the consolidate server and services infrastructure for systems supporting Army Battle Command from Battalion to Army Component Command. TBC products and services are compliant with the joint technical architecture.

FY10 funding will provide for the continuing development of the products and services that will satisfy the Tactical Battle Command capability requirements, while migrating to a service oriented architecture supporting the Battle Command Essential Capability Sets. Funding also provides for the development of Battle Command Common Services (BCCS) enabling infrastructure for Tactical Battle Command.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
MCS software development to enhance Interoperability, Usability, and Functionality	4778	4228	642
Joint Convergence Engineering and Development	12213	7383	3568
CPOF Development	17098	17613	12667
Battle Command Common Services Development	9512	6848	4517
Small Business Innovative Research/Small Business Technology Transfer Programs		956	
<b>Total</b>	<b>43601</b>	<b>37028</b>	<b>21394</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
BA9320 - Maneuver Control System (MCS)	176379	122646	82646	Continuing	Continuing
BS9710 - MCS Spares	1509	1357	1550	Continuing	Continuing

Comment:

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0203740A - Maneuver Control System**

PROJECT

**484**

**C. Acquisition Strategy** In accordance with the TRADOC requirements document approved in 2008, entitled Battle Command Essential Capability, software capability will be developed in 2-year increments as capability sets designed to Collaborate, Collapse and Converge Battle Command products. The product development funded under this R-Form is an integral part of the Army Battle Command System (ABCS), a system of systems, under a strategy designed to optimize opportunity for improved interoperability among the systems, to capture the benefits of competition where possible and to ensure the rapid integration of new capability into warfighter systems. This strategy is designed to reduce the physical footprint, logistics support requirements and increase operational efficiency.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0203740A - Maneuver Control System							484		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
MCS Software Development	C/CPAF	Lockheed Martin Corp., Tinton Falls, NJ	190787								184627	178467
Misc Contracts	Various	Various	20819	2042	1Q	1650	1Q	1287	1Q	Cont.	Cont.	
CPOF Development	MIPR	DARPA	20737								20737	
CPOF Development	IDIQ	General Dynamics	24757	18248	1Q	17806	1Q	7666	1Q	Cont.	Cont.	
Software Development & Technical Support	MIPR	CECOM Software Engineering Center, NJ	37775	4952	1-2Q	4632	1-2Q	3579	1-2Q	Cont.	Cont.	
MCS, Joint Convergence, and BCCS System Engineering & Development	C/CPAF	Lockheed Martin Corp., Tinton Falls, NJ	30453	10210	1-3Q	6820	1-4Q			Cont.	Cont.	
ABCS SoS Contract	TBD	TBD						3507	1-4Q	Cont.	Cont.	
Technical Support	In House	PM Battle Command, NJ	21312	2475	1-4Q	1689	1-4Q	631	1-4Q	Cont.	Cont.	
PSE H/W & S/W	Various	Various	2775							Cont.	2775	
MITRE System Engineering		MITRE Corp., Eatontown, NJ	12533							Cont.	12533	
ABCS SE&I	MIPR	PEO C3T, NJ	1830								1830	
Subtotal:			363778	37927		32597		16670		Cont.	Cont.	178467
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Misc Support	In House	PM Battle Command, NJ	5394	688	1-4Q	607	1-4Q	576	1-4Q	Cont.	Cont.	
Misc Contracts	Various	Various	3003	492	1-2Q	460	1-2Q	409	1-2Q	Cont.	Cont.	
Subtotal:			8397	1180		1067		985		Cont.	Cont.	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0203740A - Maneuver Control System</b>	PROJECT <b>484</b>
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III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
OGA	MIPR	Various	4802	342	1-2Q	240	1-2Q	206	1-2Q	Cont.	Cont.	
Misc Contracts	Various	Various	5673	242	1-2Q	230	1-2Q	196	1-2Q	Cont.	Cont.	
Test Planning/Conduct	MIPR	Various	22297	2123	1-3Q	1400	1-2Q	2250	1-2Q	Cont.	Cont.	
Subtotal:			32772	2707		1870		2652		Cont.	Cont.	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Office Mgmt	In House	PM Battle Command, NJ	5482	1787	1-4Q	1494	1-4Q	1087	1-4Q	Cont.	Cont.	
Subtotal:			5482	1787		1494		1087		Cont.	Cont.	

<b>Project Total Cost:</b>			<b>410429</b>	<b>43601</b>		<b>37028</b>		<b>21394</b>		<b>Cont.</b>	<b>Cont.</b>	<b>178467</b>
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# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0203740A - Maneuver Control System</b>						<b>484</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Battle Command Capability Set 11-12 Software Development	3Q - 4Q	1Q - 4Q	1Q - 3Q						
Battle Command Capability Set 13-14 Software Development			3Q - 4Q	1Q - 4Q	1Q - 3Q				
Battle Command Capability Set 15-16 Software Development					3Q - 4Q	1Q - 4Q	1Q - 3Q		
Battle Command Capability Set 17-18 Software Development							3Q - 4Q	1Q - 4Q	
CTSF Integration Testing/Interop Certification of TBC Suite (MCS/CPOF/BCCS)	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Evolving Software Upgrades (e.g., joint interoperability, COE compliance, etc.)	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Fielding	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Operational Evaluation			1Q						

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	327331	459424	209401	Continuing	Continuing
028 Aerial Common Sensor (ACS) (MIP)	12581	170960	74	Continuing	Continuing
430 IMPR CARGO HELICOPTER	21617	13861	10799	Continuing	Continuing
504 BLACK HAWK RECAPITALIZATION/MODERNIZATION	92975	35542	33467	Continuing	Continuing
D12 LONGBOW APACHE OPERATIONAL SYSTEMS DEVELOP	8478	38339	13284		60101
D17 APACHE BLOCK III	185366	197716	150793	Continuing	Continuing
D18 UTILITY FW CARGO AIRCRAFT	6314	3006	984		10304

**A. Mission Description and Budget Item Justification:** FY 2010/2011 budget request funds aviation development of modifications and improvements for the Guardrail Common Sensor/Aerial Common Sensor, the Improved Cargo Helicopter (ICH), the UH-60A/L Black Hawk Recapitalization/Modernization.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	328514	452787	428195
Current BES/President's Budget (FY 2010)	327331	459424	209401
Total Adjustments	-1183	6637	-218794
Congressional Program Reductions		-1513	
Congressional Rescissions			
Congressional Increases		8150	
Reprogrammings	7916		
SBIR/STTR Transfer	-9099		
Adjustments to Budget Years			-218794

Change Summary Explanation: Funding - FY 2010: Funding for Aerial Common Sensor was moved to a separate MIP program element.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>			<b>PROJECT</b> <b>028</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
028      Aerial Common Sensor (ACS) (MIP)	12581	170960	74	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** (U) Aerial Common Sensor (ACS) is an Airborne Reconnaissance, Surveillance and Target Acquisition (RSTA)/Intelligence, Surveillance, and Reconnaissance (ISR) capability directly supporting Battlespace Awareness for tactical commanders in irregular warfare scenarios. Specifically, ACS will provide real-time, persistent, precision, networked, wide-area, high-capacity, multi-sensor intelligence collection capability throughout the joint battlespace. ACS will quickly produce actionable intelligence that provides commanders and soldiers critical shared situational understanding delivered with the speed, accuracy, and timeliness necessary to conduct successful and when necessary, lethal joint operations. ACS will support focused Intelligence Preparation of the Battlespace (IPB), Indications and Warnings (I&W), precision targeting, battle damage assessment (BDA), Situational Development, battle command, and Force Protection. Each of these will be synchronized with operations in order to develop and maintain situational awareness and reduce clutter in the maneuver environment. ACS will be a manned, fixed-wing aircraft capable of worldwide deployment carrying multiple sensor payloads and intelligence processing, appropriate air/ground/satellite data links, and air crew (i.e., pilots and intelligence systems operations). The RSTA/ISR payload will consist of a suite of modular, scaleable Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Ground Moving Target Indicator (GMTI) and Measurement and Signature Intelligence (MASINT) sensors and processors that can operate alone or simultaneously in combination with each other (e.g., automated cross-cueing). The intelligence processing suite onboard ACS and in the ground station, provided by the Distributed Common Ground System-Army (DCGS-A), will integrate the products from all ACS Sensor payloads as well as the sensor feeds from other joint force sensors, including manned/unmanned (MUM) teaming with Army Unmanned Aircraft Systems (UAS), to provide a correlated near-real-time picture of the tactical operational environment with the greatest degree of granularity possible. Onboard communications will consist of a robust set of line-of-sight (LOS) and satellite communications (SATCOM) datalinks that will enable direct linkage to Brigade Combat Teams, Manned-Unmanned teaming with Army UAS, wideband/worldwide connectivity to DCGS and the Global Information Grid, and interoperability with other Army, Joint and National RSTA/ISR assets. ACS will be a critical and integral component of the future force.

The National Security Agency's Military Intelligence Program (MIP) provides funding to support enhanced SIGINT capabilities.

FY10 and out years funded with PE 0307207A - Aerial Common Sensor (ACS) Project 024

<b><u>Accomplishments/Planned Program:</u></b>	<b><u>FY 2008</u></b>	<b><u>FY 2009</u></b>	<b><u>FY 2010</u></b>
Modern Signal Sensor Prototype, Datalink Risk Reduction efforts, EMI/EMC Studies, GRCS Capabilities Growth Study/ICD	4522		
Datalink and other Risk Reduction efforts, GRCS ICD & Support, Modern Signal Sensor Prototype, Procure CHALS GFE, GRCS ITADS, and MR-TCDL GFE		29337	
Mission Thread Analysis, Systems Integration Analysis, Sensor Data Server Software Development	1600	2900	
Program Office, Matrix Engineering and Test support for the AC Sensors, Payload RFI, RFP/Source Selection activities/MS A Documentation	6459	13644	
Start of Technology Development Phase		125079	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>	PROJECT <b>028</b>
Total	12581	170960

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
ACS NSA MIP	3851	3690	2094	Continuing	Continuing
CHALS NSA MIP	4071	4169	1777	Continuing	Continuing
GRCS NSA MIP	6588	6713	2885	Continuing	Continuing

Comment: FY10 National Security Agency Military Intelligence Program (MIP) funding provides for the development of ACS core SIGINT technologies.

**C. Acquisition Strategy** The Aerial Common Sensor (ACS) Capabilities Development Document (CDD) was approved by the Joint Requirements Oversight Council (JROC) on 25 November 2008. ACS development will be achieved on an incremental basis. A competitive award of two (2) Cost Plus Fixed Fee (CPFF) contracts is planned for the Increment 1 Technology Development (TD) phase in FY09. The TD phase will reduce risk through demonstration of system prototype flight demonstrations. Following the TD phase a single contractor will continue through EMD. As the development program evolves, future competitive opportunities will be assessed.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
7 - Operational system development			0203744A - Aircraft Modifications/Product Improvement Programs								028	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Multi-Role-Tactical Command Data Link Development and Delivery	SS-CPAF	L-3 Communications, Salt Lake City, UT	11459	503	3Q	8600	3Q				20562	4590
MR-TCDL Advanced Technology Program	SS	Northrop Grumman Space & Mission Systems Corp Redondo Beach, CA				7789	2Q				7789	
EMI/EMC Studies	FF	Various Ktrs		2099	4Q						2099	
Risk Reduction/X-MIDAS V25. B-Kits		Zeta				1195	3Q				1195	
GRCS Capabilities Growth Study/ICD/Support	T&M	Northrop Grumman, McClellan, CA		320	1Q	1300	4Q				1620	
Advance Quickfix Settlement Costs		Boeing, Sunnyvale, CA				553	3Q				553	
GRCS ITADS	MIPRS/various contracts					5100	1-3Q				5100	
Modern Signals Sensor Prototype	SS-CPFF	Radix, Mountain View, CA	12501	1600	2-3Q	800	3-4Q				14901	
CHALS Enhancement Development	SS-CPFF	Lockheed Martin, Owego, NY	14063			4000	3Q				18063	
Sentinel UAV Phase II (ARL)			986								986	
Increment 1 TD contacts	FF	TBD				125079	4Q				125079	
Subtotal:			39009	4522		154416					197947	4590
Remarks: FY10 and out years funded with PE 0307207A - Aerial Common Sensor (ACS) Project 024												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Thread Analysis for ACS Design CONOPS; Systems Integration Analysis	IDA	VA	1169	1600	2Q	900	2-3Q				3669	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>			PE NUMBER AND TITLE <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>								PROJECT <b>028</b>	
Sensor Data Server Software Development	MIPR/TBD	I2WD, Ft. Monmouth				2000	4Q				2000	
Subtotal:			1169	1600		2900					5669	

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support	MIPR/CPFF	Gov't/Kr Various	3820	328	1-2Q	65	1-2Q			Cont.	Cont.	Cont.
Subtotal:			3820	328		65				Cont.	Cont.	Cont.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PMO Staff/travel/O/H expenses	In-House	PM, AC Sensors; Ft. Monmouth NJ	28381	773	1-4Q	2117	1-4Q			Cont.	Cont.	Cont.
Program SETA Support	C-T&M	CACI /NJ/DC	11921	810	1-2Q	1361	1-2Q			Cont.	Cont.	Cont.
SETA Mgmt Support	Kr; Various	Multiple	9819	950	1-3Q	3210	1-3Q			Cont.	Cont.	Cont.
Eng Matrix Support	Kr; various	Multiple	13166	1201	1-2Q	2140	1-3Q			Cont.	Cont.	Cont.
Govt Matrix Support	MIPR	Ft. Monmouth, NJ	6782	546	1-2Q	2465	1-2Q			Cont.	Cont.	Cont.
Matrix Support	MIPR/CPFF	Multiple	5213	1851	1-2Q	2286	1-2Q			Cont.	Cont.	
Subtotal:			75282	6131		13579				Cont.	Cont.	Cont.

<b>Project Total Cost:</b>			<b>119280</b>	<b>12581</b>		<b>170960</b>				<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>
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# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0203744A - Aircraft Modifications/Product Improvement Programs**

PROJECT  
**028**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
(1) CDD Approval					▲ <sub>1</sub> CDD Approval																															
RFP Process and Source Selection Activities													RFP/SSEB																							
Milestone Preparation Activities																																				
(2) ACS Milestone A Decision					MS Prep				▲ <sub>2</sub> MDD/MS A																											
ACS Increment 1 Technology Development Phase																																				
(3) Milestone B																	▲ <sub>3</sub> MS B																			
EMD Phase																																				
(4) Milestone C																													▲ <sub>4</sub> MSC							

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
<b>7 - Operational system development</b>		<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>						<b>028</b>
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
CDD Approval		1Q						
RFP Process and Source Selection Activities	1Q - 4Q	1Q - 4Q						
Milestone Preparation Activities	1Q - 4Q	1Q - 4Q						
ACS Milestone A Decision		4Q						
ACS Increment 1 Technology Development Phase		4Q	1Q - 4Q	1Q - 4Q	1Q			
Milestone B					1Q			
EMD Phase					1Q - 4Q	1Q - 4Q	1Q - 4Q	
Milestone C							4Q	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>			<b>PROJECT</b> <b>430</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
430 IMPR CARGO HELICOPTER	21617	13861	10799	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** The CH-47 Chinook is a twin-turbine, tandem-rotor, heavy-lift transport helicopter with a useful load of up to 25,000 pounds. As the Army's only heavy lift helicopter, the CH-47 is an essential component of the Army Future Force. The CH-47F program fills the Army's Aviation Transformation Chinook requirement. Key product improvements integrate the CH-47F Common Avionics Architecture System (CAAS) digital cockpit which will provide future growth potential to meet the Net-Ready Key Performance Parameters (KPPs) and also includes a digital data bus that permits installation of enhanced communication and navigation equipment for improved situational awareness, mission performance, and survivability. The CH-47 program funds the developmental improvements to the T55-GA-714A engines which includes a redesigned N1 Drive Train and a new torque system and the Airframe Component Improvement Program that includes development of new Rotor Blades that will result in significant performance improvement for the Chinook such as gaining an additional 1500 lbs of lift, improving erosion protection, and reducing retreating blade stall. Congressional plus-up in FY08 is for the Health and Usage Monitoring System (HUMS).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue in-house and Program Management Administration	1080	489	548
714 Engine Component Improvement Program	4380	3955	6649
Airframe Component Improvement Program	6157	5829	3602
Health and Usage Monitoring (HUMS)	10000	3200	
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)		388	
<b>Total</b>	<b>21617</b>	<b>13861</b>	<b>10799</b>

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
APA, SSN AA0252, CH-47 CARGO HELICOPTER MODS (MYP) (Including Adv Proc and Initial Spares)	9874958	720493	82363	6622220	17675959
APA, SSN AA05105000, CH-47 SLEP			352300		3110400
APA, SSN A05008, CH-47 CARGO HELICOPTER NEW BUILD (Including Adv Proc)	189600	442211	567614	155000	3317749

Comment:

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0203744A - Aircraft Modifications/Product Improvement Programs**

PROJECT

**430**

**C. Acquisition Strategy** The CH-47F program replaces one for one, the aging CH-47D aircraft by FY2020, incorporates a new machined airframe, and includes a new Common Avionics Architecture System (CAAS) cockpit with digital communication/navigation capability allowing improved interoperability on the digital battlefield. The CH-47F program includes recapitalization of key dynamic components, bringing them to a near zero time.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>							<b>430</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
EMD	CPIF	Various	117221								117221	117098
TOCR	CPIF	Various	1600								1600	1600
Low Maintenance Rotor Hub	CPIF	Boeing	7685								7685	
SBIR/STTR			814		1Q	388	1Q				1202	
Technical Support	CPFF	Various	10158								10158	
714 Engine Component Improvement Program	CPFF	Various	18675	4380	1-2Q	3955	1-2Q	6649	1-2Q		33659	
Airframe Component Improvement Program			3861	6157	2Q	5829	2Q	3602	1-2Q		23042	
Health and Usage Monitoring (HUMS)			63000	10000	3-4Q	3200					76200	
Subtotal:			223014	20537		13372		10251			270767	118698
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PMO/OGA	Reimbursable	Various government	14849	1080	2-3Q	489	2-3Q	548	2-3Q		17469	
Subtotal:			14849	1080		489		548			17469	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
DT/OT	Reimbursable	Various government	25257								20507	
Live Fire Test & Eval	Reimbursable	Contract/Govt	6365								6365	
Live Fire Test & Eval	Contract		50								50	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>			PE NUMBER AND TITLE <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>								PROJECT <b>430</b>	
Test Analysis	Reimbursable	Various Government	1500								1500	
Subtotal:			33172								28422	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
CAMBER/Westar	SS/FP	Huntsville, AL	3901								3901	3901
Subtotal:			3901								3901	3901

<b>Project Total Cost:</b>			<b>274936</b>	<b>21617</b>		<b>13861</b>		<b>10799</b>			<b>320559</b>	<b>122599</b>
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# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0203744A - Aircraft Modifications/Product Improvement Programs** PROJECT  
**430**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Full Rate Production	Full Rate Production																															

# Schedule Detail (R4a Exhibit)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>	<b>PROJECT</b> <b>430</b>
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<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
Long Lead (Lot 1)								
LRIP Decision								
LRIP Lot 1 Contract Award								
Low Rate Initial Production								
LRIP Lot 2 RFP								
LRIP Lot #2 Contract Award								
Full Rate Production RFP								
IOT&E Phase I								
MS III/FRP								
Full Rate Production	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
IOT&E Phase II								
FUE								
Milestone III								
Full Rate Pdn								
Initial Oper Test & Eval (IOT&E) Phase II								



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>			<b>PROJECT</b> <b>504</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
504 BLACK HAWK RECAPITALIZATION/MODERNIZATION	92975	35542	33467	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The UH-60 BLACK HAWK will serve as the Army's utility helicopter in the Future Force. It is used for air assault, general support, aeromedical evacuation (MEDEVAC), and command and control in active and reserve component theater, corps, division, and Table of Distribution and Allowances (TDA) units. The UH-60A entered service in fiscal year 1978 (FY78), and the newer model UH-60L in FY89. The Army's last procurement of UH-60L helicopters was FY06. The Army has established a recapitalization goal for its systems of maintaining the fleet's average age at the design half-life or less. The UH-60 was designed for a 20 year service life. The oldest UH-60As are now over 25 years old, and the average age of the UH-60A fleet is 21 years old. The increased operational tempo, coupled with the technological age of the basic airframe, components, and systems, is having an adverse impact on the operational readiness (OR) and operating and support (O&S) costs of the over 1500 aircraft UH-60 fleet. In addition, the UH-60A/L helicopters lack the necessary digital avionics architecture to meet current and future Army and Joint Service interoperability communication requirements. The Army has determined that an upgrade program is required to address these issues. An Operational Requirements Document (ORD) for recapitalization of the BLACK HAWK fleet was approved by the Joint Requirements Oversight Council (JROC) in March, 2001. The ORD describes an evolutionary, block approach to transform the utility helicopter force to one that is more deployable, responsive, and less expensive to operate. A revised ORD was signed by the JROC on July 24, 2006 updating key performance parameters for survivability and force protection. The UH-60M provides a common platform for the modernized air ambulance MEDEVAC mission equipment package (MEP). RDTE funds are required to develop, integrate, test and qualify the UH-60M configuration. FY05 funded the initial efforts to move the UH-60M program to an Upgrade configuration which includes the Fly By Wire (FBW), Composite Tailcone, Full Authority Digital Engine Control (FADEC) and the Common Avionics Architecture System (CAAS), which is the common cockpit to be used by UH-60M, CH-47 and Special Operations. Incorporation of CAAS will minimize the future sustainment costs for these aircraft platforms. A successful UH-60M Upgrade IPR decision was obtained in January 2006. On May 18, 2007, the Office of the Secretary of Defense (OSD) Overarching Integrated Product Team (OIPT) report recommended approval for the UH-60M program to enter Full Rate Production (FRP) and approved the Army request for advanced procurement for seven UH-60M Upgrade aircraft and recommended a paper Defense Acquisition Board (DAB). On June 26, 2007 the Black Hawk Full Rate Production (FRP) Acquisition Decision Memorandum (ADM) was signed. This newly approved ADM authorizes entry into FRP for the Black Hawk Upgrade Program to include both the UH-60M and HH-60M baseline aircraft. The ADM also provides for FY08 advanced procurement for long lead items to support the initial cut-in aircraft for the UH/HH-60M Upgrade effort.

FY08 includes the on-going FADEC Development program and continues efforts for the development and test of the UH-60M Upgrade aircraft.

FY09 funds on-going development of the FADEC program and continues efforts for the development and test of the UH-60M Upgrade aircraft.

FY10 funds continues the development and testing of the UH-60M Upgrade program.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue airframe, avionics and powerplant development based on finalized configuration as a result of airframe CDR. Conduct System Preliminary Design Review and Critical Design Review.	24666	9545	9573
Software Development - includes failure modes and effects criticality analysis; software design descriptions; qualification testing of mission critical computer resources; update software requirements specifications and multiplex interface control documents; and prepare software design descriptions.	17080	5600	7978
Continue Producibility Engineering and Planning (PEP) as well as manufacturing planning and control.	4752	1797	1359
Prototype build and delivery to support Development Testing (DT).	3454	3390	
Testing (Conduct flight testing, EME testing and ground testing).	21712	7899	12318
Preparation of training documentation for Logistics Demonstration Familiarization Course, Government Test Pilot Familiarization Course and Test Data Collection Training Course.	3169	1135	809
Conduct training course to support test.		1029	1164
Maintain Continuous Acquisition and Life Cycle Support (CALs)/Contractor Integrated Technical Information Service (CITIS) and deliver Interface Control Documents (ICD's).	807	286	174
Support Equipment	144	141	92
Full Authority Digital Engine Control (FADEC)	8791	1974	
Operator Situational Awareness System - MEDEVAC	2000	1750	
Helicopter Autonomous Landing System (HALS)	4000		
Aircraft Component Remediation	2400		
Improved Turbine Engine Program (ITEP) Engine Development and Qualification			
Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)		996	
Total	92975	35542	33467

<u>B. Other Program Funding Summary</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>To Compl</u>	<u>Total Cost</u>
A05002 BLACK HAWK (MYP)	1354567	1142889	1431454	Continuing	Continuing

Comment: A05002 BLACK HAWK (MYP) funds in FY09 and FY10 include supplemental funding. (FY09 - \$81.4 million and FY10 - \$74.34 million)

**C. Acquisition Strategy** The UH-60 BLACK HAWK will serve as the Army's utility helicopter in the Future Force. The Army revised the acquisition strategy for the UH-60M to procure new UH-60M helicopters in lieu of Recap/Upgrade. This program addresses current UH-60 fleet aging problems such as decreasing operational readiness (OR) and increasing Operations and Sustainment costs, including all top-ten cost drivers, and provides a common, modernized platform for the UH-60 utility and MEDEVAC fleet of the future. The program will be executed over four phases: pre-System Development/Demonstration Phase (FY00-01), System Development/Demonstration Phase (Baseline FY01-07) (Upgrade FY05-11), Production/Readiness Phase (FY05-26), and Operations and Sustainment Phase (FY06-FY45).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0203744A - Aircraft Modifications/Product Improvement Programs**

PROJECT

**504**

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0203744A - Aircraft Modifications/Product Improvement Programs							504		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Design, Integration & Qualification Contract	SS/CPAF	Sikorsky Aircraft Co 6900 Main Street Stratford, CT 06601	364215								364215	
UH-60M Upgrade Pre-Planned Product Improvement Contract	SS/CPAF	Sikorsky Aircraft Co 6900 Main Street Stratford, CT 06601	178068	68965	1-2Q	22680	1-2Q	24847	1-2Q		294560	
Development Support - Organic	MIPR	UH PMO/matrix	21513	529	1-3Q	921	1-3Q	324	1-3Q		23616	
Development Support - Contractor	C/FP	Support Contractors	15739	1586	1-3Q	1475	1-3Q	1410	1-3Q		21182	
IMD-HUMS Development Support - Organic	MIPR	Aviation Applied Tech Directorate (AATD) Matrix	6953								6953	
IMD-HUMS Development Support - Contractor	C/FP	Goodrich, 100 Panton Road, Vergennes, Vermont 05491	46862								46862	
MAST Development Support - Organic	MIPR'S	Other Government Agency Support	1429								1429	
MAST Development Support - Contractor	MIPR	Smith Industries Clear Water , FLI	5708								5708	
Full Authority Digital Engine Control (FADEC) Development - Organic			922	998	1-2Q	224	1-2Q				2144	
Full Authority Digital Engine Control (FADEC) Development - Contractor			7198	7793	1-2Q	1750	1-2Q				16741	
Internal Reprogramming - Payback for FY03			3413								3413	
HALS			8675	4000	2-4Q						12675	
Performance Support System - NG (Apache)	MIPR	Other Government Agency Support	1000								1000	
Transfer to Apache			3000								3000	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>								<b>504</b>	
Improved Turbine Engine Program (ITEP) Engine Development and Qualification	C	TBD									90628	
Operator Situational Awareness System - MEDEVAC				2000	2-4Q	1750	2-4Q				3750	
Aircraft Component Remediation				2400	2-4Q						2400	
Subtotal:			664695	88271		28800		26581			900276	

Remarks: IMD-HUMS demonstration program was funded in FY02-05 and is separate from the UH-60M program.  
 MAST demonstration program was funded in FY04 and FY05 and is separate from the UH-60M and the HUMS programs.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Cost Analysis Support	MIPR	AMCOM Matrix	798	78	1-3Q	80	1-3Q	81	1-3Q		1119	
Logistics Analysis Support - Organic	MIPR	AMCOM Matrix	1469	423	1-3Q	393	1-3Q	259	1-3Q		2674	
Logistics Analysis Support - Support Contractor	MIPR	Support Contractor	1608	352	1-3Q	327	1-3Q	216	1-3Q		2682	
Subtotal:			3875	853		800		556			6475	

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Planning, Test and Evaluation	MIPR	Various Activities	31834	1829	1-3Q	3060	1-3Q	4967	1-3Q		46499	
Test Planning, Test and Evaluation	MIPR	Various Activities	612	134	1-3Q	137	1-3Q	239	1-3Q		1122	
Subtotal:			32446	1963		3197		5206			47621	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
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# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>							<b>504</b>		
	Type				Date		Date		Date		Contract	
PM Support - Organic	MIPR	UH PMO/matrix	8920	1139	1-4Q	1052	1-4Q	665	1-4Q		12446	
PM Support - Contract	C/FP	AMCOM Express Contractor	4847	749	1-4Q	697	1-3Q	459	1-3Q		6966	
SIBR/STTR			4383			996					5379	
Subtotal:			18150	1888		2745		1124			24791	
<b>Project Total Cost:</b>			<b>719166</b>	<b>92975</b>		<b>35542</b>		<b>33467</b>			<b>979163</b>	



# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0203744A - Aircraft Modifications/Product Improvement Programs**

PROJECT  
**504**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15																																			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																																
UH-60M Program	<div style="position: absolute; top: 5px; left: 5px;"> <b>FRP CA</b>                      (1) Full Rate Production Contract Award, (2) FUE   FUE                 </div> <div style="position: absolute; top: 385px; left: 365px;">  </div> <div style="position: absolute; top: 425px; left: 365px;"> <b>LUT</b> </div>																																																															
MYP VII PRODUCTION (UH/HH-60M NEW)																																	UH-60M MYP VII PRODUCTION																															
(3) UH-60M Upgrade First Flight																																																																
UH-60M Upgrade LUT																																																																
UH-60M Upgrade Development																																	UH-60M Upgrade Development																															
UH-60M Upgrade Cut-In																																	UH-60M Upgrade Cut-In																															
MYP VIII Production (UH/HH-60M Upgrade New)																																	MYP VIII Production (UH/HH-60M Upgrade New)																															

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>						<b>504</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
UH-60M Program	1Q - 4Q	1Q - 4Q	1Q						
Full Rate Production Contract Award	1Q								
FUE	2Q								
MYP VII PRODUCTION (UH/HH-60M NEW)	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q					
UH-60M Upgrade First Flight	4Q								
UH-60M Upgrade LUT	4Q	1Q							
UH-60M Upgrade Development	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q				
UH-60M Upgrade Cut-In			1Q - 4Q	1Q - 4Q					
MYP VIII Production (UH/HH-60M Upgrade New)					1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>			<b>PROJECT</b> <b>D12</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
D12      LONGBOW APACHE OPERATIONAL SYSTEMS DEVELOP	8478	38339	13284		60101

**A. Mission Description and Budget Item Justification:** FY10: Funding is continued for Light Weight Missile Launcher (LWML) development, testing, and integration. The LWML will provide weight savings per launcher, commonality, producibility and improved electronics reliability to the Apache fleet. In addition, the AAH PMO and the Night Vision and Electronic Sensors Directorate (NVESD) mutually agreed to enter into a Technology Transition Agreement (TTA) for the purpose of defining technology deliverables from the Electronic Image Intensifier (EI2) for Pilotage Technology Transition Initiative (TTI) to the Arrowhead Modernized-Target Acquisition Designation Sight/Pilot Night Vision Sensor (M-TADS/PNVS) program. A new camera will provide high quality, Aviator's Night Vision Imaging System (ANVIS)-equivalent (the current Army aviation night goggles) performance imagery that can be fused with thermal imagery for improved nighttime pilotage and situational awareness over a broader range of degraded visual conditions.

FY09: Project D12, Longbow Apache Operational System Development, was funded for the accelerated fielding of the Composite Main Rotor Blade (CMRB), the development of the initial suite of the Apache Maintenance Part Task Trainers (PTT), and the development of a Light Weight Missile Launcher (LWML), an upgrade to the current M299 launcher. An updated state-of-the-art CMRB is in development for the Block III Apache. The effort in this project provides funding for qualification and enables accelerated fielding for the Longbow Apache Attack Helicopter Block I/II fleet. The CMRB provides twice the time on wing and provides more lift which will have a significant impact to combat operations in OIF/OEF. The development of Apache Maintenance Part Task Trainers addresses the requirements of the US Army Aviation Logistics School for additional maintenance training devices to meet the increasing volume of initial entry students for Military Occupational Specialties 15R and 15Y. The new AH-64D Maintenance PTT are: Wing PTT, Integrated Pressurized Air System PTT, Gun PTT, and Multiplex PTT.

FY 2008 funding total includes no funding received in the Bridge Supplemental.

FY 2008 funding totals do not include any previously requested funding for FY 2008 GWOT requirements, and no FY 2008 GWOT funds have been previously requested in the RDTE Project of D12.

FY 2009 funding totals do not include any previously requested funding for current FY 2009 Overseas Contingency Operations (OCO) requirements, and no FY 2009 OCO funds have been previously requested in the RDTE Project of D12.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Boeing NRE Contract -- CMRB Acceleration Development		11431	
SOFSA/L3 Inc. NRE Contract -- Apache Training Devices		13951	
Light Weight Missile Launcher (LWML) NRE Contract [Note: FY08 funds were moved with a 1414 action to the LWML Program and PM JAMS will report on the funding.]	8478	9558	10350
Kiowa Warrior Vehicle Health & Usage Management System (add will be moved to PE 0604220)		2325	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>	<b>PROJECT</b> <b>D12</b>
Electronic Image Intensifier Technology Transition Initiative (EI2 TTI)		2934
Small Business Innovative Research/Small Business Technology Transfer Programs		1074
<b>Total</b>	<b>8478</b>	<b>38339</b>

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
APA, SSNs: AA6606, AA6670	5153634	991816	741715		6887165
APA, SSN A05111			219170		219170
RDTE, 0203744A, D17	185366	197716	150793		533875

Comment:

**C. Acquisition Strategy** FY09 CMRB funding will be placed on contract as part of the Block III Phase I SDD effort. The Apache Maintenance Part Task Trainer funding will be placed on contract with L3 through SOFSA. The Light Weight Missile Launcher (LWML) project was competitively awarded in FY08 (under PM JAMS) as an incrementally funded FFP contract. (FY10 funding is required to complete the contract.) Supporting programs to the LWML are the JAGM missile system PE 655450, other missile product improvement PE 0203802A, Hellfire system C70000, and Hellfire Mods C71500.

FY10, EI2 TTI -- NVESD is performing developmental flight testing with NVESD aircraft. Operational testing will be in the Apache aircraft. NVESD will manage the AAH PMO'S flight testing.

FY10, LWML -- The requested funds are to complete contractor design, test, logistics development, and Government airworthiness qualification testing. Prior year funds have been used to initiate and sustain the contract for those activities. Missile R&D funds were originally utilized for specification development, RFP generation, and contractor source selection. The project has traditional review and continuation points with Preliminary and Critical Design Reviews, a Production Readiness Review, and In-Process Review for a production decision. First Unit Equipped will be 1st quarter FY12.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0203744A - Aircraft Modifications/Product Improvement Programs							D12		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Boeing NRE -- CRMB	Cost Reimb	Boeing Company, Mesa, AZ	641			11431	1-2Q				12072	12072
SOFSA/L3 Inc. NRE -- TADSS	Cost Reimb	SOFSA/L3 Inc., Lexington, KY				15025	1-2Q				15025	15025
Lockheed Martin -- LWML	FFP	LM Missiles & Fire Control, Orlando, FL		8478	1-2Q	9558	1-2Q	4030	1-2Q		22066	22066
Kiowa Warrior (add will be moved)						2325					2325	2325
Subtotal:			641	8478		38339		4030			51488	51488
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Light Weight Missile Launcher (LWML)	n/a (Government testing, see Major Performers)	(see Major Performers)						6320	1-2Q		6320	6320
Elec Image Intensifier Tech Transition (EI2 TTI)	NVESD (flight testing)	NVESD, Ft. Belvoir, VA						2934	1-2Q		2934	2934
Subtotal:								9254			9254	9254

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

<b>BUDGET ACTIVITY</b> 7 - Operational system development	<b>PE NUMBER AND TITLE</b> 0203744A - Aircraft Modifications/Product Improvement Programs	<b>PROJECT</b> D12
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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
<b>Project Total Cost:</b>			<b>641</b>	<b>8478</b>		<b>38339</b>		<b>13284</b>			<b>60742</b>	<b>60742</b>

# Schedule Profile (R4 Exhibit)

May 2009

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Boeing NRE Contracts -- CMRB	CMRB -- NRE				[Redacted]																										
SOFSA/L3 INC NRE Contract -- Training Device	Training Devices -- NRE				[Redacted]																											
(1) Airworthiness Certification -- CMRB	Air Worthiness Certification								▲ 1																							
(2) First Delivery -- CMRB Block I/II Fleet													CMRB First Delivery				▲ 2															
(3) First Delivery IPAS PPT, Wing PPT & Multiplex PPT																	1st Del -- IPAS/Wing/M-Plex PPTs				▲ 3											
(4) First Delivery Gun PPT									1st Delivery -- Gun PPT				▲ 4																			
LWML NRE	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
(5) LWML PDR					▲ 5 PDR																											
LWML Integration	Platform Integration				[Redacted]				[Redacted]																							
Electronic Image Intensifier Technology Transition Initiative (EI2 TTI)					NRE (Flight Testing)				[Redacted]				[Redacted]																			

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>						PROJECT <b>D12</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Boeing NRE Contracts -- CMRB		1Q - 4Q							
SOFSA/L3 INC NRE Contract -- Training Devices		1Q - 4Q							
Airworthiness Certification -- CMRB			1Q						
First Delivery -- CMRB Block I/II Fleet				1Q					
First Unit Equipped (FUE) -- CMRB Block I/II Fleet				3Q					
First Delivery IPAS PPT, Wing PPT & Multiplex PPT			1Q						
First Delivery Gun PPT			2Q						
LWML NRE	1Q - 4Q	1Q - 4Q	1Q						
LWML PDR		2Q							
LWML Integration		3Q - 4Q	1Q - 2Q						
Electronic Image Intensifier Technology Transition Initiative (EI2 TTI)			1Q - 4Q						

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational system development</b>	<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>	<b>D12</b>	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
Boeing		1143	
SOSFA/L3 INC		1395	
Light Weight Launcher (TBD)		956	1035
Kiowa Warrior (add to be moved)		233	
Elec Image Intensifier Tech Trans Init (EI2TTI)			293
<b>Total Termination Liability Funding:</b>		3727	1328

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>			<b>PROJECT</b> <b>D17</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
D17 APACHE BLOCK III	185366	197716	150793	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** Project D17, Apache Block III (AB3) funding is for the non-recurring engineering (NRE), development, and testing work associated with the planned remanufacture of 634 Apache aircraft into Block III-configured aircraft (deliveries to begin in FY11). AB3 is a result of the continuously evolving process to keep the Apache fleet viable on the battlefield. Consequently, AB3 is the Army's only attack helicopter solution capable of interoperability with Joint and Future Combat Forces. The AB3 program is the remanufacture of the aging Apache fleet integrating proven technologies into a mature weapon system platform. AB3 will add significant combat capability while addressing obsolescence issues to ensure the aircraft remains a realistic combat multiplier beyond 2025. AB3 will address current system shortfalls by integrating: Unmanned Aircraft System (UAS) Level III-IV Control Capability, Improved Situational Awareness, an Upgraded Communications Suite, Improved Drive and Propulsion Systems, Improved Targeting Capability, Increased Computer Processing Capability and Speed, Improved Navigation Systems, and Improved Diagnostics and Maintainability.

FY 2008 funding total includes no funding received in the Bridge Supplemental. FY 2008 funding totals do not include any previously requested funding for current FY 2008 GWOT requirements, and no FY 2008 GWOT funds have been previously requested in the RDTE Project D17.

FY 2009 funding totals do not include any previously requested funding for current FY 2009 Overseas Contingency Operations(OCO)requirements, and no FY 2009 OCO funds have been previously requested in the RDTE Project D17.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Boeing NRE Contracts	146000	145322	107474
Joint Venture NRE Contracts	22000	26000	13000
Block III NRE Program Support Activities	8429	7828	18149
Operational Assessments	2639	6430	7174
Management Services	6298	6599	4996
Small Business Innovative Research/Small Business Technology Transfer Programs		5537	
<b>Total</b>	<b>185366</b>	<b>197716</b>	<b>150793</b>

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
APA, SSN AA6605	5153634	991816	741715		6887165
APA, SSN A05111			219170		219170
RDTE, PE273744D12	8478	38339	13284		60101



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0203744A - Aircraft Modifications/Product Improvement Programs**

PROJECT

**D17**

Comment:

**C. Acquisition Strategy** The NRE will encompass subsystem integration and will utilize existing test aircraft, incorporate the technical insertions, and initiate appropriate qualification and operational flight testing. The LRIP effort will include a total quantity of 53 aircraft which will take 21 months for delivery and therefore will be two separate contractual actions (FY 09 & FY 10). These 53 Low Rate Initial Production (LRIP) aircraft are to be used for operational testing, First Unit Equipped (FUE), and training base fielding.

In FY10, a contract for Apache Block III Lot 1 (8 aircraft), initiating low rate initial production, will be awarded with options for Lot 2a (30 aircraft) & Lot 2b (15 aircraft).

In FY12, a contract for Apache Block III Lot 3 (30 aircraft), initiating full rate production, will be awarded with options for Lot 4 (45 aircraft), Lot 5 (48 aircraft, Lot 6 (48 aircraft), and continuing through to a total of 634 aircraft.

Contractor Support is anticipated to Apache Block III Lot 6 deliveries. Training device concurrency will be maintained with each technical insertion. Advanced material procurement is planned for award in FY 09 to support the LRIP deliveries in FY 11. All NRE efforts will be awarded as Cost Reimbursable. The LRIP and production efforts will be awarded as Firm Fixed Price (FFP) and include the Advanced Procurement requirements.

As the acquisition strategy and plan unfolds Multi-Year authority may be requested for the out-years.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>							<b>D17</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Boeing Contracts	Cost Reimb	Mesa, AZ	186177	146000	1-2Q	150859	1-2Q	107474	1-2Q		590510	590510
Joint Venture Contracts	Cost Reimb	Orlando, FL	74000	22000	1-2Q	26000	1-2Q	13000	1-2Q		135000	135000
Lockheed Martin Contracts	Cost Reimb	Orlando, FL										
Subtotal:			260177	168000		176859		120474			725510	725510
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Block III NRE Support	Various	Various Activities	5693	8429	1-3Q	7828	1-2Q	18149	1-2Q		40099	41099
Subtotal:			5693	8429		7828		18149			40099	41099
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Operational Assessments, Test Integration Working Group (TWIG), TEMP, etc.	MIPR, Various	Various Activities	1127	2639	1-2Q	6430	1-2Q	7174	1-2Q		17370	17370
Subtotal:			1127	2639		6430		7174			17370	17370
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Management Svcs (In-House, Travel, etc.)	Various	PMO AAH, Matrix Support, AMCOM	12979	6298	1-2Q	6599	1-2Q	4996	1-2Q		30872	32328

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>								<b>D17</b>	
		Express										
Subtotal:			12979	6298		6599		4996			30872	32328
<b>Project Total Cost:</b>			<b>279976</b>	<b>185366</b>		<b>197716</b>		<b>150793</b>			<b>813851</b>	<b>816307</b>



# Schedule Detail (R4a Exhibit)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>	<b>PROJECT</b> <b>D17</b>
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<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
NRE Contracts - Boeing	1Q - 4Q	1Q - 4Q	1Q - 4Q					
NRE Contracts - Joint Venture	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Critical Design Review (CDR)	2Q							
Force Development Test & Evaluation (FDTE)			1Q					
Limited User Test (LUT) I			1Q					
Milestone C			3Q					

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational system development</b>	<b>0203744A - Aircraft Modifications/Product Improvement Programs</b>	<b>D17</b>	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
D17, Apache Block III	18600	19700	15100
<b>Total Termination Liability Funding:</b>	18600	19700	15100

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203744A - Aircraft Modifications/Product Improvement Programs</b>			<b>PROJECT</b> <b>D18</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
D18 UTILITY FW CARGO AIRCRAFT	6314	3006	984		10304

**A. Mission Description and Budget Item Justification:** This Project supports Test and Evaluation of the Joint Cargo Aircraft (JCA). The RDT&E funds are to support statutorily-mandated Live Fire Test and Evaluation (LFT&E) including survivability/susceptibility assessment and Initial Operational Test and Evaluation (IOT&E). The LFT&E will involve system, subsystem- and component-level live fire testing. Additionally, survivability/susceptibility characterization assessments of nuclear, biological, chemical, and electromagnetic capabilities will be performed.

FY 2009 and FY 2010 funds are required to continue supporting Production Qualification Testing and the statutorily-mandated LFT&E.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Production Qualification Test (PQT)	3489	1569	529
Live Fire Test & Evaluation (LFT&E) Testing	2825	1437	455
Total	6314	3006	984

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
A11000 JOINT CARGO AIRCRAFT	155982	263381			419363
USAF PE0401138F/Project 5259 Joint Cargo Aircraft	20283	16732	9353	Continuing	Continuing
USAF BA 02/Item No. 10b/Joint Cargo Aircraft			319050	Continuing	Continuing

**Comment:** The Joint Cargo Aircraft test program is a joint effort between the Army and the Air Force. Each service will provide 50% of the required funding critical to complete aircraft testing to include PQT, LFT&E and IOT&E. This agreement was approved in the Memorandum of Agreement (MOA) signed June 2006. Air Force PE: 0401138F (Joint Cargo Aircraft), Project: 5259. The Air Force RDT&E line also includes funding for Trainer Development; Engineering, Training and Logistics Studies; and Joint Development Engineering.

**C. Acquisition Strategy** The Joint Cargo Aircraft's acquisition strategy is based on leveraging the commercial market. The contract was awarded in June 2007 to procure a previously developed and fielded, low-risk, commercially available aircraft and Mission Equipment Package (MEP). A protest immediately followed, which resulted in a 100 day stop work order. Program was re-started in October 07. These aircraft possess open architecture systems that will support technology insertions as improvements become available.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0203744A - Aircraft Modifications/Product Improvement Programs**

PROJECT

**D18**

The JCA program was established to correct operational shortfalls with respect to time sensitive mission critical requirements, provide commonality with other aviation platforms, and replace multiple retiring aircraft systems. This aircraft addresses these shortfalls, and replaces retiring C-23 fleets, and selected C-12s.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203752A - Aircraft Engine Component Improvement Program</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
106      A/C COMPON IMPROV PROG	461	331	792		1584

**A. Mission Description and Budget Item Justification:** Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Flight Safety Parts program. CIP is included in the RDTE budget vice procurement appropriations in accordance with congressional direction. The majority of CIP funding has been reallocated to PE 273744 beginning in FY07. Non-program specific auxiliary power unit (APU) safety and readiness issue will continue to be addressed under this PE.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203752A - Aircraft Engine Component Improvement Program</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)			
Current BES/President's Budget (FY 2010)	461	331	792
Total Adjustments	461	331	792
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Adjustments to Budget Years			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203752A - Aircraft Engine Component Improvement Program</b>			<b>PROJECT</b> <b>106</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
106      A/C COMPON IMPROV PROG	461	331	792		1584

**A. Mission Description and Budget Item Justification:** Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Flight Safety Parts program. CIP is included in the RDTE budget vice procurement appropriations in accordance with congressional direction. The majority of CIP funding has been reallocated to PE 273744 beginning in FY07. Non-program specific auxiliary power unit (APU) safety and readiness issue will continue to be addressed under this PE.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
T700 Engine: As of FY07, majority of funding for this program has been reallocated to PE 273744. Previously, this program addressed flight safety and readiness problems that arise in the field by providing timely engineering support, continued the development of the T700-GE-701D, provided engineering support of fielded engines to enhance war fighting capability and improve durability and reliability while reducing cost of ownership. Significant Accomplishments in FY 2008: Continued efforts to revise qualification reports on the 701D engine to increase flight safety, improve engine on-wing life, and reduce engine O&S costs. FY 2009 effort provides minimal support to resolve Flight Safety and Engineering issues. FY2010 effort will develop reliability improvements to the DECU to reduce high-side failure events and improve flight safety.	190	46	303
T55 Engine: Provide timely support to field users, applying engineering effort to resolve unanticipated flight safety problems revealed in the field. Continue the engineering support of fielded engines to enhance war-fighting capability, improve durability & reliability while reducing CH-47 engine cost of ownership. Significant accomplishments in FY2008: Continued efforts on the N2 Speed Sensor System to reduce amount of hardware O&S. Approved final report on the improved bleed activation system. Disapproved the ECP for the improved bleed system due to fabrication issues with the bracket. Completed the qualification efforts for the improved Engine Control Unit (ECU) for CH-47 D/F aircraft which will greatly improve control system reliability. Continued the MIL-STD-1553 ECU program which will incorporate MIL-STD-1553 databus capability in the new ECU and allow the ECU to communicate via the databus to the CH-47F aircraft. Continued work on the compressor blade erosion coating program to improve time-on-wing for engines operating in OEF/OIF environments. Program was canceled due to corrosion issues that could not be resolved. Continued a redesign of the T55 Torquemeter System to improved reliability and accuracy issues associated with T55-GA-714A output torque indication system. Initiated N1 drive line redesign efforts. This will bring the design up to current Honeywell design practices and improve system reliability. FY2009 and 2010: D106 funded efforts provide minimal support to resolve Flight Safety and Engineering issues.	80	26	303
GTCP36 Auxiliary Power Unit (APU): Provide timely responses to technical problems arising in the field during operational use. Review operational and repair reports, perform engineering analysis of failed engines and equipment. Perform investigation and testing as required to isolate/verify reported field problems and service revealed deficiencies (SRDs). Significant accomplishments in FY 2008: Developed new repairs and extend wear limits, new repair tools and techniques to reduce O&S costs. Conducted engineering analysis of service revealed deficiencies. FY 2009 and 2010: Address service revealed difficulties affecting safe operation of US Army GTCP 36	79	57	25

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
<b>7 - Operational system development</b>	<b>0203752A - Aircraft Engine Component Improvement Program</b>	<b>106</b>		
APUs. Formulate correlation factors necessary to publish life limits of turbine and compressor wheels for US Army GTCP36 APUs.				
T62 APU: Provide timely responses to technical problems arising in the field during operational use. Review operational and repair reports, perform engineering analysis of failed engines and equipment. Perform investigation and testing as required to isolate/verify reported field problems and service revealed deficiencies (SRDs). Significant accomplishments in FY 2008: Conducted engineering analysis of service revealed deficiencies. Continued redesign effort to increase reliability and maintainability of Flexible Fuel Manifold for the T-62T-2B APU to improve reliability, improve safe operation, and reduce OS costs. Completed redesign of Flexible Fuel Manifold. Addressed service revealed difficulties affecting safe operation of US Army APUs. FY 2009 and 2010: Deliver two assembled Flex Fuel Manifolds to US Army for qualification testing and provide Class I Engineering Change Proposal (ECP), prepare drawing for T62-T-2B Fuel Pump/Fuel Control assembly, provide Ignition bracket design change for T-62T-40-1 Inlet Barrier Filter (IBF) to accommodate aircraft with Environmental Control System (ECS) installed, address SRDs affecting T-62 APUs.	60	100	35	
UAV Shadow Engine Investigation at U.S. Army Research Laboratory (ARL) Cleveland: US Army Vehicle Technology Directorate (VTD) at ARL Cleveland. Provide research to support airworthiness, reliability and performance improvements of the Unmanned Aerial Vehicle (UAV) shadow engine. Investigate and research the technology challenges (i.e. engine performance, engine durability, engine life, and engine modifications) for reliable engine operation using JP-8 fuel and readily available MIL-spec lubricants. Significant accomplishments in FY2008: Constructed engine test cell, obtained, rebuilt and instrumented 2 engines for testing. FY 2009 and 2010: Complete and qualify engine test cell. Investigate and research improved oil pump and engine bearings to increase engine life and reduce engine failure due to lubrication restriction. Investigate and research thermal barrier coatings for rotor to improve engine performance, durability and reduce thermal affects due to combustion.	12	52	79	
IN HOUSE: In-house support for the CIP engineers. Contracting support for CIP contracts.	40	45	47	
SBIR/STTR Reduction			5	
Total	461	331	792	

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** Improved designs will be implemented via Engineering Change Proposal (ECP) and follow-on procurement or modification to a production contract to introduce the improved hardware.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0203752A - Aircraft Engine Component Improvement Program</b>								<b>106</b>	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
T700 Engine	SS/CPFF	GE-Air, Lynn, MA	60780	190	2Q	46	2Q	303	2Q	Cont.	Cont.	Cont.
T55 Engine	SS/CPFF	Honeywell, Phoenix, AZ	28391	80	2Q	26	2Q	303	2Q	Cont.	Cont.	Cont.
APU's	MIPR	Air Force, Kelly AFB, TX	13557								13557	13557
EDECU	SS/CPFF	GE-Air, Lynn, MA	774								774	
FADEC/FDU	MIPR	CECOM, Ft. Monmouth, NJ	12895									5716
APU's	MIPR	Air Force, Hill AFB, UT	1963	139	3Q	157	3Q	60	3Q	Cont.	Cont.	Cont.
LOLA	MIPR	CECOM, Ft. Monmouth, NJ	938								938	
UAV Shadow Engine	MIPR	ARL/VTD, Cleveland, OH		12	4Q	52	3Q	79	3Q		143	
Subtotal:			119298	421		281		745		Cont.	Cont.	Cont.
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering	SS/CPFF	Westar, St. Louis, MO	10								10	10
Contract Engineering	SS/CPFF	Camber, Huntsville, AL	199								199	199
Contract Engineering	SS/CPFF	AMS, Huntsville, AL	107								107	107
Contract Engineering	SS/CPFF	Westar, Albuquerque, NM	30								30	
Subtotal:			346								346	316
III. Test And Evaluation	Contract	Performing Activity &	Total	FY 2008	FY 2008	FY 2009	FY 2009	FY 2010	FY 2010	Cost To	Total	Target

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0203752A - Aircraft Engine Component Improvement Program</b>								<b>106</b>	
	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
Redstone Avn Prop Test Res (RAPTR) Facility Data Reduction Prog	MIPR	Redstone Technical Test Center, RSA, AL	946								946	Cont.
Subtotal:			946								946	Cont.
Remarks: Not Applicable												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
In-house Engineering		ATCOM, St. Louis, MO	10342								10342	10342
In-house Engineering	NA	AMRDEC Redstone Arsenal, AL	1977	40	1-4Q	45	1-4Q	47	1-4Q	Cont.	Cont.	Cont.
DA Withhold			140								140	
Prior Year Closed Account Funding			5								5	
SBIR/STTR			171			5					176	
Subtotal:			12635	40		50		47		Cont.	Cont.	Cont.
<b>Project Total Cost:</b>			<b>133225</b>	<b>461</b>		<b>331</b>		<b>792</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203758A - Digitization</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
374	HOR BATTLEFLD DIGITIZN 10426	9502	10692	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Horizontal Battlefield Digitization is a strategy that allows warfighters, from the individual soldier and platform to echelons above corps, to share critical situation awareness (SA) and command and control (C2) information. It conducts analysis and evaluation of new information technologies, concepts, and applications of integrated management activities to meet the dynamic Army acquisition technology requirements. The strategy applies digital information technologies to acquire exchange and employ data throughout the operational environment, providing a clear and accurate common operational picture for leaders at all levels. This timely sharing of information significantly improves the ability of commanders and leaders to quickly make decisions, synchronize forces and fires, and increase the operational tempo. Digitization is a means of realizing a fully integrated C2 capability to the platoon level, including interoperability links with joint and multi-national forces. The major efforts included in the program element are: 1) Integration and synchronization of the Army's interoperability efforts, coordination of interoperability efforts between joint and multi-national forces, and the synchronization of combat material and training efforts to develop Army information technologies; 2) Systems engineering and integration of hardware and software interfaces between and across the warfighting functions and across multiple Program Executive Offices, providing System of System (SOS) capabilities that satisfy warfighter requirements and enable the execution of mission operations by providing one Common Operational Picture (COP)/Common Tactical Picture. 3) Oversee and support synchronization of LandWarNet Battle Command capabilities and ensure interoperability across the current and future force. 4) Support fielding of integrated systems to Active and Reserve Components (USARNG and USAR) in accordance with Army Force Generation (ARFORGEN). 5) Supports integration and enhancements to Army Equipping Enterprise System (AE2S) software for the single program language, single platform system that incorporates Force Development Investment Information System (FDIIS), Continuous Early Validation (CEaVa), COP and Army Flow Model (AFM).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203758A - Digitization</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	9675	9534	8871
Current BES/President's Budget (FY 2010)	10426	9502	10692
Total Adjustments	751	-32	1821
Congressional Program Reductions		-32	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	968		
SBIR/STTR Transfer	-217		
Adjustments to Budget Years			1821

Change Summary Explanation: Funding - FY 10: Funding increased to support AE2S in Horizontal Battlefield Digitization.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203758A - Digitization</b>			<b>PROJECT</b> <b>374</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
374 HOR BATTLEFLD DIGITIZN	10426	9502	10692	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Horizontal Battlefield Digitization is a strategy that allows warfighters, from the individual soldier and platform to echelons above corps, to share critical situation awareness (SA) and command and control (C2) information. It conducts analysis and evaluation of new information technologies, concepts, and applications of integrated management activities to meet the dynamic Army acquisition technology requirements. The strategy applies digital information technologies to acquire exchange and employ data throughout the operational environment, providing a clear and accurate common operational picture for leaders at all levels. This timely sharing of information significantly improves the ability of commanders and leaders to quickly make decisions, synchronize forces and fires, and increase the operational tempo. Digitization is a means of realizing a fully integrated C2 capability to the platoon level, including interoperability links with joint and multi-national forces. The major efforts included in the program element are: 1) Integration and synchronization of the Army's interoperability efforts, coordination of interoperability efforts between joint and multi-national forces, and the synchronization of combat material and training efforts to develop Army information technologies; 2) Systems engineering and integration of hardware and software interfaces between and across the warfighting functions and across multiple Program Executive Offices, providing System of System (SOS) capabilities that satisfy warfighter requirements and enable the execution of mission operations by providing one Common Operational Picture (COP)/Common Tactical Picture. 3) Oversee and support synchronization of LandWarNet Battle Command capabilities and ensure interoperability across the current and future force. 4) Support fielding of integrated systems to Active and Reserve Components (USARNG and USAR) in accordance with Army Force Generation (ARFORGEN). 5) Supports integration and enhancements to Army Equipping Enterprise System (AE2S) software for the single program language, single platform system that incorporates Force Development Investment Information System (FDIIS), Continuous Early Validation (CEaVa), COP and Army Flow Model (AFM).

<b><u>Accomplishments/Planned Program:</u></b>	<b><u>FY 2008</u></b>	<b><u>FY 2009</u></b>	<b><u>FY 2010</u></b>
Conduct technical interoperability assessments, perform interoperability/integration analyses, analyze networked weapon system and Situational Awareness (SA), Command and Control (C2), Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems compatibility, and assess technical and operational test plans, activities, and results.	1648	1527	2842
Integrate and synchronize interoperability across SA/C2/C4ISR programs in support of acquisition synchronization, testing, training, and fielding System of Systems capabilities to the Army Force. Continue application across current and future force.	1567	1522	2594
Support digitization technical integration with Active and Reserve Components both CONUS and OCONUS.	3006	2759	3256
Procures AE2S software integration and enhancements for the single program language, single platform system that incorporates FDIIS, CEaVa, COP and AFM			2000
Support Joint and Coalition interoperability programs to improve integration and interoperability in accordance with Army Software Blocking Policy, Joint Planning Guidance, Coalition Specifications, Joint Capabilities Integration and Development System (JCIDS) requirements.	600	600	
Manage cross-platform software and hardware development, testing, training, and fielding to ensure the coordinated interoperability for each Army Force unit rotation.	2405	1428	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational system development</b>	<b>0203758A - Digitization</b>	<b>374</b>	
Apply university academic and research resources to the integration of Army complex modeling, simulation, and training in support of modernized forces.	1200	1399	
Small Business Innovative Research/Small Business Technology Transfer Programs		267	
<b>Total</b>	<b>10426</b>	<b>9502</b>	<b>10692</b>

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** To validate/demonstrate concepts and requirements, near term efforts are focused on developing a seamless battlefield software architecture and digitized hardware systems to include: evaluation of the horizontal battlefield digitization resources for systems, acquisition, integration, and testing of digital capability across multiple command and control, communications, sensors, and weapons platforms. The result will be an integrated, synchronize capability designed to meet the near-term requirements of the Stryker Brigade Combat Teams and the Army Future Force. Also supports the Army's role in joint and multi-national digitization programs, battle command efforts and Joint Battlefield Situational Awareness.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0203758A - Digitization</b>							<b>374</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
System/Software Integration	MIPR/PWD	Various	112271	6544	2-3Q	3285	2-3Q	2984	2-3Q	Cont.	Cont.	
International Digitization	MIPR/PWD	Various	11001								11001	
Technical Analysis	MIPR	MITRE, McLean, VA	12956	2445	1Q	2518	1Q	2593	1Q	Cont.	Cont.	
Other Government Agencies	MIPR	Various	6522									
Single Integrated Ground Picture	MIPR		7281									
Subtotal:			150031	8989		5803		5577		Cont.	Cont.	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Directorate of Integration Office Operations	In House	Pentagon, Arlington, VA	14422		1-4Q		1-4Q		1-4Q		14422	
System Eng. & Field Integration, Internet and graphics support.	PWD	Quantum Res International, Pentagon & Arlington, VA, Ft. Monroe, VA, & Ft. Hood, TX	10058	237	4Q	2300	4Q	3115	3-4Q		15710	
Software Integration and enhancements	PWD	SAIC, Pentagon & Ft. Belvoir						2000	2Q		2000	
Subtotal:			24480	237		2300		5115			32132	
Remarks: Directorate of Integration Office Operations was moved from the APC at ASC to G8 at OA22.												
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Other Govt. Agencies	MIPR	Various	5062								5062	
University XXI Initiatives	PWD	Univ. of Texas and	19472	1200	3Q	1399	3Q				22071	

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>			<b>PE NUMBER AND TITLE</b> <b>0203758A - Digitization</b>							<b>PROJECT</b> <b>374</b>	
		Texas A&M									
Studies/Analyses	MIPR	Pentagon, Arlington, VA	2116							2116	
DISM Battalion Test	MIPR/PWD		1000							1000	
Subtotal:			27650	1200		1399				30249	

Remarks: University XXI was granted a congressional mark of one million dollars in FY08 which was a misalignment. OSD realigned the funding and the effort was cash flowed funds from 273758 with an increase that was executed at \$1.2M.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												

Remarks: Not Applicable

<b>Project Total Cost:</b>	<b>202161</b>	<b>10426</b>		<b>9502</b>		<b>10692</b>		<b>Cont.</b>	<b>Cont.</b>
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# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203759A - Force XXI Battle Command, Brigade and Below (FBCB2)</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
120 Force XXI Battle Cmd, Brigade & Below (FBCB2)	30974	23341			54315

**A. Mission Description and Budget Item Justification:** Force XXI Battle Command Brigade and Below (FBCB2) consists of FBCB2 and Joint Battle Command - Platforms (JBC-P) hardware and software.

The Force XXI Battle Command Brigade and Below (FBCB2) is a digital, battle command information system that provides integrated, on-the-move, timely, relevant battle command information to tactical combat, combat support and combat service support leaders and soldiers. FBCB2 incorporates state-of-the-art information technology to allow commanders to concentrate combat system effects rather than combat forces, enabling units to be both more survivable and more lethal. FBCB2 provides the capability to pass orders and graphics allowing the warfighter to visualize the commander's intent and scheme of maneuver. FBCB2 affords combat forces the capability to retain the tactical/operational initiatives under all mission, enemy, terrain, troops, and time available conditions to enable faster decisions, real/near-real-time communications and response. FBCB2 as a key component of the Army Battle Command System (ABCS), completes the information flow process from brigade to platform and across platforms within the brigade task force and across brigade boundaries. FBCB2 system provides a dual based capability consisting of both terrestrial (EPLRS) and satellite based (L-Band) systems. The system includes a Pentium based processor, display unit, keyboard, removable hard disk drive cartridge, and a platform specific installation kit. The satellite based system, more commonly known as Blue Force Tracking (BFT), includes an L-Band transceiver that employs commercial satellite services in lieu of tactical terrestrial radios. Currently over 60,000 total systems have been fielded with approximately 15,000 systems in support of Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF).

The Joint Battle Command - Platforms (JBC-P), which includes Blue Force Tracking and Army Aviation, provides true Joint force Command and Control (C2) Situational Awareness (SA) and communications (e.g., terrestrial, celestial) capability at the platform level through command center locations (e.g., Network Operations Centers, TOCs, Brigade Command Posts) and enables mission accomplishment across the entire spectrum of Joint military operations. JBC-P serves as the cornerstone for Joint Blue Force Situational Awareness (JBFS). It provides continuous near-real-time identification of friendly locations to populate the Joint Common Operating Picture (JCOP). Joint Battle Command - Platforms (JBC-P) enhances Joint Combat Identification to increase combat effectiveness and reduces fratricide in a secure environment. It enables Joint, net-centric C2/Battle Command by seamlessly passing/sharing relevant information vertically and horizontally, within all levels of command, regardless of Service unit hierarchy. In addition to utilizing the existing FBCB2/BFT system, JBC-P system hardware consists of a family of computers (e.g., handhelds, tablets, ruggedized computers, beacons and in-dash computers), communications equipment (e.g., satellite transceivers/antennas), encryption devices (e.g., KGV-72), and ancillary equipment (e.g., Mission Data Loader, Disk Duplicator, cables, installation kits, etc.).

FBCB2 RDTE Funding ends in FY09.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203759A - Force XXI Battle Command, Brigade and Below (FBCB2)</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	32194	38418	
Current BES/President's Budget (FY 2010)	30974	23341	
Total Adjustments	-1220	-15077	
Congressional Program Reductions		-14424	
Congressional Recissions			
Congressional Increases			
Reprogrammings	-319		
SBIR/STTR Transfer	-901	-653	
Adjustments to Budget Years			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203759A - Force XXI Battle Command, Brigade and Below (FBCB2)</b>			<b>PROJECT</b> <b>120</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
120 Force XXI Battle Cmd, Brigade & Below (FBCB2)	30974	23341			54315

**A. Mission Description and Budget Item Justification:** The Force XXI Battle Command Brigade and Below (FBCB2) is a digital, battle command information system that provides integrated, on-the-move, timely, relevant battle command information to tactical combat, combat support and combat service support leaders and soldiers. FBCB2 incorporates state-of-the-art information technology to allow commanders to concentrate combat system effects rather than combat forces, enabling units to be both more survivable and more lethal. FBCB2 provides the capability to pass orders and graphics allowing the warfighter to visualize the commander's intent and scheme of maneuver. FBCB2 affords combat forces the capability to retain the tactical/operational initiatives under all mission, enemy, terrain, troops, and time available conditions to enable faster decisions, real/near-real-time communications and response. FBCB2 as a key component of the Army Battle Command System (ABCS), completes the information flow process from brigade to platform and across platforms within the brigade task force and across brigade boundaries. FBCB2 system provides a dual based capability consisting of both terrestrial (EPLRS) and satellite based (L-Band) systems. The system includes a Pentium based processor, display unit, keyboard, removable hard disk drive cartridge, and a platform specific installation kit. The satellite based system, more commonly known as Blue Force Tracking (BFT), includes an L-Band transceiver that employs commercial satellite services in lieu of tactical terrestrial radios. Currently over 60,000 systems have been fielded with approximately 15,000 systems in support of Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF).

FY09 funds continue execution of Chief of Staff of the Army Directives for Battle Command Architecture and Joint Requirements Oversight Council Memorandum (JROCM) efforts. Efforts include security network architecture requirements, and interoperability between Tactical Internet and L-Band based FBCB2 systems. Funds will be used to provide platform-level situational awareness and provide interoperability with ABCS System of Systems, Bradley, Abrams, Aviation, Stryker and support mandated Army/DoD protocol/system updates.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue to design, develop, fabricate and test a Type 1 Encryption Device (TIED) to meet requirements for processing secret messages.	5664		
Continue test and evaluation efforts to support Army Software Blocking schedule.	5259	4000	
PM FBCB2 Program Management	2566	3618	
Continue development of FBCB2 Joint Capabilities Release (JCR) to include Army and Marine Corp Common Battle Command Product Line (BCPL) initiatives, communications connectivity, and high speed data networks capabilities.	9894	8186	
Design, develop, fabricate and test prototype L-Band antennas to achieve data capacity and situation awareness accuracy requirements. Develop and deliver an organic FBCB2 Blue Force Tracking (BFT) L-band key management capability for the Army and other DoD and coalition users of the FBCB2 BFT L-Band network.	7591		
Initiate systems development efforts against current Combat Identification Capability gaps for accuracy/latency of Blue Position reporting,		3884	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0203759A - Force XXI Battle Command, Brigade and Below (FBCB2)</b>	PROJECT <b>120</b>
density of systems and joint coalition interoperability.		
Develop and test cross domain security solution to permit uncleared users to operate systems on a Type 1 secured network. Provide interface to unclassified sensor networks and logistics data.		3000
Small Business Innovative Research/Small Business Technology Transfer Programs		653
Total		30974      23341

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA - W61900	596166	242933	514978		1354077
OPA - BS9736 (Spares)	2501	5055			7556
OMA - 432142	19816	11024			30840

Comment:

**C. Acquisition Strategy** The FBCB2 development effort follows an evolutionary acquisition strategy to support Product Line Architecture, Army/Marine Corps convergence, Army Battle Command System (ABCS) interoperability and Army Software Blocking requirements. A Full Rate Production (FRP) decision review conducted by the Army Systems Acquisition Review Council (ASARC) in Aug 2004 authorized the FBCB2 program to enter into the Production and Deployment phase. Development efforts are executed via an Indefinite Delivery/Indefinite Quantity (ID/IQ) Cost Plus Award/Fixed Fee type contract. The current contract was awarded in Sep 2004 with a period of performance through Sept 2009.



# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0203759A - Force XXI Battle Command, Brigade and Below (FBCB2)</b>								<b>120</b>	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Software/Systems Engineering	CPIF/CPAF	Northrup Grumman, CA	189194	2428	1-2Q	6552	1-2Q				198174	
Hardware Development	CPFF	Northrup Grumman, CA	60719	7591	1-2Q						68310	
Software Development	CPIF/CPAF	Northrup Grumman, CA	261664	13130	1-2Q	9171	1-2Q				283965	
TACNAV	CPIF	TRW CA	1000								1000	
Systems Eng, Training and Log Development	CPAF	Lockheed Martin, NJ	11196								11196	
Systems Eng, Training and Log Development	Various	Various Contracts	1504								1504	
Subtotal:			525277	23149		15723					564149	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PM Office Support	N/A	CECOM, Ft. Monmouth	16113	670	1-4Q	874	1-4Q				17657	
Matrix Support	MIPR	CECOM, Ft. Monmouth	5653	528	1-2Q	673	1-2Q				6854	
Misc. Contracts Support	MIPR/PWD	CECOM, Ft. Monmouth	30699	1368	1-2Q	2071	1-2Q				34138	
Subtotal:			52465	2566		3618					58649	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
CTSF	MIPR	CTSF	3342		1-4Q	75	1-4Q				3417	
ATEC	MIPR	ATEC	38784	765	1-4Q	2500	1-4Q				42049	
EPG	MIPR	EPG	20990	4494	1-4Q	1000	1-4Q				26484	

# ARMY RDT&E COST ANALYSIS (R3)

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>				PE NUMBER AND TITLE <b>0203759A - Force XXI Battle Command, Brigade and Below (FBCB2)</b>						PROJECT <b>120</b>		
CRTC	MIPR	CRTC	1040								1040	
Misc Contract Support			4071		1-4Q	425	1-4Q				4496	
Subtotal:			68227	5259		4000					77486	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
<b>Project Total Cost:</b>			<b>645969</b>	<b>30974</b>		<b>23341</b>					<b>700284</b>	

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0203759A - Force XXI Battle Command, Brigade and Below (FBCB2)**

PROJECT  
**120**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>FBCB2</b>																																
<b>Joint Capabilities Release (JCR)/ Product Line Architecture/ JROCM 161-03</b>																																
(1) System/Segment Acceptance Testing (SSAT), (2)					▲ V1.1				▲ V2.0																							
Intra Army Interoperability Certification (IAIC),					■ V1.1				■ V2.0																							
Operational Evaluation					■																											



# Schedule Detail (R4a Exhibit)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203759A - Force XXI Battle Command, Brigade and Below</b> <b>(FBCB2)</b>	<b>PROJECT</b> <b>120</b>
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<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
FBCB2	1Q - 4Q	1Q - 4Q						
Joint Capabilities Release (JCR)/ Product Line Architecture/ JROCM 161-03	1Q - 4Q	1Q - 4Q						
System/Segment Acceptance Testing (SSAT)	3Q							
		2Q						
Intra Army Interoperability Certification (IAIC)	2Q - 3Q							
		2Q - 3Q						
Operational Evaluation	4Q							

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203801A - Missile/Air Defense Product Improvement Program</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	29186	37747	39728	Continuing	Continuing
036 PATRIOT PROD IMP PGM	10526	11127	11291	Continuing	Continuing
DF8 DF8	4172	11765	8579	Continuing	Continuing
DF9 DF9	14488	14855	19858	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** PATRIOT is an advanced Surface-to-Air guided missile system with a high probability of kill capable of operation in the presence of Electronic Countermeasures (ECM) and able to conduct multiple simultaneous engagements against high performance air breathing targets and ballistic missiles likely to be encountered by US Forces. The Patriot Product Improvement Program provides for the upgrade of the Patriot System through individual materiel changes. Program Development efforts address Mode V/S Identification Friend or Foe (IFF), launcher and design improvements.

DF8 The PATRIOT advanced missile system plays a critical part in the integrated battlefield. DF8 funding was provided by OSD to support expanding ongoing current Joint efforts to advance integrated battlefield capabilities.

DF9 funding was provided to the Army by OSD as part of an ongoing Joint OSD-managed effort.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203801A - Missile/Air Defense Product Improvement Program</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	30026	37871	40577
Current BES/President's Budget (FY 2010)	29186	37747	39728
Total Adjustments	-840	-124	-849
Congressional Program Reductions		-124	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-840		
Adjustments to Budget Years			-1304

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0203801A - Missile/Air Defense Product Improvement Program</b>			PROJECT <b>036</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
036 PATRIOT PROD IMP PGM	10526	11127	11291	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** PATRIOT is an advanced Surface-to-Air guided missile system with a high probability of kill capable of operation in the presence of Electronic Countermeasures (ECM) and able to conduct multiple simultaneous engagements against high performance air breathing targets and ballistic missiles likely to be encountered by US Forces. The Patriot Product Improvement Program provides for the upgrade of the Patriot System through individual materiel changes.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Software Improvement for Threat Evolution	10526	10816	11291
Small Business Innovative Research/Small Business Technology Transfer Programs		311	
<b>Total</b>	<b>10526</b>	<b>11127</b>	<b>11291</b>

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** The design objective of the Patriot system was to provide a baseline system capable of modification to cope with the evolving threat. This alternative minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems. The Patriot Product Improvement program upgrades the Patriot system to address operational lessons learned, enhancements to joint force interoperability, and other system performance improvements to provide overmatch capability with the emerging threat. Upgrades are implemented through individual hardware and software materiel changes and fielded incrementally.



# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0203801A - Missile/Air Defense Product Improvement Program							036		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Software Improvement for Threat Evolution	SS-CPIF	Multiple	36246	8632	2Q	8958	2Q	9001	2Q		62837	
Recapitalization	SS-CPIF	Multiple	97601								97601	
SIAP	SS-FP	Raytheon, MA	14852								14852	
Advanced Composite Radome	SS-CPIF	Multiple	3100								3100	
Subtotal:			151799	8632		8958		9001			178390	

Remarks: Sole Source-Cost Plus Incentive Fee (SS-CPIF); Sole Source-Fixed Price (SS-FP)

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
U.S. Contracts	C-FFP	CAS, Huntsville, AL				340	2Q	357	2Q		1072	
Subtotal:						340		357			1072	

Remarks: Remarks: Competitive-Firm Fixed Price (C-FFP)

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Missile Command	MIPR	RSA, AL	18951	375	2-3Q	400	2-3Q	425	2-3Q	Cont.	Cont.	
White Sands Missile Range	MIPR	WSMR, NM	14547	250	2-3Q	270	2-3Q	287	2-3Q	Cont.	Cont.	
RDEC and Other Govt Agent	MIPR	RSA, AL	101392	615	2-3Q	684	2-3Q	715	2-3Q	Cont.	Cont.	
Subtotal:			134890	1240		1354		1427		Cont.	Cont.	

Remarks: Military Interdepartmental Purchase Request (MIPR); Redstone Arsenal (RSA); White Sands Missile Range (WSMR)

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
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# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0203801A - Missile/Air Defense Product Improvement Program</b>							<b>036</b>		
	Type				Date		Date		Date		Contract	
In-House Support	N/A	RSA, AL	18141	402	1-4Q	125	1-4Q	131	1-4Q	Cont.	Cont.	
Matrix Support	N/A	RSA, AL	5917	252	1-2Q	350	1-2Q	375	1-2Q	Cont.	Cont.	
Subtotal:			24058	654		475		506		Cont.	Cont.	
Remarks: Non-Applicable (N/A); Redstone Arsenal (RSA)												
<b>Project Total Cost:</b>			<b>310747</b>	<b>10526</b>		<b>11127</b>		<b>11291</b>		<b>Cont.</b>	<b>Cont.</b>	

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
7 - Operational system development		0203801A - Missile/Air Defense Product Improvement Program																036														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Software Build	Software Build																															
(1) PDB 6.5 Fielding																																
					▲ PDB 6.5																											

**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0203801A - Missile/Air Defense Product Improvement Program</b>					PROJECT <b>036</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
Software Build	1Q - 4Q	1Q - 4Q	1Q - 4Q					
PDB 6.5 Fielding		3Q						

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# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0203802A - Other Missile Product Improvement Programs</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	1832	5209			7041
781 Hellfire UAV	1832	1522			3354
78J CLOSE COMBAT MSL MOD FAMILY OF MSLS (Javelin)		3687			3687

**A. Mission Description and Budget Item Justification:** The Laser HELLFIRE II missile requires replacement of the gyro and software modification to facilitate deployment from high altitudes and increased engagement geometries to defeat a broad target set ranging from heavy armor to urban structures. The modifications will be made to both the current AGM-114K or AGM-114K-2(shaped charge) and N (blast fragmentation) model missiles and result in an AGM-114 P+ configuration.

The Javelin multi-purpose warhead (MPWH) provides increased safety through insensitive munitions (IM) improvements and improved lethality in military operations for urban terrain (MOUT) and other irregular warfare soft targets while maintaining lethality against heavy armor. The warhead design will use an advanced shaped-charge technology improvement.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0203802A - Other Missile Product Improvement Programs</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	1885	1527	
Current BES/President's Budget (FY 2010)	1832	5209	
Total Adjustments	-53	3682	
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases		3682	
Reprogrammings			
SBIR/STTR Transfer	-53		
Adjustments to Budget Years			

FY09 Congressional increase of \$3,682 million for Javelin multi-purpose warhead.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0203802A - Other Missile Product Improvement Programs</b>			<b>PROJECT</b> <b>781</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
781 Hellfire UAV	1832	1522			3354

**A. Mission Description and Budget Item Justification:** The Laser HELLFIRE II missile requires replacement of the gyro and software modification to facilitate deployment from high altitudes and increased engagement geometries to defeat a broad target set ranging from heavy armor to urban structures. The missile will also be backwards compatible with current rotary wing platforms. The summary activities of the project are: a) replace the missile altitude gyro with an Inertial Measurement Unit (IMU), b) develop a modified digital communication link between the missile and the launcher/platform required to perform Unmanned Aircraft Systems (UAS) functions, c) modify autopilot algorithms and associated software to take advantage of the enhanced engagement envelope offered by the IMU, and d) fully develop, test, and qualify the hardware and software for materiel release for Army fixed and rotary wing platforms. Modifications will be made to both the current AGM-114K or AGM-114K-2(shaped charge) and N (blast fragmentation) model missiles and result in an AGM-114 P+ configuration. These missiles will be designated the P-4A (shaped charge warhead, with sleeve) and N-4 (metal augmenting charge warhead) configurations.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Define and develop system requirements and preliminary design.	224	113	
Develop test plans, test support equipment and testing.	1357	1128	
Perform government engineering support	251	238	
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)		43	
<b>Total</b>	<b>1832</b>	<b>1522</b>	

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
C70100 Laser HELLFIRE Missile (Basic/IHW/HFII)	252588	274124	250854		777566

Comment:

**C. Acquisition Strategy** The HELLFIRE AGM-114 P+ configuration is an in-house development effort that "leverages" previous experience associated with integration of HELLFIRE on the Air Force Predator Unmanned Aerial Vehicle (UAV) and the current Warrior System Design and Development effort (reviews, testing, and documentation). The end result of the missile modification/integration effort will be an Engineering Change Proposal (ECP) defining the hardware and software changes to be incorporated into production of the missiles for the Warrior UAS and rotary wing platforms.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0203802A - Other Missile Product Improvement Programs</b>			<b>PROJECT</b> <b>78J</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
78J CLOSE COMBAT MSL MOD FAMILY OF MSLS (Javelin)		3687			3687

**A. Mission Description and Budget Item Justification:** The Javelin multi-purpose warhead (MPWH) provides increased safety through insensitive munitions (IM) improvements and improved lethality in military operations for urban terrain (MOUT) and other irregular warfare soft targets while maintaining lethality against heavy armor. The warhead design will use an advanced shaped-charge technology improvement.

A Congressional mark directed the modernization of the Javelin missile.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
One prototype for each of two leading MPWH designs has been fabricated in order to optimize blast-penetration effects versus weight constraints to support accelerated design verification testing. Funds have been put on contract to start missile midbody design to accommodate the warhead, study design and manufacturing capability of other vendors, and to plan qualification testing.		3584	
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)		103	
<b>Total</b>		<b>3687</b>	

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
CC0007 Javelin (AAWS-M)	278475	377888	289628		945991

Comment:

**C. Acquisition Strategy** The Javelin warhead development effort leverages state of the art warhead design technology to develop a multi-purpose warhead. After all required qualification testing is completed, the Close Combat Weapons Support (CCWS) Project Office will pursue cutting the MPWH into the Javelin Block I missile production line.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0208053A - Joint Tactical Ground System</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
635	23313	1951	13258	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This program element supports development of critical improvements and insertion of technological upgrades to the Joint Tactical Ground Station (JTAGS) and the research and development of the JTAGS Pre-Planned Product Improvement (P3I). JTAGS is presently a transportable information processing system that receives and processes in-theater, direct down-linked data from Defense Support Program (DSP) satellites. JTAGS disseminates warning, alerting, and cueing information on Ballistic Missiles and other tactical events of interest throughout the theater using existing communication networks. This program is designated as a DoD Space program. JTAGS is designated as the in-theater element of the United States Strategic Command's Theater Event System. JTAGS supports all Theater Missile Defense pillars and by being located in-theater, provides the shortest sensor to shooter connectivity. The objectives of the improvements are to upgrade JTAGS to a new configuration for operation with the next generation of Space Based Infrared System (SBIRS), and to improve warning accuracy and timeliness.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0208053A - Joint Tactical Ground System</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	23215	1957	19274
Current BES/President's Budget (FY 2010)	23313	1951	13258
Total Adjustments	98	-6	-6016
Congressional Program Reductions		-6	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	98		
SBIR/STTR Transfer			
Adjustments to Budget Years			-6016

Change Summary Explanation: Funding - FY 2010 funds were realigned to higher priority Army requirements.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0208053A - Joint Tactical Ground System</b>			<b>PROJECT</b> <b>635</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
635 JOINT TACT GRD STATION-P3I (MIP)	23313	1951	13258	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** This program element supports development of critical improvements and insertion of technological upgrades to the Joint Tactical Ground Station (JTAGS) and the research and development of the JTAGS Pre-Planned Product Improvement (P3I). JTAGS is presently a transportable information processing system that receives and processes in-theater, direct down-linked data from Defense Support Program (DSP) satellites. JTAGS disseminates warning, alerting, and cueing information on Ballistic Missiles and other tactical events of interest throughout the theater using existing communication networks. This program is designated as a DoD Space program. JTAGS is designated as the in-theater element of the United States Strategic Command's Theater Event System. JTAGS supports all Theater Missile Defense pillars and by being located in-theater, provides the shortest sensor to shooter connectivity. The objectives of the improvements are to upgrade JTAGS to a new configuration for operation with the next generation of Space Based Infrared System (SBIRS), and to improve warning accuracy and timeliness.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Rebaseline Block 1 & Begin Block 2 P3I Follow On Integrated Product and Process Development (IPPD)	10125	1951	6724
Software, Information Assurance (IA) and Exercise Development	13088		1000
JTAGS Test and Evaluation Support	100		734
JTAGS Modernization (Block 1 and Block 2)			4800
<b>Total</b>	<b>23313</b>	<b>1951</b>	<b>13258</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
BZ8420 Joint Tactical Ground Station Mods (JTAGS)			7242		31652

Comment: JTAGS today and the P3I in the future are an integral part of the Integrated Air Missiles Defense (IAMD) architecture.

**C. Acquisition Strategy** Under this program element, critical improvements will be developed making maximum use of Non-Developmental Items(NDI)/Commercial Off-The-Shelf (COTS) components. After design and integration, the system will be subject to a thorough developmental and limited user test (LUT) to verify performance, operational effectiveness and suitability. All Block 1 activities (formerly known as Defense Support Program (DSP)-Only Multi-Mission Mobile Processor (M3P) (DM3P)) were rebaselined and resources refocused to maintain viability of JTAGS; remaining Block 1B has been fielded adding Common Data Link Interface (CDLI),the Joint Tactical Terminal (JTT) and Information Assurance (IA) upgrades. Remaining Block 1C work includes Secure Telephone Equipment (STE) integration, Multi-functional Information Distribution System (MIDS) radio integration, and Highly Elliptical Orbit (HEO) Automation Track Transfer (ATT) Integration. Additionally, in Block 1 a bridging Initial

**ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)****May 2009**

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0208053A - Joint Tactical Ground System**

PROJECT

**635**

Geosynchronous Capability (IGC) will be fielded in the FY10-11 timeframe, to include, new commercial antennas and SIPRNET capability. Block 2 upgrades will follow in the outyears to include Geosynchronous (GEO) Starer capability and removal of the five JTAGS systems from the shelters and integration into operation centers.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0208053A - Joint Tactical Ground System</b>							<b>635</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Competitive/Cost Plus Award Fee	Lockheed / Sunnyvale, CA	29191							Cont.	Cont.	Cont.
Engineering Services Software	Sole Source/Cost Plus Fixed Fee	Northrop Grumman / Azusa, CA	16844	300	2Q			1000	1-4Q		19894	
Engineering Services Hardware	Sole Source/Cost Plus Fixed Fee	Northrop Grumman / Boulder, CO	5109	12788	2-3Q			3535	1Q		24599	
Government Furnished Equipment	N/A	Multiple	1135					125	1-2Q		1260	
Subtotal:			52279	13088				4660		Cont.	Cont.	Cont.
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Integrated Product & Process Development (IPPD) Support	Sole Source/Cost Plus Fixed Fee	Multiple	20759	2525	2-3Q			1265	1-3Q	Cont.	Cont.	
Subtotal:			20759	2525				1265		Cont.	Cont.	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
White Sands Missile Range	N/A	Multiple	4272	100				734		Cont.	Cont.	Cont.
Subtotal:			4272	100				734		Cont.	Cont.	Cont.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0208053A - Joint Tactical Ground System</b>	PROJECT <b>635</b>
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Remarks: N/A-Not Applicable

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government IPPD	N/A	Multiple	25824	6027	1-4Q	1951	1-4Q	5242	1-4Q	Cont.	Cont.	Cont.
Contractor IPPD			17022	1573	1-4Q			1573	1-4Q		21741	
Subtotal:			42846	7600		1951		6815		Cont.	Cont.	Cont.

<b>Project Total Cost:</b>			<b>120156</b>	<b>23313</b>		<b>1951</b>		<b>13474</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>
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# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0208053A - Joint Tactical Ground System</b>	PROJECT <b>635</b>
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<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
P3I DEVELOPMENT	1Q - 4Q	1Q - 4Q	1Q - 4Q					
P3I BLOCK 1B UNIT FIELDING (5 UNITS)	3Q - 4Q							
P3I BLOCK 1C DEVELOPMENT	1Q - 4Q	1Q - 4Q						
P3I BLOCK 1C+ TEST		1Q - 4Q	1Q - 2Q					
P3I BLOCK 1C+ UNIT FIELDING (5 UNITS)		1Q - 4Q	1Q - 3Q					
P3I BLOCK DEVELOPMENT	1Q - 4Q	1Q - 4Q						
P3I BLOCK DEVELOPMENT TEST			1Q - 3Q					



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0208058A - Joint High Speed Vessel (JHSV)</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
JH1 JOINT HIGH SPEED VESSEL MANUFACTURING TECHNOLOGY	4973	2926	3082	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Joint High Speed Vessel (JHSV) program is a merger of the Army's Theater Support Vessel (TSV) program and the Marine Corps/Navy High Speed intra-theater surface Connector (HSC) program into a joint (multi-service) High Speed Vessel program. The JHSV program takes advantage of inherent commonality hull forms to create a more flexible asset for the Department of Defense and leverage the Navy's core competency in ship acquisition. The JHSV program will provide high speed intra-theater surface connector capability to rapidly deploy troops and equipment together and then immediately transition to execute, even in the absence of developed infrastructure, and conduct deployment and sustainment activities in support of multiple simultaneous, distributed, decentralized battles and campaigns. The primary missions include: support to Theater Security Cooperation Program (TSCP) and Global War on Terrorism (GWOT), littoral maneuver, and seabasing support. Department of Army (DA) and Department of Navy (DoN) will maintain separate and distinct funding streams to support this joint program. DA will resource to the critical Army requirement set validated for the joint Initial Capabilities Document (ICD) for High Speed Intra-theater Surface Connector (HSC) and the Capability Development Document (CDD) for JHSV. DA and DoN will focus on the development of common capabilities, each Department will source their unique developmental costs for unique service capabilities that cannot be incorporated into a combined solution set. FY10/11 funding will procure for the Army Integrated Logistics Support (ILS)/Integrated Electronic Technical Manuals.(IETMs).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0208058A - Joint High Speed Vessel (JHSV)</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	5116	2936	3133
Current BES/President's Budget (FY 2010)	4973	2926	3082
Total Adjustments	-143	-10	-51
Congressional Program Reductions		-10	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-143		
Adjustments to Budget Years			-51

Funding in FY10 realigned to support Army higher priority requirements.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0208058A - Joint High Speed Vessel (JHSV)</b>			<b>PROJECT</b> <b>JH1</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
JH1 JOINT HIGH SPEED VESSEL MANUFACTURING TECHNOLOGY	4973	2926	3082	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** The Joint High Speed Vessel (JHSV) program is a merger of the Army's Theater Support Vessel (TSV) program and the Marine Corps/Navy High Speed intra-theater surface Connector (HSC) program into a joint (multi-service) High Speed Vessel program. The JHSV program takes advantage of inherent commonality hull forms to create a more flexible asset for the Department of Defense and leverage the Navy's core competency in ship acquisition. The JHSV program will provide high speed intra-theater surface connector capability to rapidly deploy troops and equipment together and then immediately transition to execute, even in the absence of developed infrastructure, and conduct deployment and sustainment activities in support of multiple simultaneous, distributed, decentralized battles and campaigns. The primary missions include: support to Theater Security Cooperation Program (TSCP) and Overseas Contingency Operations (OCO), littoral maneuver, and seabasing support. Department of Army (DA) and Department of Navy (DoN) will maintain separate and distinct funding streams to support this joint program. DA will resource to the critical Army requirement set validated for the joint Initial Capabilities Document (ICD) for High Speed Intra-theater Surface Connector (HSC) and the Capability Development Document (CDD) for JHSV. DA and DoN will focus on the development of common capabilities, each Department will source their unique developmental costs for unique service capabilities that cannot be incorporated into a combined solution set. FY10/11 funding will procure for the Army Integrated Logistics Support (ILS)/Integrated Electronic Technical Manuals (IETMs).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08-FY10: Provide Program Management Support.	1000	1040	1000
FY08-FY10: Provides Acquisition/Documentation Development.	1700	500	82
FY08-FY09: Continues Technical/Design Development	2273	1304	
FY10: Integrated Logistics Support (ILS)/Integrated Electronic Technical Manuals (IETMs)			2000
Small Business Innovative Research/Small Business Technology Transfer Programs		82	
<b>Total</b>	<b>4973</b>	<b>2926</b>	<b>3082</b>

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA 3, M11203, Joint High Speed Vessel (JHSV),	208581	168348	183666	Continuing	Continuing

Comment:

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0208058A - Joint High Speed Vessel (JHSV)**

PROJECT

**JH1**

**C. Acquisition Strategy** The JHSV program will combine the two separate programs (Theater Support Vessel (TSV) - Army and High Speed Connector (HSC) - Navy) and take advantage of inherent commonality of hull forms to create a more flexible asset for the Department of Defense. Based on the efforts accomplished and data collected to date by the two services, it appears that a hardware solution will incorporate the evolutionary development of commercial based high speed vessel technology employing integrated military unique capabilities/adaptations. The JHSV would be acquired competitively and production would be based in the United States. The Joint High Speed Vessel (JHSV) program's updated Acquisition Strategy is currently under development. The JHSV program Milestone A Defense Acquisition Board (DAB) was in April 2006. Milestone B is planned for November 2008.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0208058A - Joint High Speed Vessel (JHSV)							JH1		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Acquisition/Documentation Development	MIPR	PEO Ships Washington Navy Yard, DC	6497	1700	1-2Q	500	1-2Q	82	1-2Q		8779	
Technical/Design Development	MIPR	PEO Ships Washington Navy Yard, DC	16389	2273	1-2Q	1386	1-2Q				20048	
Subtotal:			22886	3973		1886		82			28827	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Integrated Logistics Support (ILS)/Integrated Electronic Technical Manuals (IETMs)								2000	1-2Q		4000	
Subtotal:								2000			4000	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	PWD	PM Force Projection, TACOM, Warren, MI	3118	1000	1-2Q	958	1-2Q	1000			6076	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY				PE NUMBER AND TITLE						PROJECT		
<b>7 - Operational system development</b>				<b>0208058A - Joint High Speed Vessel (JHSV)</b>						<b>JH1</b>		
SBIR/STTR						82	3Q				82	
Subtotal:				3118	1000			1040		1000		6158

<b>Project Total Cost:</b>				<b>26004</b>	<b>4973</b>			<b>2926</b>		<b>3082</b>		<b>38985</b>
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# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0208058A - Joint High Speed Vessel (JHSV)**

PROJECT  
**JH1**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Acquisition Milestones				▲ 1																												
Source Selection	■																															
(2) Award Lead Vessel				▲ 2																												

**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0208058A - Joint High Speed Vessel (JHSV)</b>					PROJECT <b>JH1</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
Acquisition Milestones								
Acquisition Milestones	4Q							
Source Selection	4Q							
Award Lead Vessel	4Q							



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0303140A - Information Systems Security Program</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	52045	43053	76575	Continuing	Continuing
491 INFORMATION ASSURANCE DEVELOPMENT	16807	13295	15204	Continuing	Continuing
501 ARMY KEY MGT SYSTEM	933	1023	1884		3840
50B BIOMETRICS	34305	28735	49567	Continuing	Continuing
5PM DoD Biometrics Program Management			9920		9920

**A. Mission Description and Budget Item Justification:** The Communications Security Equipment Program develops Information Systems Security (ISS) equipment and techniques required to combat threat Signal Intelligence capabilities and to insure the integrity of data networks. The Army's Research Development Test and Evaluation (RDTE) ISS program objective is to implement National Security Agency (NSA) developed security technology in Army information systems. Communications Security Equipment (COMSEC) technology ensures total signal and data security for all Army information systems to include any operational enhancement and specialized Army configurations. The Army Key Management System (AKMS) automates key generation and distribution while supporting joint interoperability. It provides communications and network planning with key management. AKMS is a part of the management/support infrastructure for the Warfighter Information Network - Tactical (WIN-T) program. Additional modifications to the AKMS baseline are required to support the emerging WIN-T architecture. System security engineering, integration of available Information Security (INFOSEC) products, development, and testing are provided to ensure that Command, Control, Communications and Computer Intelligence (C4I) systems are protected against malicious or accidental attacks. Several joint service/NSA working groups exist in the area of key management in order to avoid duplication and assure interoperability between all systems, including the establishment of standards and testing. The Defense Information Systems Agency (DISA) Multi-Level Security (MLS) working group coordinates all the different ongoing technology efforts. This program will also develop, integrate, and demonstrate Command and Control (C2) Protect Common Tools into C4I systems that manage, protect, detect and react to C2 system vulnerabilities, threats, reconfigurations, and reconstitutions. Modeling, simulation, and risk management tools will be used to develop C2 Protect capabilities, enabling the warfighter to distribute complete and unaltered information and maintain a dynamic, continuous synchronous operational force.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0303140A - Information Systems Security Program</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	31403	38090	39974
Current BES/President's Budget (FY 2010)	52045	43053	76575
Total Adjustments	20642	4963	36601
Congressional Program Reductions		-136	
Congressional Rescissions			
Congressional Increases	21465	5099	2220
Reprogrammings			
SBIR/STTR Transfer	-823		
Adjustments to Budget Years			34381

Change Summary Explanation: Funding - FY 08: Supplemental appropriated to support GWOT related Biometrics. FY 09 Congressional increase includes the anticipated Overseas Contingency Operations increase of \$1.9 million in support of Biometrics development. FY 10 increase to support Biometrics development and anticipated Overseas Contingency Operations increase of \$2.2 million in support of Biometrics development..

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303140A - Information Systems Security Program</b>			<b>PROJECT</b> <b>491</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
491 INFORMATION ASSURANCE DEVELOPMENT	16807	13295	15204	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This project implements National Security Agency (NSA) developed security technologies in Army information systems. Project objectives are to provide systems security mechanisms through encryption, trusted software or standard operating procedures, and to integrate these mechanisms into specified systems, securing operations in as transparent a manner as possible. This entails architecture studies, modeling, system integration and testing, installation kits, and certification and accreditation of Automation Information Systems. Project will also assess, develop, integrate and demonstrate information assurance (IA) common tools (hardware and software) providing protection for fixed infrastructure post, camp and station networks as well as efforts on tactical networks. The cited work is consistent with Strategic Planning Guidance, and the Army Modernization Plan.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
This one year congressional add, develops technologies and techniques to secure the Army's digital networks against hostile Intelligent services		1550	
Crypto Mod and Key Management Program. In FY08: Supported development of net centric technologies for the Tactical Network, Modularity and the Comprehensive National Cybersecurity Initiative (CNCI). Implemented Inline Network Encryptor (INE), Link Encryption Family (LEF) and secure Communications Interoperability Protocol (SCIP) Replacement and Modernization Plans. Planned Army Secure Wireless Local Area Network (LAN) Strategy using SecNet54 and other products for Div and below. Developed Cryptographic Modernization Plan for JNN Lot 1 through 9 of KG175D and KIV7M. Evaluated Secure Mobile Environment/Personal Electronic Device (SME/PED) including voice and data capability and email migration. Participated in SME/PED Pilot Tests with NSA and the Defense Information Systems Agency (DISA). In FY09: Continue to field Crypto Mod (CM) compliant devices, including KG250A/M/T, KG255, KIV7M, KIV19M, SECNET 54, KG240A, KG245A/X, KG175D and KG75A. Software upgrades for existing devices including STE, OMNI, SECTERA Wireline Adaptor, SECNET 54, KSV-21, KG175D, KIV7M, KIVI19M, KOV26, VIPER and SME/PED. Initiate enterprise deployment of SME/PED device below GO/SES level and tactical deployment of device at DIV/BDE and below level. Test and evaluate Army secure network devices to HAIPIS 3.X and IPV6. In FY10: Will field CM compliant 10 G and Sonet devices, including KG245X, KG75A, and KG340.	9912	6833	9255
Tactical C2 Protect Tools/Tactical PKI. In FY08: Developed/validated/enhanced IA tools for the tactical Warfighter. Evaluated, performed vulnerability assessments/performance testing and source code analysis on tools for fielding. Evaluated both COTS/GOTS IA tools for deployment for use in support of Army priorities, modularity and the CNCI. Validated TPKI solution for Future Force use as well as Current Systems planned to interface with Future Force systems. In FY09: Develop/validate/enhance IA tools for the tactical Warfighter, including network access control (i.e. Firewalls). Perform vulnerability assessments/performance testing on tactical tools to be fielded in the near term as well as current legacy tools to ensure their effectiveness against current threats. COTS IA tools planned for deployment will be evaluated for use to support the CNCI. Modify/enhance FCS Tactical PKI spinout 1 baseline and validate/test final software/hardware for fielding in FY10. In FY10: Will develop/validate/enhance IA tools for the tactical Warfighter in areas	6895	4595	5949

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303140A - Information Systems Security Program</b>	<b>PROJECT</b> <b>491</b>
including intrusion detection and intrusion prevention systems. Will perform vulnerability assessments/performance testing and selected source code assessments on tools that are on the Army Information Assurance Approved Product List, to evaluate the tools' effectiveness against current/emerging threats. Both COTS and GOTS IA tools for deployment will be evaluated for use to support the CNCI. Will develop Tactical PKI policy and CONOPS.		
Small Business Innovative Research/Small Business Technology Transfer Program		317
<b>Total</b>	16807	13295

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA TA0600	47400	47444		Continuing	-23173

Comment:

**C. Acquisition Strategy** The objective of this project is to develop, integrate and validate hardware and software solutions that will secure current and objective architecture and electronic business/commerce transactions. Project focuses on completing development and evaluation of Battle Command and control IA Common tools and the procurement and institutionalization of information assurance related hardware and software, as well as techniques and procedures. The objective of the DOD CRYPTO Modernization Program is to provide adaptive, flexible, and programmable cryptographic systems using best practices, lessons learned and programmatic management to meet the challenge of modernizing the Army's aging cryptographic systems.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0303140A - Information Systems Security Program							491		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
System Engineering	Various	CECOM, RDEC	44072	11900	1Q	5735	1Q	8331	1Q	Cont.	Cont.	Cont.
Hardware/Software Engineering	Various	CECOM, RDEC	5224								5224	
C2 Protect Common Tools	Subcontracts reflected in d. through k. below	Subcontracts reflected in d. through k. below	9899							Cont.	Cont.	Cont.
Engineering Support	Various	CECOM, RDEC	7847	120	4Q						7967	
Engineering Support	T&M	Lockheed Martin/SRI Int., Eatontown, NJ	2047							Cont.	1918	Cont.
Information Assurance System Engineering Support	C-Reimburs	MITRE, McLean, VA	2013	465	1Q	400	1Q	400	1Q		3628	
Malicious Mobile Code Analysis	T&M	ILEX Tinton Falls, NJ	577								577	
Information Assurance System Engineering Support	T&M	DSCI Consulting	3587							Cont.	3587	Cont.
Engineering Support	T&M	VIATECH		1722	1Q	2104	1Q	2423	1Q	Cont.	Cont.	Cont.
Tactical Intrusion Detection System	T&M	MIT, Cambridge, MA	135								135	
Model & Simulation for Information Assurance Trainer	T&M	Atlantic Consulting Services, GA	1020								1020	
DHIAP	Various	CIO/G6 BMO	12027								12027	
DoD Biometrics Program	Various	CIO/G6 BMO	18280								18280	
Crypto Mod	Various	CECOM, RDEC	424								274	Cont.
Engineering Support	T&M	CACI		600	1Q			550	1Q		1450	
Engineering Support	T&M	Booze Allen, Eatontown, NJ	1093	500	2Q						1593	Cont.
Engineering Support	T&M	CSC, Virginia	2844	1500	1Q	3500	2Q	3500	1Q	Cont.	Cont.	Cont.
Engineering Support	T&M	VIATECH				1556	2Q				1556	
Subtotal:			111089	16807		13295		15204		Cont.	Cont.	Cont.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303140A - Information Systems Security Program</b>	<b>PROJECT</b> <b>491</b>
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II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												

Remarks: Not Applicable

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												

Remarks: Not Applicable

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												

Remarks: Not Applicable

<b>Project Total Cost:</b>	<b>111089</b>	<b>16807</b>		<b>13295</b>		<b>15204</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>
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# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0303140A - Information Systems Security Program</b>			<b>PROJECT</b> <b>501</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
501 ARMY KEY MGT SYSTEM	933	1023	1884		3840

**A. Mission Description and Budget Item Justification:** FY2010 CORE:

Provides Commander with an automated capability to plan, engineer, distribute, and manage all systems that employ Electronic Key, Electronic Protection (EP), and Signal Operating Instructions (SOI).

- Army Key Management System (AKMS) AKMS consists of two Workstations, one hosting Local COMSEC Management Software (LCMS) for COMSEC Management, one hosting Automated Communication Engineering System (ACES) for Cryptonet Planning and the Simple Key Loader (SKL).
- LCMS is the Communications Security (COMSEC) accounting and generation software that provides Information Systems with Cryptographic Key capability.
- ACES provides Information Systems with Cryptonet Planning & SOI/EP Fill for Combat Net and supports Coalition Joint Spectrum Management Planning Tool (CJSMPT).
- SKLs move the ACES/LCMS data to End Crypto Units (ECUs).
- CJSMPT software enables more efficient and accurate management of critical spectrum resources supporting de-confliction of Incendiary Explosive Device (IED) Jammers and Blue Force comms.

**Accomplishments/Planned Program:**

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY2010 CORE:Continue enhancements and support of next set of software tools for the AKMS workstation to support Army modularity requirements.	586	617	1290
FY2010 CORE:Engineering Support	297	328	444
FY2010 CORE:Test and Evaluation	50	50	150
Small Business Innovative Research/Small Business Technology Transfer Programs		28	
<b>Total</b>	<b>933</b>	<b>1023</b>	<b>1884</b>

**B. Other Program Funding Summary**

	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
BA1201 TSEC - AKMS	27605	34811	29525	Continuing	Continuing

Comment:

**C. Acquisition Strategy** AKMS Milestone III was conducted/approved in FY99. LCMS completed fielding of software v5.0.3 in FY09 to all COMSEC custodians to provide Encrypted Key capability. LCMS hardware refresh will begin 4QFY09. The AKMS acquisition strategy to procure Simple Key Loaders was updated in an Acquisition Decision

**ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)****May 2009**

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303140A - Information Systems Security Program**

PROJECT

**501**

Memorandum (ADM) approved by the PEO C3T Milestone Decision Authority (MDA) 3QFY02. SKL Fielding began 3QFY05 and continue. SKL software v5.0 was released 4QFY08. SAIC began efforts in 1QFY09 to upgrade SKL software and v6.0 will be released 1QFY10 to provide interoperability with emerging systems (all services). ACES software v1.9 development was completed and released 1QFY09. ACES software v2.0 development began in FY09 and will be released in early FY10. ACES hardware refresh will occur FY10. CJSMPPT software v2.0 was completed 1QFY09, the Approval to Operate (ATO) was received 1QFY09, and a Joint Military Utility Assessment (JMUA) was successfully conducted 2QFY09. FY 09-10 will continue enhancement and support of next generation of AKMS software tools to meet emerging Army systems' requirements.



# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303140A - Information Systems Security Program</b>							<b>501</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
FY2010 CORE:ACES Software enhancements & support	C/T&M	SYPRIS, Tampa, FL	22543	320	1-2Q	385	1-2Q	650	1-2Q	Cont.	Cont.	
Software development/Upgrade	C/T&M	ISS, Tinton Falls, NJ	5679								5679	
Electronic Key Management Sys (EKMS)	MIPR	Navy, Washington	3900								3900	
FY2010 CORE:Software Support	CPFF	SAIC, San Diego, CA	958	238	1-2Q	253	1-2Q	640	1-2Q	Cont.	Cont.	
Subtotal:			33080	558		638		1290		Cont.	Cont.	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
FY2010 Core: Testing	MIPR	SPAWAR, San Diego, CA	300	50	2Q	50	2Q	150	2-3Q	Cont.	Cont.	
Subtotal:			300	50		50		150		Cont.	Cont.	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering	C/T&M	TELOS System	154								154	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0303140A - Information Systems Security Program</b>								<b>501</b>	
		Integration, Ashburn, VA										
FY2010 Core: Government Engineering	MIPR	CECOM, Fort Monmouth, NJ	2349	325	2-3Q	335	2-3Q	444	2-3Q	Cont.	Cont.	
Subtotal:			2503	325		335		444		Cont.	Cont.	
<b>Project Total Cost:</b>			<b>35883</b>	<b>933</b>		<b>1023</b>		<b>1884</b>		<b>Cont.</b>	<b>Cont.</b>	



# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0303140A - Information Systems Security Program</b>						<b>501</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
LOCAL COMSEC MANAGEMENT SOFTWARE (LCMS) - S/W Release 5.0.3/5.1 (FY2010 CORE)	1Q - 4Q	1Q - 4Q	1Q - 3Q						
LCMS Hardware Refresh (FY2010 CORE)		4Q	1Q - 2Q						
AUTOMATED COMMUNICATION ENGINEERING SYSTEM (ACES) S/W v1.9	1Q - 4Q	1Q							
ACES S/W v2.0 (FY2010 CORE)		1Q - 4Q	1Q						
ACES Block III/Future Upgrades (FY2010 CORE)			1Q - 4Q						
ACES Hardware Refresh (FY2010 CORE)			3Q - 4Q						
ACES PDSS/PPSS Software Support				1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
SIMPLE KEY LOADER (SKL) (Tier 3) Hardware Production/Fielding (FY2010 CORE)	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
SKL S/W v5.0	1Q - 4Q								
SKL S/W v6.0 (FY2010 CORE)		1Q - 4Q	1Q						
Future SKL Block Upgrades (FY2010 CORE)			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
COALITION JOINT SPECTRUM MANAGEMENT PLANNING TOOL (CJSMPT)	1Q - 2Q								
	2Q - 4Q	1Q - 4Q							
CJSMPT Deployment/Training/Fielding (FY2010 CORE)			1Q - 4Q						
CJSMPT Transition to DISA (FY2010 CORE)			4Q						

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303140A - Information Systems Security Program</b>			<b>PROJECT</b> <b>50B</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
50B BIOMETRICS	34305	28735	49567	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Secretary of the Army (SA) is the Executive Agent (EA) and the Director, Biometrics Task Force (BTF) is the Executive Manager (EM) for DoD Biometrics. The BTF will (1) synchronize and integrate existing and new technologies throughout DoD; (2) provide identity dominance, protection and management through integrated joint biometric programs; and, (3) establish and maintain an authoritative biometric data source in order to provide timely, accurate and comprehensive identity superiority to the Warfighter. The BTF provides conformance testing, supports test and evaluation (T&E) of commercial Off-the-Shelf (COTS) biometrics, supports the development standards and performance measures, provides biometric repository support as required; and, provides technical implementation and integration to DoD Biometrics. The BTF sustains the next generation enterprise development to support all DoD Services for continuous improvement in technologies that support the Warfighter's ability to exercise identity dominance over non-traditional enemies.

This Project (50B) was previously under PE 0303140A, Project 491. Beginning with FY10, PM Biometrics funding is reported under Project 5PM.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Base. FY2008 accomplished the execution of Multi-National Coalition-Iraq (NMC-I) tactical matching project that confirmed and quantified the technical ability of the current Biometric Automated Toolset (BAT)/Hand-held Interagency Identity Detection Equipment (HIIDE) system to match covert images. Initiated development of the Identification-based Decision Processes to Ensure Confident Transaction (IDProTECT) or the friendly forces biometric repository. Completed testing of 32 biometric products for functionality and standards conformance to facilitate interoperability for shared data across DoD. This effort had a profound effect on industry with regard to the development of biometric capabilities that better suit the needs of DoD and created better relations between key members of DoD and Other Government Agencies (OGA). Increased DoD's capability to store, match and share biometric data by accessing the 3 million plus records and coordinate with the Test Resource Management Center for Development Test (DT)/Operational Test (OT) biometrics test bed. FY2009/2010 efforts will continue to support biometric capabilities that include new/emerging technologies and modalities to support the Warfighter and Interagency operations. Provides for development of new matching algorithms, software enhancements, equipment design, data storage technology, matching capabilities, and exploitation.	12834	26835	47347
Overseas Contingency Operation (OCO). FY2008 and FY2009: (PM Biometrics Project 5PM) Development of Next Generation Automated Biometric Identification System (NG ABIS) to provide continuity of operations and begin development of Blue Force/Identification-based Decision Process To Enable Confident Transactions (IDProTECT) system. FY2010 (BTF): Funding continues to support IDProTECT development to ensure identity protection of US persons and to enhance anti-terrorism/force protection posture by positively identifying individuals requiring access to DoD facilities, systems, or services. Funding also will be used to conduct an Analysis of Alternatives for the Biometrics Enterprise System. Biometrics Interagency Interoperability (BII) supports implementation of Homeland Security Presidential Directive 24 (HSPD-24). BII also provides mutual compatible methods and procedures across DoD in the collection, storage, use, analysis, and sharing of biometric and associated biographic and contextual information of individuals in a lawful and appropriate manner while respecting their information privacy and other legal rights under United States law.	21471	1900	2220

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303140A - Information Systems Security Program</b>	<b>PROJECT</b> <b>50B</b>
Total	34305	28735      49567

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
TA0600 - Information Systems Security Program	2878	5354		Continuing	Continuing
432144 - Operations and Maintenance Army	10664	12770	13461	Continuing	Continuing
135197 - Operations and Maintenance Army	234044	213900	148318		596262

Comment:

**C. Acquisition Strategy** The objective of this project is to develop biometric systems that interoperate to provide and/or verify the identities of persons of interest; a major component of this is the next generation DoD Automated Biometrics Identification System (ABIS) that will be managed at the enterprise level. ABIS currently provides a biometric matching capability that can identify national security threats in support of the Global War on Terrorism for a variety of functions. Primary focus for FY06 was to establish the biometrics program of record and develop a framework for leveraging technologies and processes to facilitate better sharing of biometric data on persons of interest collected and forwarded to other DoD agencies and to develop a biometric implementation strategy for Homeland Security Presidential Directive (HSPD)-12. The program will also continue to support the testing and evaluation of products and other analysis and evaluation of applicable technologies, as well as finalize and synthesize an interoperable biometric enterprise approach. FY09 and beyond will continue to support technology insertion, prototype test and evaluation activities, integration of biometric devices and systems used for biometric data collection and processing, physical access, logical access, identity proofing, intelligence exploitation, and law enforcement.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0303140A - Information Systems Security Program							50B		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Enterprise Development	Various	Various	72045	34305	1-4Q	28735	1-2Q	49567	1-2Q	Cont.	Cont.	Cont.
Subtotal:			72045	34305		28735		49567		Cont.	Cont.	Cont.

Remarks: Milestone B Activities scheduled for 4Q FY10  
EMD efforts scheduled to begin following MS B decision

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
N/A												
Subtotal:												

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
N/A												
Subtotal:												

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
N/A												
Subtotal:												

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303140A - Information Systems Security Program**

PROJECT

**50B**

**Project Total Cost:**

**72045**

**34305**

**28735**

**49567**

**Cont.**

**Cont.**

**Cont.**





# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0303140A - Information Systems Security Program**

PROJECT  
**50B**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	 																															

**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>			PE NUMBER AND TITLE <b>0303140A - Information Systems Security Program</b>				PROJECT <b>50B</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
	4Q							
		1Q - 4Q	1Q - 4Q					

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# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0303141A - Global Combat Support System</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	125480	104588	144733	Continuing	Continuing
083 GLOBAL COMBAT SUPPORT SYS - ARMY (GCSS-ARMY)	84182	62331	116734	Continuing	Continuing
08A PRODUCT LIFECYCLE MANAGEMENT PLUS (PLM+)	41298	42257	27999	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Global Combat Support System-Army (GCSS-Army) has two components: a functional component titled GCSS-Army (Field/Tactical) (F/T) and a technology enabler component titled Product Lifecycle Management Plus (PLM+). GCSS-Army (F/T) coupled with GCSS-Army (PLM+) are information and communications technology investments that will provide key enabling support to the transformation of the Army into a network-centric, knowledge-based future force. The GCSS-Army approved Joint Capability Description Document (CDD) requires an enterprise approach to replace current logistics and maintenance Standard Army Management Information Systems (STAMIS). GCSS-Army (F/T) will provide the Army's Combat Support/Combat Service Support (CS/CSS) warfighter with a seamless flow of timely, accurate, accessible and secure information management that gives combat forces a decisive edge. PLM+ will provide interfaces to external systems and limited Master Data Management. GCSS-Army will implement best business practices to streamline supply, accountability, maintenance, distribution, and reporting procedures in support of the future force transition path of the Army Campaign Plan.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0303141A - Global Combat Support System</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	94089	104934	79356
Current BES/President's Budget (FY 2010)	125480	104588	144733
Total Adjustments	31391	-346	65377
Congressional program reductions		-346	
Congressional rescissions			
Congressional increases			
Reprogrammings	33878		
SBIR/STTR Transfer	-2487		
Adjustments to Budget Years			65377

Change Summary Explanation: Funding - FY 08: Funds reprogrammed to support Global Combat Support. FY 10: Funding increased to support federated approach which requires additional RDTE in accordance with an OSD Cost Analysis Improvement Group's (CAIG) independent cost estimate (ICE).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0303141A - Global Combat Support System</b>			<b>PROJECT</b> <b>083</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
083 GLOBAL COMBAT SUPPORT SYS - ARMY (GCSS-ARMY)	84182	62331	116734	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** Global Combat Support System-Army will provide the Army's CS/CSS warfighter with a seamless flow of timely, accurate, accessible, actionable, and secure information not readily available today that gives combat forces a decisive edge. GCSS-Army will modernize automated logistics by implementing best business practices to streamline supply operations, maintenance operations, property accountability, and logistics management and integration procedures in support of the Future Force transition path of the Army Campaign Plan. This effort will implement a comprehensive logistics automation solution for the field (deployable) Army and provide the Commander on the battlefield with an integrated, interoperable view of the battle-space in time to support decisions that will affect the outcome of combat operations, combat power, and planning for future operations. This solution implements Commercial-Off-The-Shelf (COTS) Enterprise Resource Planning (ERP) products from SAP AG. This will also allow the Army to retire multiple custom designed standalone business software baselines optimized to existing Army business processes and replace them with a single integrated business software baseline that has been optimized to industry defined best business practices. GCSS-Army is a key component of the Federated ERP Integration solution that will optimize logistics and tactical finance domain business processes into a single federated approach. It will eliminate the need for extensive maintenance and modification of aging, diverse software systems resulting in improved and efficient change control and configuration management through implementation of an enterprise system.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
PM Operations	8358	5550	8914
GCSS-Army ERP	75824	55171	107820
Small Business Innovative Research/Small Business Technology Transfer Programs		1610	
Total	84182	62331	116734

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA SSN: W00800, STACOMP	10069	19366	9110	Continuing	Continuing
OMA APE: 432612	2044	12463	34781	Continuing	Continuing

Comment:

**C. Acquisition Strategy** GCSS-Army has an evolutionary acquisition strategy as defined in DoD Directive 5000.01 and DoD Instruction 5000.02 and will define, develop and

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303141A - Global Combat Support System**

PROJECT

**083**

produce/deploy an initial, militarily useful (and supportable) operational capability based upon proven technology, time-phased requirements, projected threat assessments, and demonstrated manufacturing capabilities in as short a time as possible. The system will be developed in multiple increments as functional capabilities are defined and as integration and synchronization opportunities with related systems present opportunities for subsequent increments. Increment I will be a viable stand alone capability that will not require subsequent increments to be operational.

GCSS-Army Increment I will consist of three releases. Release 1.0 is an initial prototype of retail supply capability that has been deployed to the 11th Armored Cavalry Regiment at the National Training Center as part of an operational assessment and continuous evaluation. Release 1.1 will add the capabilities of Unit Level Supply, Maintenance, Property Book, and Finance (support to tactical supply and maintenance). Release 1.2 will add Ammunition (Class V management), Environmental Health and Safety and Finance Functionality (e.g., Cost Management)).

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0303141A - Global Combat Support System							083		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Enterprise Resource Planning (ERP) Implementation	C/FP	Northrop Grumman, Midlothian, VA	217656	3500	1-4Q						221156	Cont.
Enterprise Resource Planning (ERP) Implementation	C+/FF	Northrop Grumman, Midlothian, VA		73497	1-4Q	52084	1-4Q	105420	1-4Q	Cont.	Cont.	
Tactical Combat Developer	MIPR	CASCOM, Ft Lee, VA	11495	1409	1-4Q	1225	1-4Q	1225	1-4Q	Cont.	Cont.	Cont.
Subtotal:			229151	78406		53309		106645		Cont.	Cont.	Cont.
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PM Support	C/FP	MPRI-L3, Colonial Heights, VA	22160	1685	1-4Q	2006	1-4Q	2086	1-4Q	Cont.	Cont.	Cont.
Engineering and Security	MIPR	ISEC, Ft Huachuca, AZ	16582	1142	1-4Q	1200	1-4Q	1300	1-4Q	Cont.	Cont.	Cont.
Technical Services	C/FP	Log Mgt Institute, McLean, VA	14836	544	1-4Q	1664	1-4Q	1730	1-4Q	Cont.	Cont.	Cont.
Subtotal:			53578	3371		4870		5116		Cont.	Cont.	Cont.
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Army Evaluation Center	MIPR	Alexandria, VA	2557	281	1-4Q	609	1-4Q	1175	1-4Q	Cont.	Cont.	Cont.
Subtotal:			2557	281		609		1175		Cont.	Cont.	Cont.
IV. Management Services	Contract	Performing Activity &	Total	FY 2008	FY 2008	FY 2009	FY 2009	FY 2010	FY 2010	Cost To	Total	Target

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303141A - Global Combat Support System</b>							<b>083</b>		
	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
PMO Operations	NA	NA	33885	2124	1-4Q	3543	1-4Q	3798	1-4Q	Cont.	Cont.	Cont.
Subtotal:			33885	2124		3543		3798		Cont.	Cont.	Cont.
<b>Project Total Cost:</b>			<b>319171</b>	<b>84182</b>		<b>62331</b>		<b>116734</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>



# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0303141A - Global Combat Support System**

PROJECT  
**083**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Seg 2 Contract Award	▲ <sub>0</sub>																															
Increment 1 - Acquisition Review		▲ <sub>0</sub>																														
Increment 1/Segment 1 Operational Assessment	█																															
(1) Increment 1 - Milestone B			▲ <sub>1</sub>																													
Increment 1/Release 1.1 DTOE											█																					
Independent Govt Test and Release 1.1 OA/CE												█																				
(2) Increment 1 - Milestone C															▲ <sub>2</sub>																	
Increment 1 - IOT&E																█																
Increment 1 - Full Fielding																	█															
Increment 1 - Initial Operational Capability (IOC)																				▲ <sub>2</sub>												

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0303141A - Global Combat Support System</b>						<b>083</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Seg 2 Contract Award	1Q								
Increment 1 - Acquisition Review	2Q								
Increment 1/Segment 1 Operational Assessment	1Q - 4Q	1Q - 4Q	1Q - 3Q						
Increment 1 - Milestone B	4Q								
Increment 1/Release 1.1 DTOE			3Q - 4Q						
Independent Govt Test and Release 1.1 OA/CE			4Q	1Q					
Increment 1 - Milestone C				2Q					
Increment 1 - IOT&E				4Q					
Increment 1 - Full Fielding					2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Increment 1 - Initial Operational Capability (IOC)					2Q				

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0303141A - Global Combat Support System</b>			<b>PROJECT</b> <b>08A</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
08A PRODUCT LIFECYCLE MANAGEMENT PLUS (PLM+)	41298	42257	27999	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** Army Enterprise Systems Integration Program (AESIP, formerly Product Life-Cycle Management Plus (PLM+)) mission is to integrate Army business processes by providing a single source for enterprise hub services, centralized master data management, and business intelligence and analytics. AESIP will support the Army's federated approach and enable the integration of end-to-end logistical and financial processes. The Army has successfully addressed concerns about the lack of integration of ERPs by leveraging AESIP core capabilities and expanding those benefits across the Army enterprise. AESIP will be an Army specific commercial off-the-shelf (COTS) web portal implementation via the NetWeaver Platform from developer Systems Applications and Products (SAP) AG to support Army process scenarios and requirements that will provide core competencies:

- Enterprise Service Bus (Hub Services) - For a Service oriented, Single Point of Entry to connect, mediate, and control the exchange of data
- Business Intelligence/Business Warehouse - Aggregates data from ERP and non-ERP systems to provide flexible Enterprise level reporting
- Enterprise Master Data - For a single source of authoritative data and improved workflow and business processes

Hence the AESIP solution establishes a framework for a fully integrated ERP that will ultimately provide Commanders Total Visibility from Factory to Foxhole thereby ensuring delivery of the right equipment to the right unit at the right time, while reducing backlogs of material on the battlefield.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Product Development	36895	33574	22482
Test and Evaluation	550	583	618
PM Operations	3853	6917	4899
Small Business Innovative Research/Small Business Technology Transfer Programs		1183	
<b>Total</b>	<b>41298</b>	<b>42257</b>	<b>27999</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA SSN: W11001, PLM+	2193		11090	Continuing	Continuing
OMA APE: 423612	1000	1585	17379	Continuing	Continuing

Comment:

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303141A - Global Combat Support System**

PROJECT

**08A**

**C. Acquisition Strategy** GCSS-Army has an evolutionary acquisition strategy as defined in DoD Directive 5000.1 and DoD Instruction 5000.2, and will define, develop and produce/deploy an initial, militarily useful (and supportable) operational capability based upon proven technology, time-phased requirements, projected threat assessments, and demonstrated manufacturing capabilities in as short a time as possible. The system will be developed in multiple increments as functional capabilities are defined and as integration and synchronization opportunities with related systems present opportunities for subsequent increments. Increment I will be a viable stand alone capability that will not require subsequent increments to be operational.

GCSS-Army Increment I will consist of three releases. Release 1.0 will consist of an Operational Assessment and Continuing Evaluation of retail supply capability at the National Training Center. Release 1.1 consists of Unit Level Supply, Maintenance (Aviation and Ground) Property Book, Finance (support to tactical supply and maintenance). Release 1.2 consists of Ammunition (Class V management), Environmental Health and Safety and Finance Functionality e.g, Cost Management.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0303141A - Global Combat Support System							08A		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Enterprise Resource Planning (ERP) Implementation	T&M	Computer Sciences Corporation, Falls Church VA	29326	25624	1-4Q	18669				Cont.	Cont.	Cont.
Enterprise Resource Planning (ERP) Implementation	T&M	TBD		11271		16088		22482		Cont.	Cont.	Cont.
Subtotal:			29326	36895		34757		22482		Cont.	Cont.	Cont.
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PM Support	C/FP	Titan Corp, Colonial Heights, VA	1821	974	1-4Q	2830	1-4Q	1552		Cont.	Cont.	Cont.
PM Support	T&M	LMI/ILLUMINA, Tysons Corner, VA		1647		2546	1-4Q	1729		Cont.	Cont.	Cont.
Subtotal:			1821	2621		5376		3281		Cont.	Cont.	Cont.
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	N/A	ATEC, JITC, CTSF & ISEC		550		583		618		Cont.	Cont.	Cont.
Subtotal:				550		583		618		Cont.	Cont.	Cont.
IV. Management Services	Contract	Performing Activity &	Total	FY 2008	FY 2008	FY 2009	FY 2009	FY 2010	FY 2010	Cost To	Total	Target

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303141A - Global Combat Support System</b>							<b>08A</b>		
	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
PMO Operations	NA	NA	2045	1232	1-4Q	1541	1-4Q	1618		Cont.	Cont.	Cont.
Subtotal:			2045	1232		1541		1618		Cont.	Cont.	Cont.
<b>Project Total Cost:</b>			<b>33192</b>	<b>41298</b>		<b>42257</b>		<b>27999</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
7 - Operational system development

PE NUMBER AND TITLE  
0303141A - Global Combat Support System

PROJECT  
08A

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) Increment 1 - Acquisition Review	▲ 1																															
Increment 1 Segment 1 Operational Assessment																																
(2) Increment 1 - Milestone B	▲ 2																															
Increment 1 Release 1.1 DTOE																																
Independent Gov Test and Release 1.1 OA/CE																																
(3) Increment 1 - Milestone C													▲ 3																			
Increment 1 - IOT&E																																
Increment 1 - Full Fielding																																
(4) Increment 1 - Initial Operational Capability																					▲ 4											

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0303141A - Global Combat Support System</b>						<b>08A</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Increment 1 - Acquisition Review	2Q								
Increment 1 Segment 1 Operational Assessment	1Q - 4Q	1Q - 4Q	1Q - 3Q						
Increment 1 - Milestone B	4Q								
Increment 1 Release 1.1 DTOE			3Q - 4Q						
Independent Gov Test and Release 1.1 OA/CE			4Q	1Q					
Increment 1 - Milestone C				2Q					
Increment 1 - IOT&E				4Q					
Increment 1 - Full Fielding					2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Increment 1 - Initial Operational Capability					2Q				



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE				
<b>7 - Operational system development</b>	<b>0303142A - SATCOM Ground Environment (SPACE)</b>				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	45316	58902	40097	Continuing	Continuing
253 DSCS-DCS (PHASE II)	7605	7858	7125	Continuing	Continuing
456 MILSATCOM SYSTEM ENGINEERING	25865	16160	28788	Continuing	Continuing
562 MBAND INT SAT TERM MIST	11846	34884	4184	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Military Satellite Communication (MILSATCOM) systems are joint program/project efforts to satisfy ground mobile requirements for each Service, the Joint Chiefs of Staff (JCS), the National Command Authority, the combatant commanders, the National Security Agency, the Office of the Secretary of Defense, and other governmental, non-DoD users. The worldwide MILSATCOM systems are: Ultra High Frequency (UHF) Follow-On Satellite System; Air Force Satellite (FLTSAT/AFSAT) system; the Mobile User Objective System (MUOS); the Super High Frequency (SHF) Defense Satellite Communications System (DSCS); the Wideband Global SATCOM (WGS); the MILSTAR Extremely High Frequency (EHF)(Low Data Rate (LDR) and Medium Data Rate (MDR); the Advanced Extremely High Frequency (AEHF); and future MILSATCOM capabilities, all of these systems are required to support legacy, interim and emerging communication space architectures and Objective Force requirements. The Army is responsible for materiel development, acquisition, product improvement, testing, fielding and integrated logistics support of ground satellite terminals and SATCOM control subsystems and all associated equipment used to provide range extension of Command, Control and Communications Systems for the Warfighter. The Army also participates in the development of MILSATCOM programs, including architectures, payloads, waveforms, antennas and terminal developments to ensure US Army equities are appropriately addressed with our sister services. This includes technology assessment efforts associated with the integration of MILSATCOM components to US Army Landwarnet. This responsibility also includes maintaining the life cycle logistics support required to achieve end-to-end connectivity and interoperability, satisfying JCS Command, Control, Communications and Intelligence (C3I) in support of the President, JCS, combatant commanders, Military Departments, Department of State, and other government Departments and Agencies.

This program is designated as a DoD Space Program.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0303142A - SATCOM Ground Environment (SPACE)</b>
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<u><b>B. Program Change Summary</b></u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	107092	106327	131771
Current BES/President's Budget (FY 2010)	45316	58902	40097
Total Adjustments	-61776	-47425	-91674
Congressional Program Reductions		-47425	
Congressional Rescissions	-49800		
Congressional Increases			
Reprogrammings	-9021		
SBIR/STTR Transfer	-2955		
Adjustments to Budget Years			-91674

**Change Summary Explanation:**

Funding - FY 2008 - Funding reprogrammed (-9,021) from Project 562 to other higher priority programs.  
 Funding rescissions (-49,800).

Funding - FY 2010: Funding realigned (91,040) to Army high priority efforts.

Funding - FY 2011 : Funding realigned (+44,473) to support MILSATCOM System Engineering efforts.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0303142A - SATCOM Ground Environment (SPACE)</b>			<b>PROJECT</b> <b>253</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
253 DSCS-DCS (PHASE II)	7605	7858	7125	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This project provides funds to develop strategic and tactical Ground Subsystem equipment and software in support of Joint Chiefs of Staff (JCS) validated Command, Control, Communications and Intelligence (C3I) requirements for the worldwide Defense Enterprise Wideband SATCOM System (DEWSS). It is composed of the Super High Frequency (SHF) Defense Satellite Communications System (DSCS) and Wideband Global SATCOM (WGS) programs. Continuing upgrades for the DSCS and WGS are vital to support the emerging power projection and rapid deployment role of the Armed Forces. DSCS and WGS provide Warfighters multiple channels of tactical connectivity as well as interfaces with strategic networks and national decision-makers.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue the development of the DSCS Integrated Management System (DIMS) Interface Software program	4228	3953	
Completed the development of the Common Network Planning Software (CNPS) program	262		
Netcentric Systems Engineering and Analysis	1085	1319	4567
Continue SATCOM Engineering Lab (SEL), PM Admin, and Systems Engineering Technical Assistance (SETA) efforts	2030	2391	2558
Small Business Innovative Research/Small Business technology Transfer Programs (SBIR/STTR)		195	
<b>Total</b>	<b>7605</b>	<b>7858</b>	<b>7125</b>

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
DSCS Other Procurement Army	133937	69680	145180	Continuing	Continuing

Comment:

**C. Acquisition Strategy** The DSCS Integrated Management System (DIMS) and Common Network Planning Software (CNPS) are software programs. DIMS provides the capability to electronically disseminate network plans to the monitoring and controlling Enterprise Wideband Satellite Payload Control subsystems, and retrieves and displays subsystem monitoring data. It also provides a comprehensive view of network operations at Wideband Operations Centers and DISA management sites. CNPS plans strategic and Ground Mobile Forces (GMF) satellite communication networks for DSCS, WGS, and commercial satellites. DIMS and CNPS will be installed at Wideband Operations Centers and DISA Management Sites at worldwide locations. PM DCATS employs Netcentric Systems Engineering to develop the technology for new ground segment equipments which will include studies, risk mitigation, system integration and advanced demonstrations for Netcentric Baseband and Policy Based Control to accommodate technology insertion, data sharing, remote operations, architecture efforts and use of commercial technology to conform to Department of Defense (DoD) requirements.

**ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**

**May 2009**

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303142A - SATCOM Ground Environment (SPACE)**

PROJECT

**253**

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0303142A - SATCOM Ground Environment (SPACE)							253		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
DIMS Software	C / CPFF	JHU/APL, Laurel, MD	36726	3803	1-2Q	3500	1Q				44029	44029
CNPS	C / FFP	Northrop Grumman, Winter Park, FL	34388								34388	34388
MET	S/CPFF	Hypres, Elmsford, NY	1069								1069	1069
Subtotal:			72183	3803		3500					79486	79486

Remarks: JHU/APL - John Hopkins University/Applied Physics Laboratory

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	Fort Monmouth, NJ	7950	409	1-2Q	705	1-2Q	376	1-2Q	Cont.	Cont.	Cont.
SETA Support	C / CPFF	Fort Monmouth, NJ	3753	318	1-2Q	110	1-2Q			Cont.	Cont.	Cont.
Netcentric Systems Engineering	C / CPFF	Fort Monmouth, NJ	4281	1085	1-2Q	1319	1-2Q	4567	1-2Q	Cont.	Cont.	Cont.
Core Support	Various	Fort Monmouth, NJ	4663	700	1-4Q	735	1-4Q	772	1-4Q	Cont.	Cont.	Cont.
Subtotal:			20647	2512		2869		5715		Cont.	Cont.	Cont.

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
JSEC	MIPR	Fort Monmouth, NJ	8715	700	2Q	675	2Q	760	2Q	Cont.	Cont.	Cont.
Subtotal:			8715	700		675		760		Cont.	Cont.	Cont.

Remarks: JSEC - Joint Satellite Engineering Center

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award	FY 2009 Cost	FY 2009 Award	FY 2010 Cost	FY 2010 Award	Cost To Complete	Total Cost	Target Value of
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# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303142A - SATCOM Ground Environment (SPACE)</b>							<b>253</b>		
	Type				Date		Date		Date			Contract
PM Admin	Various	Fort Monmouth, NJ	6095	590	1-4Q	814	1-4Q	650	1-4Q	Cont.	Cont.	Cont.
Subtotal:			6095	590		814		650		Cont.	Cont.	Cont.
<b>Project Total Cost:</b>			<b>107640</b>	<b>7605</b>		<b>7858</b>		<b>7125</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
7 - Operational system development

PE NUMBER AND TITLE  
0303142A - SATCOM Ground Environment (SPACE)

PROJECT  
253

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CNPS Testing V2.0	■ V2.0																															
(1) CNPS Materiel Release V2.0					▲ 1																											
DIMS Testing V5.2					■ V5.2																											
(2) DIMS Materiel Release V5.2									▲ 2																							
DIMS Testing V6.0					■ V6.0																											
(3) DIMS Materiel Release V 6.0									▲ 3																							
Netcentric System Engineering, Conduct System Engineering Studies/Analysis	■																															
Advanced Demonstrations for Baseband and Policy Based Control	■								■																							

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0303142A - SATCOM Ground Environment (SPACE)</b>						<b>253</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
CNPS Testing V2.0	1Q - 2Q								
CNPS Materiel Release V2.0	4Q								
DIMS Testing V5.2		2Q - 3Q							
DIMS Materiel Release V5.2		4Q - 3Q							
DIMS Testing V6.0		4Q	1Q						
DIMS Materiel Release V 6.0			2Q						
Netcentric System Engineering	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Conduct System Engineering Studies/Analysis	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Advanced Demonstrations for Baseband and Policy Based Control			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303142A - SATCOM Ground Environment (SPACE)</b>			<b>PROJECT</b> <b>456</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
456 MILSATCOM SYSTEM ENGINEERING	25865	16160	28788	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** MILSATCOM System Engineering provides centralized funding for US Army participation in the development of MILSATCOM programs. This includes engineering, technical and CAIV related analyses supporting architecture, payloads, network and terminal requirement and design decisions across all MILSATCOM programs

MILSATCOM System Engineering also supports experimentation and/or development of new and emerging SATCOM related technologies. This includes prototyping efforts to address technology gaps identified by US Army Program of Records (POR) in the US Army Technology Transition Matrix.

The FY2010 funding support increased efforts in the area of Protected Communications and other related efforts.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Protected Advanced EHF (AEHF) Communications System Engineering	1100	1200	3188
Wideband Global SATCOM (WGS) Communications System Engineering	1075	1200	2000
Experimentation, development, testing and certification of critical SATCOM and SOTM communication and network technologies.	3227	5671	11600
Intelligence, Surveillance, Reconnaissance (ISR) POR Migration to OPM WIN T SATCOM Solutions. Includes Reginal Hub Node (RHN) mods, Joint Management and Operations Subsystem (JMOS) mods, Terminal Certifications (WGS)		2000	1000
Federal Communications Commission/ International Telecommunications Union (FCC/ITU) SOTM Regulatory Proposals/Analyses/Modifications		1100	2000
Protected COTM Technical Reference Terminal Prototyping			9000
Soldier Network Extension (SNE) SATCOM Terminal development in support of WIN-T Increment 2 Communications Network. Includes Antenna and Modem modifications required per Increment 2 DT/LUT	18000	1500	
Small Business Innovative Research/Small Business Technology Transfer Programs		435	
Transformational Satellite (TSAT) Communications System Engineering	2463	3054	
<b>Total</b>	<b>25865</b>	<b>16160</b>	<b>28788</b>

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
373142/562 MILSATCOM SYSTEM ENGINEERING	11846	34884	4184	Continuing	Continuing

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0303142A - SATCOM Ground Environment (SPACE)</b>				PROJECT <b>456</b>
(RDTE)					
373142/563 HC3 BLOCK 2 TSAT DEVELOPMENT				Continuing	Continuing

Comment:

**C. Acquisition Strategy** This project funds advanced systems engineering, research, development, test and evaluation of new and emerging technologies to optimize terminal performance and communications control. Once the technologies are mature and deemed feasible, funding and management responsibility for implementation of the technology will transition to Army PORs.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303142A - SATCOM Ground Environment (SPACE)</b>							<b>456</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Protected Advanced EHF and WGS Communications System Engineering	MIPR/PWD	Various	19351			5000	1-3Q	2500	1-4Q		26851	
Experimentation, development, testing & certification of SATCOM & SOTM communication & networking.	MIPR/PWD	Various						7600	2-4Q		7600	
Protected COTM Tactical Reference Terminal Prototyping	MIPR/PWD	Various						5088			5088	
Terminal Upgrades, SNE, Engineering Support	MIPR/PWD	General Dynamics Taunton, MA	1524	17300	2Q	1500	2Q				20324	
Subtotal:			20875	17300		6500		15188			59863	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering (In House)		Core, Matrix,	15852	1238	1-4Q	1100		3800	1-4Q	Cont.	Cont.	
Engineering Contractors Support	MIPR/PWD	JANUS, BAH, Linquest, JHU APL	22135	3100	2Q	3182	2Q	3800	1-4Q	Cont.	Cont.	
System Architecture & Analysis	MIPR/PWD	MIT Lincoln Labs, Lexington, MA; MITRE, CERDEC	13063	1000		600	1-3Q	1000	1-3Q	Cont.	Cont.	
Subtotal:			51050	5338		4882		8600		Cont.	Cont.	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303142A - SATCOM Ground Environment (SPACE)</b>							<b>456</b>		
Test Support	MIPR/PWD	MIT Lincoln Labs, Lexington, MA, General Dyanamics, Tauton MA	17998	1634	1Q			1500	2-3Q	Cont.	Cont.	Cont.
Terminal Certification, ISR POR Migration	MIPR/PWD	John Hopkins University, Applied Physics Laboratory , MD				500	2-3Q	600	2-3Q		1100	
Testing, Certification	MIPR/PWD	CERDEC Support Technical Testing				3078	1-4Q	1500	1-4Q	Cont.	Cont.	Cont.
Subtotal:			17998	1634		3578		3600		Cont.	Cont.	Cont.
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Oversight	MIPR/PWD	In-House		274	2Q	400	1-2Q	400	1-4Q	Cont.	Cont.	
Advanced Architecture/ Advanced Wideband System Architecture	MIPR/PWD	MIT Lincoln Labs Lexington, MA and General Dynamics Taunton, MA , Linquest, MITRE	8024	1319	2-3Q	800	2-3Q	1000	2-3Q	Cont.	Cont.	
Subtotal:			8024	1593		1200		1400		Cont.	Cont.	
<b>Project Total Cost:</b>			<b>97947</b>	<b>25865</b>		<b>16160</b>		<b>28788</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
<b>7 - Operational system development</b>		<b>0303142A - SATCOM Ground Environment (SPACE)</b>																<b>456</b>														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Protected AEHF, WGS, Sys Eng and Analysis	[Redacted]																															
Advanced Component Experimentation/Prototyping	[Redacted]																															
FCC/ITU SOTM Regulatory Proposals/Analyses/Modifications	[Redacted]																															
ISR POR Migration to OPM WIN T SATCOM	[Redacted]																															
Protected COTM Tactical Reference Terminal Development Strategy	[Redacted]																															
Soldier Network Extension SATCOM Terminal development	[Redacted]																															

## Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0303142A - SATCOM Ground Environment (SPACE)</b>					PROJECT <b>456</b>		
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Protected AEHF, WGS, Sys Eng and Analysis	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q	
Advanced Component Experimentation/Prototyping	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q	
FCC/ITU SOTM Regulatory Proposals/Analyses/Modifications		1Q - 4Q	1Q - 4Q	1Q - 4Q					
ISR POR Migration to OPM WIN T SATCOM		1Q - 4Q	1Q - 4Q	1Q - 4Q					
Protected COTM Tactical Reference Terminal Development Strategy			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q	
Soldier Network Extension SATCOM Terminal development	1Q - 4Q	1Q - 4Q							

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303142A - SATCOM Ground Environment (SPACE)</b>			<b>PROJECT</b> <b>562</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
562 MBAND INT SAT TERM MIST	11846	34884	4184	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** A. Mission Description and Budget Item Justification: Multi-band Integrated Satellite Terminal (MIST) funds will develop the high capacity communications capability (HC3) for Increment 1.

The HC3 will provide high data rate communications capabilities that will be pervasively integrated into the Army's Future Modular Force communication architecture, as well as other Service and Joint communication architectures. HC3 will break traditional terminal architecture paradigms by developing a modular, open systems architecture that supports hardware and software module reuse across HC3 platforms, as well as other Joint Service applications. HC3 will be a family of tactical Multi-band, modular, communications terminals that will provide inter-network and reach back communications services across the Army's Future Modular Force tactical networks.

HC3 will develop a high capacity, multi-band, protected Communications satellite solution to replace end-of-life tactical terminals in the early-mid 2020's timeframe. As a result of recent Department of Defense (DoD) initiatives to reduce technical, cost, and schedule risk in large development programs, the HC3 program has been restructured. Various risk mitigation studies and analyses will be executed with tri-service participation in order to further lower risk prior to MS A.

FY10 funds will support detailed studies and analyses of future MILSATCOM capabilities to support Army requirements.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
High capacity communications capability studies/efforts that include Waveform porting issues and high speed/capacity Cryptographic development	4010	12889	
Antenna/RF and Modem Analysis and risk mitigation efforts	5068	15036	
HC3 requirements process/analysis	2768	5983	4184
Small Business Innovative Research/Small Business Technology Transfer Program		976	
<b>Total</b>	<b>11846</b>	<b>34884</b>	<b>4184</b>

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0303142A D456-MILSATCOM Systems Engineering	25865	16160	28788	Continuing	Continuing

Comment: Proj D456 will support EHF technology efforts

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303142A - SATCOM Ground Environment (SPACE)**

PROJECT

**562**

**C. Acquisition Strategy** A competitive high capacity communications capability Technology Development (TD) contract is being planned.



# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303142A - SATCOM Ground Environment (SPACE)</b>							<b>562</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
System Development	MIPR	MIT Lincoln Labs, Lexington MA	10445	2250	1Q	8326	1-2Q			Cont.	Cont.	
Pre-SDD Study Contracts	T&M	Raytheon, Marlborough, Mass and Boeing, Anaheim, Ca.	11071								11071	
Government Engineering Support	Various	PM WIN-T, Fort Monmouth, NJ	8615	2639	1-2Q	2849	1-2Q			Cont.	Cont.	
Risk Mitigation Efforts/Other Contracts	Various	Various	23187	1938	1-2Q	11434				Cont.	Cont.	
Engineering Services	Various	Various	343	550	1-2Q	1050	1-2Q				1943	
Subtotal:			53661	7377		23659				Cont.	Cont.	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering Services	N/A	Fort Monmouth, NJ	7443	1553	1-2Q	2181	1-2Q	750	1-2Q	Cont.	Cont.	
Requirement Services/Studies	Various	Various	406	1101	2Q	4324	1Q	2752	1-2Q	Cont.	Cont.	
Subtotal:			7849	2654		6505		3502		Cont.	Cont.	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering (In-House)	N/A	PM WIN-T, Fort Monmouth, NJ	494			541	1-2Q			Cont.	Cont.	
Subtotal:			494			541				Cont.	Cont.	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0303142A - SATCOM Ground Environment (SPACE)</b>	PROJECT <b>562</b>
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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government Support	N/A	PM WIN-T, Fort Monmouth, NJ	5281	1815	1-2Q	4179	1-2Q	682	1-2Q	Cont.	Cont.	
Subtotal:			5281	1815		4179		682		Cont.	Cont.	

<b>Project Total Cost:</b>	<b>67285</b>	<b>11846</b>		<b>34884</b>		<b>4184</b>		<b>Cont.</b>	<b>Cont.</b>	
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**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0303142A - SATCOM Ground Environment (SPACE)</b>					PROJECT <b>562</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
Pre-Milestone A Activities/Risk Mitigation	1Q - 4Q	1Q - 4Q	1Q - 4Q					
High Capacity Communications Capability Studies	1Q - 4Q	1Q - 4Q	1Q - 4Q					

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0303150A - WWMCCS/Global Command and Control System</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
C86 ARMY GLOBAL C2 SYSTEM	24197	12879	12034		49110

**A. Mission Description and Budget Item Justification:** Global Command and Control System-Army (GCCS-A): This project is the Army component system that directly supports the implementation of the Global Command and Control System Family of Systems. GCCS-A provides automated command and control tools for Army Strategic and Operational Theater Commanders to enhance warfighter capabilities throughout the spectrum of conflict during joint and combined operations in support of the National Command Authority (NCA). The GCCS-A developed software systems dramatically improves the Army's ability to analyze courses of action; develop and manage Army Forces; and ensure feasibility of war plans. GCCS-A provides a client-server layered architecture and functional best-of-breed software applications to develop a totally integrated component of the Global Command and Control System Family of Systems that integrates the GCCS-Joint picture with the Army Battle Command Systems. The GCCS-A strategic tools have been modernized and replaced by DRRS-A, a suite of web based applications for Army Readiness, Force Registration and Force Projection. The DRRS-A applications are positioned for adoption into the future NECC joint program.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0303150A - WWMCCS/Global Command and Control System</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	24620	12922	14
Current BES/President's Budget (FY 2010)	24197	12879	12034
Total Adjustments	-423	-43	12020
Congressional Program Reductions		-43	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	188		
SBIR/STTR Transfer	-611		
Adjustments to Budget Years			12020

Change Summary Explanation: Funding FY 10: +12020 increased funding to support continued GCCS-A interoperability with GCCS-J and ABCS.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0303150A - WWMCCS/Global Command and Control System</b>			<b>PROJECT</b> <b>C86</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
C86 ARMY GLOBAL C2 SYSTEM	24197	12879	12034		49110

**A. Mission Description and Budget Item Justification:** Global Command and Control System-Army (GCCS-A): This project is the Army component system that directly supports the implementation of the Global Command and Control System Family of Systems. GCCS-A provides automated command and control tools for Army Strategic and Operational Theater Commanders to enhance warfighter capabilities throughout the spectrum of conflict during joint and combined operations in support of the National Command Authority (NCA). The GCCS-A developed software systems dramatically improves the Army's ability to analyze courses of action; develop and manage Army Forces; and ensure feasibility of war plans. GCCS-A provides a client-server layered architecture and functional best-of-breed software applications to develop a totally integrated component of the Global Command and Control System Family of Systems that integrates the GCCS-Joint picture with the Army Battle Command Systems. The GCCS-A strategic tools have been modernized and replaced by DRRS-A, a suite of web based applications for Army Readiness, Force Registration and Force Projection. The DRRS-A applications are positioned for adoption into the future NECC joint program.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Perform Software and System Engineering Services	861	694	520
Accomplish Software Development of automated Command and Control tools	20272	9122	9007
Perform Data Engineering	491	1154	707
Conduct Test and Evaluation	1150	773	925
Perform Program Support and Management Efforts	1423	856	875
Small Business Innovative Research/Small Business Technology Transfer Programs		280	
<b>Total</b>	<b>24197</b>	<b>12879</b>	<b>12034</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
BA8250 Global Command & Control System-Army (GCCSA)	30803	31420	22996	Continuing	Continuing

Comment:

**C. Acquisition Strategy** In accordance with the TRADOC requirements document approved in 2008, entitled GCCS-A Battle Command Essential Capability, software capability will be developed in 2-year increments as capability sets designed to Collaborate, Collapse and Converge Battle Command products. The product development funded under this

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303150A - WWMCCS/Global Command and Control System**

PROJECT

**C86**

R-Form is an integral part of the Army Battle Command System (ABCS), a system of systems, under a strategy designed to optimize opportunity for improved interoperability among the systems, to capture the benefits of competition where possible and to ensure the rapid integration of new capability into warfighter systems. This strategy is designed to reduce the physical footprint, logistics support requirements and increase operational efficiency. DRRS-A strategy is based on annual release of software integrating HQDA (Office of Defense Readiness) directed changes.



# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0303150A - WWMCCS/Global Command and Control System							C86		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Software Development	HYBRID	Lockheed Martin Corp, Springfield, VA	136391	14752	2-3Q	2000	1Q			Cont.	Cont.	Cont.
Software Development	HYBRID/Competitive	Follow-on Contracts TBD				2304	3Q	4841	1-2Q		7145	
Defense Readiness Reporting System-Army	PWD	Accenture, Camden, NJ	1748	3000	2Q	3100	2Q	2900	1-2Q		10748	
Developmental Hardware/Licensing	PWD	Various	5	851	1-4Q	255	1Q				1111	
Technical Management	In House	PM BC, Fort Monmouth, NJ	38101	1453	1-4Q	1152	1-4Q	940	1-2Q	Cont.	Cont.	Cont.
Matrix	MIPR	CECOM, Fort Monmouth, NJ & Fort Belvoir, VA	5189	216	1-2Q	311	1Q	326	1Q	Cont.	Cont.	Cont.
System Engineering	MIPR	Various	4777	861	1-4Q	694	1-4Q	520	1-2Q	Cont.	Cont.	Cont.
ABCS System Engineering & Integration Efforts	MIPR	PEO C3T, Fort Monmouth, NJ	1514								1514	1514
GFE	MIPR	Various	1464								1464	1465
Product Studies	MIPR	SAIC, VA	2391								2391	2391
COE Support	MIPR	Various	1766								1766	1766
Subtotal:			193346	21133		9816		9527		Cont.	Cont.	Cont.
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
FCBS/CSC	MIPR/Del Ord	Various	2389								2389	2389
INRI	MIPR	Various	200								200	200
Support Contractors			9347	491	2Q	1154	2Q	707	2Q	Cont.	Cont.	Cont.
Subtotal:			11936	491		1154		707		Cont.	Cont.	Cont.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303150A - WWMCCS/Global Command and Control System</b>	<b>PROJECT</b> <b>C86</b>
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III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government	MIPR	Various	4254	1079	2Q	573	2Q	600	2-3Q		6506	5106
EPG	MIPR	Various	786								786	786
ATEC	MIPR	Various	2602	71	1Q	200	1Q	325	1Q	Cont.	Cont.	Cont.
Subtotal:			7642	1150		773		925		Cont.	Cont.	Cont.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Office Management	In House	PM GC C2, NJ	8547	1423	1-4Q	856	1-4Q	875	1-4Q	Cont.	Cont.	Cont.
SBIR		PM BC NJ				280	2-4Q				280	
Subtotal:			8547	1423		1136		875		Cont.	Cont.	Cont.

<b>Project Total Cost:</b>	<b>221471</b>	<b>24197</b>		<b>12879</b>		<b>12034</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>
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# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
7 - Operational system development		0303150A - WWMCCS/Global Command and Control System																C86														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Block 4.1 Software Development	Block 4.1																															
Block 4.2 Software Development					Block 4.2																											
Hardware Fielding					initial fielding and refresh hw																											
(1) NECC MS B									1																							

**Schedule Detail (R4a Exhibit)**

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303150A - WWMCCS/Global Command and Control System</b>	<b>PROJECT</b> <b>C86</b>
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<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
IT - IPT								
Software Development								
Block 4.1 Software Development	1Q - 4Q	1Q						
Block 4.2 Software Development	3Q - 4Q	1Q - 4Q	1Q - 4Q					
Hardware Fielding	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 3Q				
NECC MS B		4Q						
NECC MS C			4Q					

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0303140A - Information Systems Security Program</b>			<b>PROJECT</b> <b>5PM</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
5PM DoD Biometrics Program Management			9920		9920

**A. Mission Description and Budget Item Justification:** REF Core: DoD D 8521.aaE established the Department of Defense (DoD) Biometrics Program and designated the Secretary of the Army (SA) as the Executive Agent for the DoD Biometrics program with the Director, Biometrics Task Force (BTF) serving as the functional component. The USD (AT&L) designated DoD Biometrics as an Acquisition Category (ACAT) 1 - Special Interest Program on 2 September 2008, and directed the Army, as the Executive Agent for DoD Biometrics, to pursue a Milestone B decision not later than FY 2010. Project Manager (PM) DoD Biometrics is responsible for the Biometric Enterprise Core Capability (BECC), known as Enterprise System, and Biometric Family of Capabilities for Full Spectrum Operations (BFCFSO), known as Tactical Collection Systems. Both products will leverage the lessons learned from existing Quick Reaction Capabilities (QRC) along with new biometric capabilities and technologies. Using an evolutionary approach capability will be delivered in increments to achieve stated requirements. BECC is the enterprise biometric system serving as the DoD authoritative biometric repository enabling identity superiority across the Department. Envisioned capabilities consist of Multi-modal storage and matching, state of the art Service Oriented Architecture, management portal, Watch List capability, interoperability with the FBI, DHS, National Ground Intelligence Center's Biometric Intelligence Repository (BIR) and other agencies. BFCFSO is the program responsible for developing a tactical biometric collection, storage, matching, and sharing capability to satisfy Joint Warfighter requirements in allied, threat, and neutral domains. Capabilities envisioned for BFCFSO will be configurable for multiple operational mission environments, enabling identity superiority across the Department of Defense. This program was previously under PE 0303140A, Project 491 and PE 0303140A, Project 50B.

FY 2010 Core funding will fund acquisition oversight, the preparation and validation of documentation, studies, and estimates required to meet the USD (AT&L) directive for a Milestone B decision in FY 2010, and the initial post-Materiel Development Decision (MDD) activities including award of material development contracts, OT&E certification and accreditation planning, and development of BECC and BFCFSO.

FY 2010 OCO funding will support advancement of key capabilities (Transaction Manager, processing speed, Continuity of Operation Capability (COOP) and associated test and evaluation) for the QRC, Next Generation Automated Biometric Identification System (NG ABIS).

Note:  
Prior to FY 2010, funding provided by the Biometric Task Force (Project 50B).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY 2010 Core: Plan and conduct activities to achieve MS B decision in late FY 2010 for two ACAT 1 Special Interest programs, Biometric Enterprise Core Capability (BECC) and Biometric Family of Capabilities for Full Spectrum Operations (BFCFSO); Award Engineering and Manufacturing Development (EMD) Contracts supporting the two Programs of Record (POR). In response to the preferred alternative selected in the AOA, and requirements defined in the CDD, design, develop, and test enduring Biometric capability and achieve MS C in FY 2012.			9920
<b>Total</b>			<b>9920</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303140A - Information Systems Security Program</b>	<b>PROJECT</b> <b>5PM</b>
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<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
TA0600 - Information Systems Security Program			17585		17585
432144 - Operations and Maintenance Army			919		919
135197 - Operations and Maintenance Army			224300		224300

Comment: The USD(AT&L) designated DoD Biometrics as an Acquisition Category (ACAT) 1 - Special Interest Program on 2 September 2008, and directed the Army, as the Executive Agent for DoD Biometrics, to pursue a Milestone B decision not later than FY 2010. The objective of this program is to develop and provide full life-cycle support to biometric systems which support the DoD and Army. These systems will enable the Identity Superiority mission by denying anonymity upon which our enemies rely to engage in asymmetric warfare. This program is divided into two projects, the Biometric Enterprise Core Capability (BECC) and the Biometric Family of Capabilities for Full Spectrum Operations (BFCFSO). The acquisition strategy is to competitively source systems integration services to develop the systems and then transition them to DoD/Army support organizations. BECC will serve as the single, authoritative, DoD biometric repository which provides matching, storing, referencing, and sharing of biometrics. BECC is projected to begin the Engineering and Manufacturing Development (EMD) phase of Acquisition in late FY 2010 by successfully achieving Milestone B. The BECC project will sustain the Next-Generation Automated Biometric Identification system (NG-ABIS) until replaced by BECC. BFCFSO will develop tactical biometric collection devices which meet the requirements of all services. Tactical collection requirements will be interoperable with BECC and will allow collection, local matching, and sharing of biometrics. BFCFSO is projected to also begin the EMD acquisition phase in late FY 2010. BFCFSO project will sustain the Biometric Automated Toolset (BAT-A) until replaced by devices developed by BFCFSO.

**NG ABIS QRC Accomplishments**

In direct response to CENTCOM JUONS (Joint Urgent Operational Needs Statement), PD BECC developed, integrated, tested, and deployed Next Generation Automated Biometric Identification System (NG ABIS) thirty hours ahead of schedule on January 28, 2009. This enabling capability quadrupled the lethality of the previous prototype by introducing three new modalities for biometric matching (face, iris, palm) and significantly upgraded the fingerprint algorithm to achieve matches three-to-ten times faster and achieve matches on previously missed latent fingerprints. The four modalities, and the multi-modal fusion algorithm, provide a wealth of new biometric matches for the Intelligence community to prepare biometric dossiers for targeting and enable the Warfighter faster and greater success in Identity Dominance and Identity Management; distinguishing between know-and-suspected-terrorists (KSTs) and innocent or neutral forces. The improved responsiveness (from hours and minutes to minutes and seconds) enables Warfighters to make quicker release-or-detain decisions and increases survivability by reducing exposure time. The upgraded fingerprint algorithm has exceeded expectations and improved "lights-out" matching which has freed-up critical latent examination resources to focus on latent cases involving deadly attacks or use of deadly force on US Forces.

**BAT QRC Accomplishments**

Awarded in-service engineering to provide software maintenance and maintain required certifications and accreditations through FY 2012 for the Biometric Automated Toolset (BAT). Awarded operations and user maintenance contract (O&UM) to provide contractor support primarily in the US Central Command (US CENTCOM) Area of Responsibility (AOR) through FY 2012 for Biometrics Automated Toolset - Army (BAT-A), which includes the BAT (2100+QRC systems) and the Handheld Interagency Identity Detection Equipment (HIIDE) device (6000+QRC systems). Fielding of new Service Pack scheduled 2nd QTR FY 2009. Material refresh of 525 BAT systems in US CENTCOM AOR planned in FY 2009. Transitioned Operations and User Maintenance (O&UM) in-theater oversight and logistics management to Army Materiel Command

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303140A - Information Systems Security Program**

PROJECT

**5PM**

(AMC) Communications and Electronics Command (CECOM).

**C. Acquisition Strategy** The USD(AT&L) designated DoD Biometrics as an Acquisition Category (ACAT) 1 - Special Interest Program on 2 September 2008, and directed the Army, as the Executive Agent for DoD Biometrics, to pursue a Milestone B decision not later than FY 2010. The objective of this program is to develop and provide full life-cycle support to biometric systems which support the DoD as well as the Army. These systems allow positive identification and verification of the identities of persons of interest, unveiling the anonymity upon which terrorists rely to effective wage asymmetric warfare. This program is divided into two projects, the Biometric Enterprise Core Capability (BECC) and the Biometric Family of Capabilities for Full Spectrum Operations (BFCFSO) with the acquisition strategy to competitively source systems integration services to develop the systems using an incremental approach and then transition them to DoD/Army support organizations. Primary focus is to establish the biometrics program of record and develop a framework for leveraging technologies and processes to facilitate better sharing of biometric data on persons of interest collected and forwarded to other DoD agencies and to develop a biometric implementation strategy for Homeland Security Presidential Directive (HSPD)-12. The program will also continue to support the testing and evaluation of products and other analysis and evaluation of applicable technologies, as well as finalize and synthesize an interoperable biometric enterprise approach.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303140A - Information Systems Security Program</b>							<b>5PM</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Base: Products Development	Various	Various					3-4Q	9920	1-4Q		9920	
Subtotal:								9920			9920	
Remarks: Milestone B (MS B) activities on-going to support MS B decision in late FY 2010. EMD contract award and development efforts scheduled to begin following MS B decision.												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
<b>Project Total Cost:</b>								<b>9920</b>			<b>9920</b>	



# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0303140A - Information Systems Security Program**

PROJECT  
**5PM**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) ADM Signed	2 Sep 2008																															
Milestone B Activities																																
(2) Milestone Decision					MS B Preparations																											
System Development													Milestone B				Engineering and Manufacturing Development															

**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0303140A - Information Systems Security Program</b>					PROJECT <b>5PM</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
ADM Signed	4Q							
Milestone B Activites		1Q - 4Q	1Q - 4Q					
Milestone Decision			4Q					
System Development			4Q	1Q - 4Q	1Q - 4Q			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0303158A - Joint Command and Control Program (JC2)</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
714	JOINT COMMAND AND CONTROL - ARMY	15655	15153	20365	Continuing

**A. Mission Description and Budget Item Justification:** The Net-Enabled Command Capability (NECC) is the DoD's principal Command and Control (C2) capability that will be accessible in a net-centric environment and focused on providing the Commander with the data and information needed to make timely, effective and informed decisions. NECC draws from the C2 community to evolve current and provide new C2 capabilities into a fully integrated, interoperable, collaborative Joint solution. Warfighters will be able to rapidly adapt to changing mission needs by defining and tailoring their information environment and drawing on capabilities that enable the efficient, timely and effective command of forces and control of engagements.

The Joint Requirements Oversight Council Memorandum 163-03 (JROCM 163-03) established a need for, and directed, evolving the current Global Command and Control System (GCCS) Family of Systems (FOS) into a single joint C2 architecture and capabilities-based implementation. This implementation (NECC) will be based on Global Information Grid (GIG) Enterprise Services (GES) and consists of joint mission capability packages.

NECC will deliver continuous C2 enhancements to the Warfighter. The program will be founded on a single, net-centric, services-based C2 architecture and provide the decision support infrastructure that will enable the Warfighter to access, display, and understand the information necessary to make efficient, timely, and effective decisions. NECC will be responsive to the Warfighter through loosely coupled capability needs, development, test, and user engagement processes. The program will leverage existing and evolving C2 capabilities and centers of excellence with its ABC commitment to Adopt-before-Buy, Buy-before-Create. Key to ABC is adaptation of commercial best practices, architectures and standards for C2. The NECC program will ensure that our C2 capability evolves toward increased net-centricity and Joint mission integration.

NECC is a Joint Acquisition Category (ACAT) 1D Major Defense Acquisition Program and Major Automated Information System. The lead component for the Joint Program is the Defense Information Systems Agency (DISA). Each Service, to include the Army, has established a Component Program Management Office (CPMO) to implement the NECC solution within its agency. This project, 714, funds Army project management costs and integration and test costs to accomplish Army implementation of NECC.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0303158A - Joint Command and Control Program (JC2)</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	10330	15203	23094
Current BES/President's Budget (FY 2010)	15655	15153	20365
Total Adjustments	5325	-50	-2729
Congressional program reductions		-50	
Congressional rescissions			
Congressional increases	5614		
Reprogrammings			
SBIR/STTR Transfer	-289		
Adjustments to Budget Years			-2729

Change Summary Explanation:  
 Funding - FY 08: +5,614 Supplemental funding for NECC development, integration and test

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0303158A - Joint Command and Control Program (JC2)</b>			<b>PROJECT</b> <b>714</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
714 JOINT COMMAND AND CONTROL - ARMY	15655	15153	20365	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Net-Enabled Command Capability (NECC) is the DoD's principal Command and Control (C2) capability that will be accessible in a net-centric environment and focused on providing the commander with the data and information needed to make timely, effective and informed decisions. NECC draws from the C2 community to evolve current and provide new C2 capabilities into a fully integrated, interoperable, collaborative Joint solution. Warfighters will be able to rapidly adapt to changing mission needs by defining and tailoring their information environment and drawing on capabilities that enable the efficient, timely and effective command of forces and control of engagements.

The Joint Requirements Oversight Council Memorandum 163-03 (JROCM 163-03) established a need for, and directed, evolving the current Global Command and Control System (GCCS) Family of Systems (FOS) into a single joint C2 architecture and capabilities-based implementation. This implementation (NECC) will be based on Global Information Grid (GIG) Enterprise Services (GES) and consists of joint mission capability packages.

NECC will deliver continuous C2 enhancements to the Warfighter. The program will be founded on a single, net-centric, services-based C2 architecture and provide the decision support infrastructure that will enable the Warfighter to access, display, and understand the information necessary to make efficient, timely, and effective decisions. NECC will be responsive to the Warfighter through loosely coupled capability needs, development, test, and user engagement processes. The program will leverage existing and evolving C2 capabilities and centers of excellence with its ABC commitment to Adopt-before-Buy, Buy-before-Create. Key to ABC is adaptation of commercial best practices, architectures and standards for C2. The NECC program will ensure that our C2 capability evolves toward increased net-centricity and Joint mission integration.

NECC is a Joint Acquisition Category (ACAT) 1D Major Defense Acquisition Program and Major Automated Information System. The lead component for the Joint Program is the Defense Information Systems Agency (DISA). Each Service, to include the Army, has established a Component Program Management Office (CPMO) to implement the NECC solution within its agency. This project, 714, funds Army project management costs and integration and test costs to accomplish Army implementation of NECC.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Perform Software Development Necessary to Integrate Capability Modules onto Army Platforms	7315	7722	11664
Conduct Test and Evaluation to Meet Interoperability Requirements	898	1669	3209
Perform Program Support and Management Efforts	4408	5337	5492
Supplemental Reprogramming	3034		
Small Business Innovative Research/Small Business Technology Transfer Programs		425	
<b>Total</b>	<b>15655</b>	<b>15153</b>	<b>20365</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0303158A - Joint Command and Control Program (JC2)**

PROJECT

**714**

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** The Assistant Secretary of Defense (ASD) National Information System (NII) approved the Joint Command and Control (JC2) for entry into the Concept Refinement Phase in FY03. In FY06, the Assistant Secretary of Defense (ASD) National Information Infrastructure (NII) issued an Acquisition Decision Memorandum (ADM) approving Milestone A, authorizing entry into the Technology Demonstration Phase and renaming Joint Command and Control (JC2) as Net-Enabled Command Capability (NECC).

The ongoing Technology Demonstration Phase efforts include definition of the system architecture and initial system engineering activities. Initial capability spirals are being developed to demonstrate technical feasibility and readiness, prove out the development processes and validate the program cost estimate.

Milestone B, is scheduled for 4QFY09, after completion of the initial spiral development efforts. Milestone C is scheduled for FY10 to support an Initial Operational Capability (IOC) in FY11.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303158A - Joint Command and Control Program (JC2)</b>							<b>714</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	Competitive/Time and Materials	Various	50	4589	2Q	6859	2Q	3805	2Q		15303	
Integration Efforts	Competitive/Time and Materials	Various		2726	2-4Q	863	1-4Q	7859	2-4Q		11448	
Supplemental				3034	4Q						3034	
Subtotal:			50	10349		7722		11664			29785	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government	Government Matrix	Various	250	898	2-3Q	1669	2-3Q	3209	2-3Q		6026	
Subtotal:			250	898		1669		3209			6026	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0303158A - Joint Command and Control Program (JC2)</b>							<b>714</b>		
Government	Government	Various	4184	2393	1-2Q	2509	1-2Q	2771	1-2Q	Cont.	Cont.	Cont.
Contractor	Competitive/Time and Materials	Various	2697	2015	1-4Q	2828	1-4Q	2721	1-2Q		10261	
SBIR/STTR						425					425	
Subtotal:			6881	4408		5762		5492		Cont.	Cont.	Cont.
<b>Project Total Cost:</b>			<b>7181</b>	<b>15655</b>		<b>15153</b>		<b>20365</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>



# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0303158A - Joint Command and Control Program (JC2)**

PROJECT  
**714**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NECC Technology Development	[Redacted]																															
(1) NECC MS B	[Redacted]				[Redacted]																											
NECC Software Development	[Redacted]																															
(2) NECC MS C	[Redacted]				[Redacted]								[Redacted]																			

**Schedule Detail (R4a Exhibit)**

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0303158A - Joint Command and Control Program (JC2)</b>					PROJECT <b>714</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
NECC Technology Development	1Q - 4Q	1Q - 4Q						
NECC MS B		4Q						
NECC Software Development	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
NECC MS C			4Q					

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0305204A - Tactical Unmanned Aerial Vehicles</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	188257	103930	232021	Continuing	Continuing
114 Tactical Unmanned Aerial Vehicle (TUAV) (MIP)	20277	12169	70773	Continuing	Continuing
11A Advanced Payload Develop & Spt (MIP)	40254	25654	49651	Continuing	Continuing
11B TSP DEVELOPMENT (MIP)			21647	Continuing	Continuing
123 JOINT TECHNOLOGY CENTER SYSTEM INTEGRATION (MIP)	2230	2351	4411	Continuing	Continuing
D09 EXTENDED RANGE UAV (MIP)	103448	61767	83571	Continuing	Continuing
D10 SUAV (MIP)	22048	1989	1968	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Project 114 TUAV Shadow provides the Army Brigade Commander with dedicated Reconnaissance, Surveillance and Target Acquisition (RSTA), Intelligence, Battle Damage Assessment (BDA) and Force Protection. The Shadow provides the Brigade Commander with critical battlefield intelligence and targeting information in the rapid cycle time required for success at the tactical level. The Shadow system air vehicle meets the required range of 50 km and remains on station for up to five hours. The baseline fielded payload is electro-optic infrared (EO/IR). The TUAV Shadow system consists of four air vehicles, (each configured with an EO/IR sensor payload), launcher and ground control and support equipment including: power generation, communications equipment, automated recovery equipment, remote video terminals, vehicle mounted shelters, and High Mobility Multipurpose Wheeled Vehicles with trailer(s). Each system is equipped with one Maintenance Section Multifunctional (MSM) Vehicle and is supported at the division level by a Mobile Maintenance Facility (MMF). The TUAV Shadow has logged over 360,000 flight hours.

Project 11A Advance Payload Development supports the Army's transformation by developing payloads for brigade combat team, division, and corps UASs in accordance with Headquarters Department of the Army and Training and Doctrine Command UAS priorities. The Synthetic Aperture Radar/Ground Moving Target Indicator (SAR/GMTI) payload will provide a wide-area search capability with a built-in imaging mode that provides essential all-weather surveillance and increased situational awareness. The SAR/GMTI payload is a complementary system of the Army's Future Combat System (FCS) Class IV UAV and is a principal payload for the Extended Range Multi-Purpose (ERMP) UAS. The EO/IR w/Laser Designator (LD) is currently in development for the ERMP system and has potential application to other platforms. The EO/IR/LD will provide a day/night capability to collect and display continuous imagery with the ability to designate targets of interest for attack by laser guided precision weapons. Additional initiatives will continue to focus on the transition of technologies directly supporting emerging requirements and the Army's Current and Future Force.

Project 11B Tactical SIGINT Payload (TSP) is an Unmanned Aerial Vehicle (UAV) mounted SIGINT sensor that detects radio frequency (RF) emitters. TSP, a key FCS component, is capable of providing the Brigade Combat Team (BCT) Land Commander with an overwatch and a penetrating SIGINT system capable of detecting, identifying, locating, and providing geolocation information on RF emitters throughout the Area of Operations (AO). The BCT commander will deploy TSP to provide sensor coverage where FCS ground vehicles cannot perform the SIGINT mission due to radio line of sight blockage. TSP is developing sensors for BCT applications to detect low-power radio emitters. The SIGINT payload is scalable and designed to provide maximum flexibility for the BCT mission profile. TSP will provide near real time (NRT) actionable intelligence that can

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational system development**

**0305204A - Tactical Unmanned Aerial Vehicles**

immediately be used in the commanders decision cycle. The TSP electronic emitter information will be correlated with data from other systems, e.g. Prophet and Aerial Common Sensor (ACS) to provide precise targeting information for immediate engagement. The TSP sensors are critical to providing full coverage Intelligence, Surveillance and Reconnaissance (ISR) information for Future Force capabilities for FCS and contributing to the Joint ISR net.

Project 123 JTC/SIL is a joint facility that develops, integrates and supports the enhancement of its Multiple Unified Simulation Environment (MUSE) capability for Army systems and operational concepts. The JTC/SIL conducts prototype hardware and software development (i.e. TUAV Tactical Unmanned Control System (TUCS), TUAV Institutional Mission Simulation (IMS) Trainer, TUAV C4I module), modeling and simulation support. The MUSE develops real-time, operator in-the-loop simulations that are capable of tactical Hardware-In-the-Loop (HWIL) interoperability for multiple intelligence systems, that may be integrated with larger simulations in support of Service training and exercises. MUSE provides a realistic operational environment, supporting a wide range of C4I applications. This project funds the management of the JTC/SIL and MUSE enhancements.

Project D09 Extended Range Multi-Purpose (ERMP) UAS provides much improved real-time responsive capability to conduct long-dwell, wide area reconnaissance, surveillance, target acquisition, communications relay, and attack missions (4 HELLFIRE). ERMP addresses an ever-increasing demand for greater range, altitude, endurance and payload flexibility and allows for mission change while in flight. ERMP will be fielded as a system to a company level organization with one company being assigned to each of the 10 Army Divisions. This will provide a capability that is responsive to the lowest level of command facilitating dynamic re-tasking. The ERMP system consists of 12 aircraft with Electro-Optical/Infrared, Synthetic Aperture Radar, and communications relay payloads, Ground equipment includes 5 Ground Control Stations, 5 Ground Data Terminals, 2 Portable Ground Control Stations, 2 Portable Ground Data Terminals, and other associated ground support equipment. The acquisition strategy capitalized upon competitive forces, bringing cutting-edge improvements at the best cost and value that support the major thrusts of the DoD UAS Roadmap, and the imperatives of Army modernization and Army Aviation Transformation. The ERMP system includes a heavy fuel engine, endurance of 30 hours, TC DL, network connectivity that reduces information cycle time and enhances overall battlespace awareness through liberal dissemination, teaming with manned platforms, and steps toward integration of UAS into national and international airspace. ERMP has a 3,200 pound gross take off weight (with growth to 3,600 pounds), Fowler flaps which improve take-off and landing performance, Automatic Take-off and Landing (ATLS) and the flexibility to operate with or without SATCOM data links. The ERMP One System Ground Control Station has the ability to operate multiple ERMP aircraft simultaneously and is interoperable with the Shadow UAS.

Project D10 The Small Unmanned Aircraft System (SUAS) program provides the ground maneuver battalions and below with unprecedented situational awareness and enhanced force protection. SUAS is a man portable unmanned aircraft system capable of handling a wide variety of ISR tasks at Battalion and below. The SUAS aircraft has a wingspan of 4.5 feet and weighs 4.2 pounds. It is hand-launched, and provides aerial observation, day or night, at line-of-sight ranges up to 10 kilometers. The aircraft has an endurance rate of 90 minutes and can deliver color or infrared imagery in real time to the ground control and remote viewing stations. SUAS obtained Milestone C approval 6 Oct 05 and successfully completed IOT&E Jun 06. The program obtained Full Rate Production authority 5 Oct 06.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0305204A - Tactical Unmanned Aerial Vehicles</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	100854	50976	35224
Current BES/President's Budget (FY 2010)	188257	103930	232021
Total Adjustments	87403	52954	196797
Congressional Program Reductions		-346	
Congressional Rescissions			
Congressional Increases		53300	29500
Reprogrammings	87403		
SBIR/STTR Transfer			
Adjustments to Budget Years			167297

Change Summary Explanation: Funding - FY 08: Funds reprogrammed to support TUAVS programs. FY 2010: Base funding increase to support Extended Range UAV, Tactical UAV and TSP development. Also anticipated FY 10 Overseas Contingency Operations supplemental request increase.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305204A - Tactical Unmanned Aerial Vehicles</b>			<b>PROJECT</b> <b>114</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
114 Tactical Unmanned Aerial Vehicle (TUAV) (MIP)	20277	12169	70773	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** The Tactical Unmanned Aerial Vehicle (TUAV) Shadow 200 provides the Army Brigade Commander with dedicated Reconnaissance, Surveillance and Target Acquisition (RSTA), Intelligence, Battle Damage Assessment (BDA) and Force Protection. The Shadow provides the Brigade Commander with critical battlefield intelligence and targeting information in the rapid cycle time required for success at the tactical level. The TUAV Shadow system air vehicle meets the required operating range of 50 kilometers and remains on station for up to five hours. The baseline fielded payload is electro-optic infrared (EO/IR). Procurement of attrition air vehicles originated in FY 01 and was re-established in FY 06. The TUAV Shadow system consists of four air vehicles, (each configured with an EO/IR sensor payload), launcher and ground control and support equipment including: power generation, communications equipment, automated recovery equipment, one system remote video terminals, vehicle mounted shelters, and High Mobility Multipurpose Wheeled Vehicles with trailer(s). Each system is equipped with one Maintenance Section Multifunctional (MSM) Vehicle and is supported at the division level by a Mobile Maintenance Facility (MMF).

The TUAV has logged over 360,000 flight hours since Jun 01, most of which were flown in support of Operation Iraqi Freedom and Operation Enduring Freedom. Block upgrades are required for continued improvement and interoperability. Common Systems Integration is required to ensure interoperability with other weapon systems, manned and unmanned. Included in this category is Universal Ground Control Station (UGCS), Trainer upgrades and One System Remote Video Transceiver (OSRVT). Small Sense and Avoid System (SSAASy) is required to meet the requirement for a traffic alert and collision avoidance system and to allow for operations in the National Airspace (NAS). Rolling Take Off and Launch and Land Heavier Air Vehicle (LALHAV) is required to improve reliability and provides redundant take off capability for the system. Intelligence, Surveillance, and Reconnaissance Surge funding for development of an extended wing is required for weight growth from Tactical Common Data Link (TCDL) and increased endurance.

FY 2010 Overseas Contingency Operations (OCO) supplemental request will fund the continuing development of the RQ-7 Shadow TUAV.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Base: Program Management Support	304	350	234
Base: OIF Improvements	1400	1200	5665
Base: Re-wing (extended wing)	10600		
Base: Launch and Land Heavier Air Vehicle (LALHAV)	2000		
Base: Small Sense and Avoid System (SSAASy)		3908	
CBase: ommunications Relay			
Base: Test Support (TCDL - Tactical Common Data Link)	3043	5782	2021

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0305204A - Tactical Unmanned Aerial Vehicles</b>	<b>PROJECT</b> <b>114</b>	
Inclement WX Capability	1000		
Common System Integration (UGCS, Trainers, OSRVT)	750	231	31524
Base: Rolling Take Off	470		
OBase: ther Government Agencies (OGA)	710	698	1829
FY 10 OCO: Shadow Encryption			29500
<b>Total</b>	<b>20277</b>	<b>12169</b>	<b>70773</b>

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
TUAV Procurement/ OPA (BA0330)	547668	2		Continuing	Continuing
TUAV Procurement/ APA (A00015)			172545		230644
Initial Spares - TUAV (BS9738)	2980	2618	2752	Continuing	Continuing

Comment:

**C. Acquisition Strategy** A System Capability Demonstration (SCD) was conducted with four contractors. The results from the SCD in conjunction with proposal evaluations resulted in the competitive down select of a Best Value TUAV system. A successful Milestone II ASARC was conducted 21 Dec 99, and a TUAV LRIP contract was awarded to AAI Corporation 27 Dec 99. In order to accelerate fielding of the TUAV system, a second LRIP for four systems was awarded 30 Mar 01 following a successful OPTEMPO test. In order to maintain accelerated fielding and continue ramp up to full rate production, a third LRIP was awarded in Mar 02. A successful LRIP program led to a MS III decision 25 Sep 02. The full rate production contract was awarded 27 Dec 02. Continued development of the selected TUAV system will be accomplished through a series of modifications and retrofits such as Tactical Common Data Link (TCDL), Communications Relay, Laser Designator, and reliability upgrades.



# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0305204A - Tactical Unmanned Aerial Vehicles							114		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Base: Target Location Error (TLE) / TCDL/JTRS / Laser Designator	SS/CPFF	AAI Corporation, MD	52200								37369	36593
Base: OIF Improvements (Blue Force Tracker, 1101 Engine Upgrade, System Upgrades/Block Upgrades)	SS/CPFF	AAI Corporation, MD	12518	1400	2Q	1200	2Q	5665	2Q		20783	12449
Base: Re-Wing	SS/CPFF	AAI Corporation, MD / Other Government Agency		10600	4Q						10600	1500
Base: Common System Integration (UCGS, Trainers, OSRVT)	SS/CPFF	AAI Corporation, MD / Other Government Agency	6332	750	2Q	231	2Q	31524	2Q		38837	
Base: LALHAV	SS/CPFF/MIP R	AAI Corporation, MD / Other Government Agency		2000	2-3Q						2000	
Base: Small Sense and Avoid System (SSAASy)	SS/CPFF/MIP R	AAI Corporation, MD/Other Government Agency				3908	2Q				3908	
FY 10 OCO: Shadow Encryption								29500	2-4Q		29500	
Subtotal:			71050	14750		5339		66689			142997	50542
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/CPFF	Various Contractors	10711	406	1-2Q	412	1-2Q	1079	1-2Q	Cont.	Cont.	Cont.
Government Engineering Support	MIPR	AMRDEC & IMMC, Redstone Arsenal, AL	7704	304	1-2Q	286	1-2Q	750	1-2Q	Cont.	Cont.	Cont.
Government Engineering Support - Extended Range	MIPR	AMRDEC, Redstone Arsenal, AL	1476		2Q						1476	1476

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY				PE NUMBER AND TITLE						PROJECT			
<b>7 - Operational system development</b>				<b>0305204A - Tactical Unmanned Aerial Vehicles</b>						<b>114</b>			
Subtotal:				19891	710		698		1829		Cont.	Cont.	Cont.
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
Rolling Take Off	MIPR	Various	16345	1470	2Q					Cont.	Cont.	Cont.	
Development Testing/ TCDL - Tactical Common Data Link	MIPR	Various	6928	3043	2Q	5782	2Q	2021	1-2Q		17774	4354	
Subtotal:				23273	4513		5782		2021		Cont.	Cont.	Cont.
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Personnel	MIPR	PM UAS, Redstone, AL	9139	304	1-4Q	350	1-4Q	234	1-4Q	Cont.	Cont.	Cont.	
Subtotal:				9139	304		350		234		Cont.	Cont.	Cont.
<b>Project Total Cost:</b>				<b>123353</b>	<b>20277</b>		<b>12169</b>		<b>70773</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT																		
<b>7 - Operational system development</b>		<b>0305204A - Tactical Unmanned Aerial Vehicles</b>																<b>114</b>																		
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
OIF Improvements (System Upgrades, Block Upgrades, Rewing, LALHAV)	OIF								Block Upgrades/P3I																											
Small Sense and Avoid System (SSAASy)	SSAASy																																			
Common System Integration (UGCS, Trainers, OSRVT)	UGCS/OSRVT																																			
Rolling Take Off	ST&E																																			
Test Support / TCDL - Tactical Common Data Link	Test ing																																			

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
<b>7 - Operational system development</b>		<b>0305204A - Tactical Unmanned Aerial Vehicles</b>						<b>114</b>
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
OIF Improvements (System Upgrades, Block Upgrades, Rewing, LALHAV)	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
Small Sense and Avoid System (SSAASy)	2Q - 4Q	1Q - 4Q						
Common System Integration (UGCS, Trainers, OSRVT)	2Q - 4Q	1Q - 4Q	1Q - 2Q					
Rolling Take Off	2Q - 4Q	1Q - 3Q						
Test Support / TCDL - Tactical Common Data Link	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0305204A - Tactical Unmanned Aerial Vehicles</b>			<b>PROJECT</b> <b>11A</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
11A Advanced Payload Develop & Spt (MIP)	40254	25654	49651	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This project supports the Army's transformation by developing payloads for brigade combat team, division, and corps Unmanned Air Vehicles (UAV) and unmanned systems in accordance with Headquarters Department of the Army (HQDA) and Training and Doctrine Command (TRADOC) UAV priorities. The Synthetic Aperture Radar/Ground Moving Target Indicator (SAR/GMTI) payload will provide a wide-area search capability with a built-in imaging mode that provides essential all-weather surveillance and increased situational awareness. The SAR/GMTI payload is a complementary system of the Army's Future Combat System (FCS) Class IV UAV and is a principal payload for the Extended Range/Multi-Purpose (ER/MP) UAV. The Electro Optical Infra Red w/Laser Designator (EO/IR/LD) Common Sensor Payload (CSP) is being developed at the direction of the Vice Chief of Staff of the Army for the ER/MP system and has potential application to other platforms. The EO/IR/LD CSP will provide a day/night capability to collect and display continuous imagery with the ability to designate targets of interest for attack by laser guided precision weapons. Additional initiatives will continue to focus on the transition of technologies directly supporting emerging requirements and the Army's Current and Future Force.

The Enhanced Tactical Signals Intelligence (SIGINT) Payload (ETSP) is the second increment of an Unmanned Aerial System (UAS) mounted SIGINT sensor that detects radio frequency (RF) emitters. ETSP, through handoff from the Combat Aviation Brigade (CAB), is capable of providing the Brigade Combat Team (BCT) Land Commander with an overwatch and penetrating SIGINT system capable of detecting, identifying, locating, and providing geolocation information on RF emitters throughout the Area of Operations (AO). After FY2009, future year funding is carried in PE 0305204A-11B.

Fiscal Year 2010 base funding in the amount of \$49.651 million continues the system integration and Increment 1 enhancements of the SAR/GMTI payload, and follow-on testing and HD/TLA upgrades of the EO/IR/LD Common Sensor Payload.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Common Sensor Payload (EO/IR/LD) Effort, includes NRE, prototypes, integration and testing efforts.	40055	10554	7100
LYNX II Integration Support	199		
Enhanced Tactical SIGINT NRE		4100	
SAR/GMTI Increment 1 Performance Enhancements and Platform Integration		11000	11855
Common Sensor Payload (EO/IR/LD) HD/TLA Upgrade NRE			30696
<b>Total</b>	<b>40254</b>	<b>25654</b>	<b>49651</b>

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Advanced TUAV Payloads (B00302)	42135	141988			184123

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT
<b>7 - Operational system development</b>	<b>0305204A - Tactical Unmanned Aerial Vehicles</b>			<b>11A</b>
Payload UAV (A00020)			167424	609793
Tactical Unmanned Aerial Vehicles (0305204A/11B)			21647	777217
				21647

Comment: 1) Funding for the Tactical SIGINT Payload (TSP) Development in prior and future years is carried in the project D11B of this PE.  
 2) B00302 funding moved to APA line A00020 beginning FY 2010.

**C. Acquisition Strategy** The System Development and Demonstration (SDD) contract for the SAR/GMTI Payload was competitively awarded 1QFY04 for the design/modification and fabrication of SDD articles. The SAR/GMTI SDD articles will be provided to ER/MP for integration and testing.

The SDD contract for the EO/IR/LD was competitively awarded in 3rd quarter FY05 for 10 test articles. After combined development and operational testing, the SDD articles were provided to the ER/MP program for system integration and test.

An acquisition strategy based on a full and open competition for the Army Common Sensor Payload program was briefed and approved at the Army Systems Acquisition Review Council (ASARC) in Dec 06. A competitive contract was awarded in Nov 07 for the design, build, test and delivery of 27 Common Sensor Payloads.

TSP System Development and Demonstration (SDD) Phase for Future Combat Systems (FCS) requirements was completed in FY08. The SIGINT requirement for FCS was moved to Objective and funding removed in FY08. As such, prototype deliveries for TSP fulfilled an operational requirement with USSOCOM.

TSP for MQ-1C ERMP UAS or Enhanced TSP (ETSP) is the second increment for the TSP program. Due to additional performance requirements, it will be based on a full and open competitive solicitation. Increment II will be focused on starting with a mature TRL 6+ sensor that meets the Increment I requirements. It will be upgraded via Non-Recurring Engineering (NRE) in an EMD phase to meet the full set of threshold SIGINT requirements for the MQ-1C ERMP UAS. Following the EMD phase, a Milestone C decision will be sought to move into full rate production and to meet the fielding timelines of the MQ-1C ERMP UAS platform.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0305204A - Tactical Unmanned Aerial Vehicles							11A		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Common Sensor Payload NRE and Hardware	COMP, FFP/CPFF	Raytheon, McKinney, TX	11000	17536	1-4Q	2484	1-4Q	400	1-4Q	Cont.	Cont.	
SAR/GMTI System Development & Demonstration/Refurbishment and Integration	COMP, CPIF	General Atomics, San Diego, CA	25586	199	1-4Q						25785	26869
Tactical SIGINT Payload NRE	TBD, CPFF	TBD				3300	4Q				3300	4100
SAR/GMTI Increment 1 Enhancement	CPFF	Northrop Grumman, Linthicum, MD				3223	2-4Q	2832	1-4Q	Cont.	Cont.	
Common Sensor Payload (EO/IR/LD) HD/TLA Upgrade NRE	CPFF	Raytheon, McKinney, TX						30696	2-4Q	Cont.	Cont.	
Subtotal:			36586	17735		9007		33928		Cont.	Cont.	30969
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
ARH Integration Support	MIPR	Various		12593	1-4Q						12593	
ERMP Integration Support	MIPR	Various		4981	1-4Q	11531	1-4Q	9400	1-4Q		25912	
Subtotal:				17574		11531		9400			38505	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Common Sensor Payload Testing	MIPR	TBD		401	1-4Q	3574	1-4Q	1797	1-4Q	Cont.	Cont.	
SAR/GMTI Increment 1 Verification Testing	MIPR	TBD					1-4Q	3591	1-4Q	Cont.	Cont.	
Subtotal:				401		3574		5388		Cont.	Cont.	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0305204A - Tactical Unmanned Aerial Vehicles</b>	PROJECT <b>11A</b>
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Remarks: Government, contractor, and test support for UAV testing contained in the ER/MP Platform.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Mgmt Personnel	In House	PM RUS, Ft. Monmouth, NJ	4340	4544	1-4Q	742	1-4Q	935	1-4Q	Cont.	Cont.	
Program Mgmt Personnel	Multiple/ In House	PM ACS, Ft. Monmouth, NJ				800	1-4Q			Cont.	Cont.	
Subtotal:			4340	4544		1542		935		Cont.	Cont.	
<b>Project Total Cost:</b>			<b>40926</b>	<b>40254</b>		<b>25654</b>		<b>49651</b>		<b>Cont.</b>	<b>Cont.</b>	<b>30969</b>



# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
<b>7 - Operational system development</b>	<b>0305204A - Tactical Unmanned Aerial Vehicles</b>																<b>11A</b>															
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SAR/GMTI SDD & UAV Systems Integration & Test																																
SAR/GMTI Qual Test																																
SAR/GMTI Increment 1 Enhancements																																
(1) Common Sensor Payload Award																																
Common Sensor Payload Incr 1 Engr/Hdwe Efforts																																
CSP Qual Test																																
CSP Payload DT																																
CSP/ ERMP Integrated DT/OT																																
Common Sensor Payload (EO/IR/LD) HD/TLA Upgrade NRE																																
ER/MP System Payload IOT&E (PM MAE program)																																
Enhanced Tactical SIGINT Payload (ETSP) NRE																																

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
<b>7 - Operational system development</b>		<b>0305204A - Tactical Unmanned Aerial Vehicles</b>						<b>11A</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
SAR/GMTI SDD & UAV Systems Integration & Test	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
SAR/GMTI Qual Test		3Q							
SAR/GMTI Increment 1 Enhancements		2Q - 4Q	1Q - 4Q						
Common Sensor Payload Award	2Q								
Common Sensor Payload Incr 1 Engr/Hdwe Efforts	1Q - 4Q	1Q - 4Q	1Q - 4Q						
CSP Qual Test		2Q - 3Q							
CSP Payload DT		2Q - 3Q							
CSP/ ERMP Integrated DT/OT			4Q	1Q					
Common Sensor Payload (EO/IR/LD) HD/TLA Upgrade NRE				1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
ER/MP System Payload IOT&E (PM MAE program event)					2Q				
Enhanced Tactical SIGINT Payload (ETSP) NRE		4Q	1Q - 4Q						

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305204A - Tactical Unmanned Aerial Vehicles</b>			<b>PROJECT</b> <b>11B</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
11B TSP DEVELOPMENT (MIP)			21647	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Tactical Signals Intelligence (SIGINT) Payload (TSP) is an Unmanned Aerial System (UAS) mounted SIGINT sensor that detects radio frequency (RF) emitters. TSP, through handoff from the Combat Aviation Brigade (CAB), is capable of providing the Brigade Combat Team (BCT) Land Commander with an overwatch and penetrating SIGINT system capable of detecting, identifying, locating, and providing geolocation information on RF emitters throughout the Area of Operations (AO). The BCT commander will deploy TSP to provide sensor coverage where FCS ground vehicles cannot perform the SIGINT mission due to radio line of sight blockage. TSP is developing sensors for BCT applications to detect low-power radio emitters. The SIGINT payload is scalable and designed to provide maximum flexibility for the BCT mission profile. TSP will provide near real time (NRT) actionable intelligence that can immediately be used in the commander's decision cycle. The TSP electronic emitter information will be correlated with data from other systems, e.g. Prophet and Aerial Common Sensor (ACS) to provide precise targeting information for immediate engagement. TSP will also be able to provide Airborne Precision Geolocation (APG) against high value targets. TSP sensors are critical to providing coverage Intelligence, Surveillance, and Reconnaissance (ISR) / Reconnaissance Surveillance, and Target Acquisition (RSTA) information and contributing to the Joint ISR net. This is not a New Start in 2010. Prior year funding was carried in PE 0305204A-11A. FY2010 funding supports Non-Recurring Engineering (NRE), Test, and Production Decision Support for Increment II for Enhanced TSP (ETSP).

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Enhanced TSP (ETSP) for the MQ-1C ERMP UAS			21647
Total			21647

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
NSA MIP (TSP)	6739	6433	683		13855
Project B00302 Advanced Payload Develop & Spt (MIP)			14832		14832
0305204A 11A Tactical SIGINT Payload		4100			4100

Comment: FY09 ETSP Engineering and Manufacturing Development (EMD) contract was funded in the 0305204A 11A line.

**C. Acquisition Strategy** TSP System Development and Demonstration (SDD) Phase for Future Combat Systems (FCS) requirements was completed in FY08. The SIGINT requirement for FCS was moved to Objective and funding removed in FY08. As such, prototype deliveries for TSP fulfilled an operational requirement with USSOCOM.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT

**11B**

TSP for MQ-1C ERMP UAS or Enhanced TSP (ETSP) is the second increment for the TSP program. Due to additional performance requirements, it will be based on a full and open competitive solicitation. Increment II will be focused on starting with a mature TRL 6+ sensor that meets the Increment I requirements. It will be upgraded via Non-Recurring Engineering (NRE) in an EMD phase to meet the full set of threshold SIGINT requirements for the MQ-1C ERMP UAS. Following the EMD phase, a Milestone C decision will be sought to move into full rate production and to meet the fielding timelines of the MQ-1C ERMP UAS platform.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0305204A - Tactical Unmanned Aerial Vehicles</b>								<b>11B</b>	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
ETSP EMD Contract	CPFF	TBD	22657					15497	2Q		38154	
ERMP Integration	TBD	Multi/TBD						3000	2Q		3000	
Subtotal:			22657					18497			41154	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	FFP	MITRE, McLean, VA	1573					450	2Q		2023	
Matrix Support	MIPR	CERDEC, Fort Monmouth NJ	2125					800	2Q		2925	
Engineering Support	FFP	CACI, Eatontown, NJ	3142								3142	
Engineering Support	FFP	Various	440								440	
EMD Engineering Support	MIPR	Various, Ft Monmouth, NJ	3092								3092	
Subtotal:			10372					1250			11622	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support	MIPR	TBD	4139					1400	2Q		5539	
Continuous Evaluation	MIPR	ATEC, Ft Belvoir, VA	500					500	2-3Q		1000	
Test Platform for DT/OT	CPAF	TBD	4733								4733	
Subtotal:			9372					1900			11272	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0305204A - Tactical Unmanned Aerial Vehicles</b>	PROJECT <b>11B</b>
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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management	In House support	PM, Aerial Common Sensors, Fort Monmouth, NJ	2092								2092	
Subtotal:			2092								2092	

<b>Project Total Cost:</b>	<b>44493</b>					<b>21647</b>					<b>66140</b>	
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# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
<b>7 - Operational system development</b>		<b>0305204A - Tactical Unmanned Aerial Vehicles</b>																<b>11B</b>														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ETSP Engineering and Manufacturing Development (EMD)																																
(1) ETSP Award																																
Non-Recurring Engineering																																
(2) Preliminary Design Review																																
(3) Critical Design Review																																
Developmental Testing/Operational Testing																																
(4) Milestone C																																
ETSP Production																																

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
<b>7 - Operational system development</b>		<b>0305204A - Tactical Unmanned Aerial Vehicles</b>						<b>11B</b>
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
ETSP Engineering and Manufacturing Development (EMD)		2Q						
ETSP Award		4Q						
Non-Recurring Engineering		4Q	1Q - 4Q					
Preliminary Design Review			1Q					
Critical Design Review			2Q					
Developmental Testing/Operational Testing			2Q - 3Q					
Milestone C			4Q					
ETSP Production			4Q	1Q - 4Q	1Q - 4Q			



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305204A - Tactical Unmanned Aerial Vehicles</b>			<b>PROJECT</b> <b>123</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
123 JOINT TECHNOLOGY CENTER SYSTEM INTEGRATION (MIP)	2230	2351	4411	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Joint Technology Center/System Integration Laboratory (JTC/SIL) is a joint facility that develops, integrates and supports the enhancement of its Multiple Unified Simulation Environment (MUSE) capability for Army systems and operational concepts. The JTC/SIL conducts prototype hardware and software development, the UAS Institutional Mission Simulator (IMS) trainer for the Shadow, Hunter, and ERMP programs, and modeling and simulation support. The MUSE is a real-time, operator in-the-loop simulation that may be integrated with larger simulations in support of Army and Joint training and exercises. The MUSE is also employed as a Mission Rehearsal Tool for ongoing combat operations. This project funds the management of the JTC/SIL and MUSE enhancements.

This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Product Development	1836	1959	1886
Support cost in support of OSD Joint Interoperability Requirements			2000
Management Services	394	392	525
Total	2230	2351	4411

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PE 0305204N Navy	1700	1700	1700	Continuing	Continuing
PE 0305205F Air Force	2000	2000	2000	Continuing	Continuing

Comment: Comment: The JTC/SIL and the MUSE receive funding from the Air Force and Navy through their POM processes. This effort is a continuing effort in support of Service UAS programs.

**C. Acquisition Strategy** Continued MUSE development will be accomplished through a combination of Government in-house functional directorate support using a variety of existing contract vehicles.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0305204A - Tactical Unmanned Aerial Vehicles</b>							<b>123</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
MUSE Development	SS/CPFF/FFP	AMC/AMCOM/AMRD EC/SED/Redstone Arsenal, AL	11422	1836		1959	1Q	1886			17103	143
Subtotal:			11422	1836		1959		1886			17103	143
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Interoperability Support	SS/CPFF/FFP	AMC/RDECOM/AMR DEC, Redstone Arsenal, AL						2000	1Q		4000	75
Subtotal:								2000			4000	75
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
JTC/SIL Management Personnel	In House	JTC/SIL/Redstone Arsenal, AL	2132	394	1-4Q	392	1-4Q	525	1-4Q		3968	1806
Subtotal:			2132	394		392		525			3968	1806

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>	PE NUMBER AND TITLE <b>0305204A - Tactical Unmanned Aerial Vehicles</b>					PROJECT <b>123</b>			
<b>Project Total Cost:</b>	<b>13554</b>	<b>2230</b>		<b>2351</b>		<b>4411</b>		<b>25071</b>	<b>2024</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305204A - Tactical Unmanned Aerial Vehicles</b>			<b>PROJECT</b> <b>D09</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
D09 EXTENDED RANGE UAV (MIP)	103448	61767	83571	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Extended Range Multi-Purpose (ERMP) Unmanned Aircraft System (UAS) provides a much improved real-time responsive capability to conduct long-dwell, wide area reconnaissance, surveillance, target acquisition, communications relay, and attack missions (4 HELLFIRE). ERMP addresses an ever-increasing demand for greater range, altitude, endurance and payload flexibility and allows for mission change while in flight. ERMP will be fielded as a system to a company level organization with one company being assigned to each of the 10 Army Divisions providing a capability that is responsive to the lowest level of command facilitating dynamic re-tasking. The ERMP system consists of 12 aircraft with Electro-Optical/Infrared, Synthetic Aperture Radar, and communications relay payloads, Ground equipment includes 5 Ground Control Stations, 5 Ground Data Terminals, 2 Portable Ground Control Stations, 2 Portable Ground Data Terminals, and other associated ground support equipment. The acquisition strategy capitalized upon competitive forces, bringing cutting-edge improvements at the best cost and value that support the major thrusts of the DoD UAS Roadmap, and the imperatives of Army modernization and Army Aviation Transformation. The ERMP system includes a heavy fuel engine, endurance of 30 mission hours, Tactical Common Data Link (TCDL) technology, network connectivity that reduces information cycle time and enhances overall battlespace awareness through liberal dissemination, teaming with manned platforms, and steps toward integration of UAS into national and international airspace. ERMP has a 3,200 pound gross take off weight (with growth to 3,600 pounds), Fowler flaps which improve take-off and landing performance, Automatic Take-off and Landing (ATLS) and the flexibility to operate with or without Satellite Communication (SATCOM) data links. The ERMP One System Ground Control Station has the ability to operate multiple ERMP aircraft simultaneously and is interoperable with the Shadow UAS.

RDT&E funds continue to resource the System Development and Demonstration (SDD) phase for ERMP, as well as continuing improvements after SDD. Engineering developmental tests and prototype production and integration frame the major FY 10 activities. These activities prepare the system and lower risk for the Limited User Test, the Logistics Demonstration event and the Operational Temp (OPTEMPO) and Initial Operational Test & Evaluation (IOT&E) events. Testing of prototype articles includes components of Electronic Environmental Effects (E3), environmental, and Nuclear, Biological, Chemical (NBC) as well as software certification, many of which run concurrently to conserve schedule.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
ER/MP System Development and Demonstration (SDD) System including Electro-Optical / Infrared, Synthetic Aperture Radar, and communications Relay Payloads	92673	46711	40180
Government Test Support including Limited User Test (LUT), Logistics Demonstration Operational Temp (OPTEMO)	3925	8706	12780
Initial Operational Test and Evaluation (IOT&E) Events			22897
Program Management	6850	6350	7714
<b>Total</b>	<b>103448</b>	<b>61767</b>	<b>83571</b>

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0305204A - Tactical Unmanned Aerial Vehicles</b>				<b>PROJECT</b> <b>D09</b>
<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
TUAV - Extended Range / Multi-Purpose - OPA (B00305) / A00005	158635	89044			247679
TUAV - Extended Range / Multi-Purpose - APA (A00005)			651364	Continuing	Continuing
Extended Range / Multi-Purpose - Weapons Capability Modifications - OPA (B10307)	15104	15079			30183
Extended Range / Multi-Purpose - Weapons Capability Modifications - APA (A00025)			14832		14832
Extended Range / Multi-Purpose - Weaponization - RDTE (D20)	3766				3766

Comment:

**C. Acquisition Strategy** The ERMP Operational Requirement Document (ORD) was approved by the Joint Requirement Oversight Council (JROC) 6 Apr 05, Milestone B occurred 20 Apr 05, and the System Development and Demonstration contract was awarded 8 Aug 05 as a result of a competitive solicitation which included a vendor system capabilities demonstration. To meet the required capability, evolutionary acquisition has been employed to implement the incremental approach outlined in the ORD. The ERMP UAS is being matured during the System Development and Demonstration (SDD) phase, which includes the development and integration of key components such as the Tactical Common Data Link (TCDL), Link-16, and integration of Government Furnished Equipment, payloads, appropriate Common Aviation Ground Support Equipment and the One System GCS. PM JAMS is developing the P+ model of the HELLFIRE missile and participate in the integration and test activities for the entire ERMP system. PM JAMS is budgeting for the procurement of missiles for the fielded systems. Field Tests at the Electronic Proving Grounds in Ft. Huachuca, AZ, and integration tests at the Central Technical Support Facility in Ft. Hood, TX, are examples of the tests planned to reduce risk in the SDD phase. A favorable Milestone C decision will permit award of the Low Rate Initial Production (LRIP) contract and Production and Deployment phase. The LRIP will:

- a. Establish an effective and efficient production base for the system required to provide a solid foundation on which to build FRP systems.
- b. Permit an orderly increase in production rate to mitigate risk.
- c. Procure production representative equipment to support test & evaluation.
- d. Support Doctrine, Training, Leadership Development, Organization, Materiel, Personnel and Facilities (DTLOMPF) and Tactics, Techniques and Procedures (TTP) development.
- e. Provide an opportunity to incorporate lessons learned from the comprehensive test and evaluation program into the production baseline.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0305204A - Tactical Unmanned Aerial Vehicles							D09		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Development Engineering & Prototype Manufacturing	C/CPIF/AF	General Atomics / ASI - San Diego, CA	203306	92673	1-3Q	46711	2Q	40180	1Q		382870	60826
Government Furnished Equipment	MIPR/REQ	Various Government Agencies	4625								4625	8494
Common System Integration	MIPR	AAI, MD and Various Government Agencies	3663								3663	
Launcher Software Development	MIPR	PM JAMS, Redstone Arsenal, AL	1000								1000	
Aviation Mission Planning Systems	MIPR	Other Government Agency	1615								1615	
Next Generation Ice Protection	MIPR	AMRDEC, Redstone Arsenal, AL	1920								1920	
Subtotal:			216129	92673		46711		40180			395693	69320
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	C/FFP	Various Contractors	5713	3985	1-2Q	3643	2Q	1896	2Q		15237	3459
Government Engineering Support	MIPR	AMRDEC and IMMC, Redstone Arsenal, AL	8691	2146	1-2Q	1961	2Q	4135	2Q		16933	2730
Subtotal:			14404	6131		5604		6031			32170	6189
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
System Test and Evaluation	MIPR	Various Government	5850	3925	2-3Q	8706	2-3Q	6749	2Q		25230	11115

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>7 - Operational system development</b>			<b>0305204A - Tactical Unmanned Aerial Vehicles</b>								<b>D09</b>	
		Agencies										
Subtotal:			5850	3925		8706		6749			25230	11115
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management Personnel	MIPR	PM UAS, Redstone Arsenal, AL	2339	719	1-4Q	746	1-4Q	7714	1-4Q		11518	1716
ER/MP System Training for Field Deployment								22897			22897	
Subtotal:			2339	719		746		30611			34415	1716
<b>Project Total Cost:</b>			<b>238722</b>	<b>103448</b>		<b>61767</b>		<b>83571</b>			<b>487508</b>	<b>88340</b>

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**7 - Operational system development**

PE NUMBER AND TITLE  
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT  
**D09**

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
System Development and Demonstration and Test																																
Operational Test									SDD																							
(1) Milestone C									OT				MS C																			
(2) Initial Rate Production													IRP																			
(3) First Unit Equipped																	FUE															
Initial Operational Test and Evaluation (IOT&E)													IOT&E																			
(4) FOTE																	FOTE															
(5) Initial Operating Capability																					IOC											



# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0305204A - Tactical Unmanned Aerial Vehicles</b>					PROJECT <b>D09</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>
System Development and Demonstration and Test	4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
Operational Test		2Q - 3Q						
Milestone C			1Q					
Initial Rate Production			3Q					
First Unit Equipped				3Q				
Initial Operational Test and Evaluation (IOT&E)				4Q				
FOTE					3Q			
Initial Operating Capability					4Q			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305204A - Tactical Unmanned Aerial Vehicles</b>			<b>PROJECT</b> <b>D10</b>	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
D10 SUAV (MIP)	22048	1989	1968	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** The Small Unmanned Aircraft System (SUAS) program provides the ground maneuver battalions and below with unprecedented situational awareness and enhanced force protection. SUAS is a man portable unmanned aircraft system capable of handling a wide variety of Intelligence, Surveillance & Reconnaissance (ISR) tasks at Battalion and below. The SUAS aircraft has a wingspan of 4.5 feet and weighs 4.2 pounds. It is hand-launched, and provides aerial observation, day or night, at line-of-sight ranges up to 10 kilometers. The aircraft has an endurance rate of 90 minutes and can deliver color or infrared imagery in real time to the ground control and remote viewing stations. SUAS obtained Milestone C approval 6 Oct 05 and successfully completed IOT&E Jun 06. The program obtained Full Rate Production authority 5 Oct 06.

Funding in FY2009-2010 will provide for engineering support by enhancing system performance through incorporation of a Digital Data Link and associated subsystem components necessary for system operation with DDL, such as improved operational capability through an increase in the number of channels and ability for frequency reuse, improved operational range through relay capability, encryption capability, capability to interface with advanced digital payloads, and greater interoperability.

FY2010 program efforts will focus on Digital Data Link (DDL) development.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Program Management Support	189	300	142
SUAS Product Development	14124	1689	1826
DARPA Heterogeneous Urban Reconnaissance Team (HURT) Phase II	7500		
Other Government Agencies (OGA)	235		
<b>Total</b>	<b>22048</b>	<b>1989</b>	<b>1968</b>

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
SUAS Procurement/OPA (B00303)	76631	57481			134112
SUAS Procurement/APA (A00010)			35008	270420	305428

Comment: \$3.952M of FY 2008 was a pass through PM UAS to Aviation Applied Technical Directorate at Ft. Eustis, VA for Integrated Vehicle Health Monitoring System.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT

**D10**

**C. Acquisition Strategy** Not applicable for this item.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational system development			0305204A - Tactical Unmanned Aerial Vehicles							D10		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering Services	C/CPFF	AeroVironment, Simi Valley, California		10172	2Q	1689	2Q	1826	2Q		13687	
Integrated Vehicle Health Monitoring System	C/CPFF	Aviation Applied Tech Directorate, FT Eustis, VA		3952	2Q						3952	
DARPA Heterogeneous Urban Reconnaissance Team (HURT) Phase II	C/CFF			7500	2Q						7500	
Subtotal:				21624		1689		1826			25139	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Other Government Agencies	MIPR	Edwards Air Force Base, CA		235	2-3Q						235	
Subtotal:				235							235	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Reliability Availability and Maintainability(RAM) Test	MIPR	RDECOM, Redstone Arsenal, AL		27	2Q						27	
Subtotal:				27							27	

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>			PE NUMBER AND TITLE <b>0305204A - Tactical Unmanned Aerial Vehicles</b>							PROJECT <b>D10</b>		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management Personnel	MIPR	PM UAS, Redstone Arsenal, AL		162	4Q	300	1-4Q	142	1-4Q		604	
Subtotal:				162		300		142			604	
<b>Project Total Cost:</b>				<b>22048</b>		<b>1989</b>		<b>1968</b>			<b>26005</b>	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0305208A - Distributed Common Ground/Surface Systems</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	128334	68662	188425	Continuing	Continuing
956 Distributed Common Ground System (DCGS) (MIP)	57736	22456	187760	Continuing	Continuing
D06 DCGS-A FUSION INTEGRATION (MIP)	24515	6604			31119
D07 DCGS-A COMMON MODULES (MIP)	34591	28066			62657
D08 DCGS-A SENSOR INTEGRATION (MIP)	10826	10871			21697
D15 MUSE & TES TADSS (MIP)	666	665	665		6634

**A. Mission Description and Budget Item Justification:** Distributed Common Ground System - Army (DCGS-A) will serve as the primary ground system of systems for airborne and ground sensor platforms. DCGS-A enables the commander to achieve situational understanding by leveraging multiple sources of data, information and intelligence to synchronize the elements of Joint and Combined Arms combat power to See First, Understand First, Act First and Finish Decisively. The core functions of DCGS-A are receipt and processing of select Intelligence, Surveillance and Reconnaissance (ISR) sensor data, control of select Army sensor systems, intelligence synchronization, ISR planning, reconnaissance and surveillance (R&S) integration, fusion of sensor information, and direction and distribution of relevant threat, non-aligned, friendly and environmental (weather and geospatial) information. DCGS-A will support three primary roles: 1. As an analyst tool set, DCGS-A provides the User a capability to collaborate, synchronize and integrate organic and non-organic direct and general support collection elements with operations; 2. As the ISR component of the Army Battle Command, DCGS-A provides the ability to discover and use all relevant threat, non-combatant, weather, and geospatial data and to evaluate technical data and information on behalf of a Commander; 3. DCGS-A provides organizational elements the ability to control select sensor platforms/payloads and process the collected data.

DCGS-A draws information from a wide variety of automated and manual sources; on-board sensors, space platforms and unattended air and ground vehicles to enable the land component commander to achieve situational understanding, execute battle command, synchronize fires and effects and rapidly shift battle focus to protect the force and employ his forces more effectively. DCGS-A allows commanders at all levels to visualize and understand the threat and environment, predict threat intentions, execute targeting through targeting support, conduct ISR integration and support Information Operations.

DCGS-A Projects D06 (Fusion Integration), D07 (Common Modules) and D08 (Sensor Integration) have been consolidated into a single DCGS-A Project (956) for ease of reporting purposes beginning in FY10. Project 956 provides the DCGS-A enterprise system level design, net-centric architecture and infrastructure, integration of the DCGS Integrated Backbone (DIB), single and Multi-Intelligence automated fusion capabilities, development of a common set of ISR analysis tools, and sensor integration to include sensor control, tasking and interoperability. Project D15 funds Training Aids, Devices, Simulators and Simulations (TADSS) for the Tactical Exploitation System (TES).

DCGS-A includes hardware for Fixed and Mobile configurations and common software that is scaleable and tailored by echelon and is interoperable with sensors, other Battlefield Operating Systems (BOS), and the DoD Distributed Common Ground/Surface System (DCG/SS) Family of Systems (FoS). Within the Brigade Combat Teams (BCTs), DCGS-A provides the Mobile ISR capability as well as an embedded software application on the Future Combat System (FCS) FoS and other select platforms. At the

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational system development**

**0305208A - Distributed Common Ground/Surface Systems**

Corps, Division and Echelons Above Corps (EAC), DCGS-A is composed of hardware and software in Mobile and Fixed site configurations. As a system of systems, DCGS-A will consolidate and replace the capabilities found in the following Current Force systems: Joint Intelligence Operations Capability-Iraq (JIOC-I), All Source Analysis System (ASAS), Counter Intelligence/Human Intelligence (CI/HUMINT) Single Source Workstation, Tactical Exploitation System (TES), Guardrail Common Sensor (GRCS) Intelligence Processing Facility (IPF), Prophet Control, Common Ground Station (CGS), Digital Topographic Support System (DTSS) and Integrated Meteorological System (IMETS), sensor control and processing of select Unmanned Aerial Vehicles (UAVs) and Enhanced Trackwolf processing capabilities. DCGS-A is a key component of Transformation and a top Army priority.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0305208A - Distributed Common Ground/Surface Systems</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	90088	57704	17639
Current BES/President's Budget (FY 2010)	128334	68662	188425
Total Adjustments	38246	10958	170786
Congressional Program Reductions		-228	
Congressional Rescissions			
Congressional Increases	5529	11186	
Reprogrammings	32717		
SBIR/STTR Transfer			
Adjustments to Budget Years			170775

Change Summary Explanation: Funding - FY08: \$5.529 million GWOT supplemental to design and build Mobile Brigade Combat Team test article to support Mobile Basic LUT. \$28.6 million reprogrammed to fund DCGS-A SPIRNET to classified programs. FY10 \$170.8M: \$147.8M increase to support continuing DCGS-A system development; \$23M to support ISR Surge.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305208A - Distributed Common Ground/Surface Systems</b>			<b>PROJECT</b> <b>956</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
956      Distributed Common Ground System (DCGS) (MIP)	57736	22456	187760	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Distributed Common Ground System - Army (DCGS-A) will serve as the primary ground system of systems for Army airborne and ground sensor platforms defined as Future Force systems. DCGS-A enables the commander to achieve situational understanding by leveraging multiple sources of data, information, and intelligence to synchronize the elements of Joint and Combined Arms combat power (maneuver, maneuver support and maneuver sustainment support). The core functions of DCGS-A are: receipt and processing of space, airborne, ground and maritime Intelligence, Surveillance and Reconnaissance (ISR) sensor data; control of select Army and joint ISR sensor systems; intelligence synchronization; ISR planning, reconnaissance and surveillance (R&S) integration; fusion of sensor information, and direction and distribution/dissemination of sensor information. It draws information from a wide variety of automated and manual sources; on-board sensors, space platforms, unattended air and ground vehicles, existing and new ISR capabilities, and an assortment of databases to enable the land component commander to execute battle command, synchronize fires and effects, rapidly shift battle focus, achieve situational understanding, protect the force, and employ forces more effectively. DCGS-A allows commanders at all levels to visualize, analyze and understand the threat and environment, predict threat intentions, execute targeting through targeting support, conduct ISR integration and support Information Operations.

This project provides for the design, development, integration and test of the DCGS-A system of systems at all echelons, from embedded DCGS-A up to Fixed Site operations. The effort includes system engineering, software integration and development, test & evaluation, and use of Modeling and Simulation (M&S) to develop DCGS-A Mobile systems with common multi-function hardware and software capable of performing all DCGS-A functions. It establishes the DCGS-A Federated Network Centric Enterprise, facilitating system integration and network-enabled capability of existing and future intelligence, surveillance and reconnaissance (ISR) ground stations, eventually consolidating these capabilities into a single system of systems. It matures DCGS-A sensor fusion and all source production capabilities, leveraging existing tools and on-going Future Combat System (FCS)/Science and Technology (S&T) developmental efforts to meet the requirements for battle management and situational awareness, intelligence preparation of the battlespace (battle damage assessments, course of action/predictive analysis, wargaming), target development (deliberate, time critical, high value/high payoff), collection/ISR management (requirement and mission), electronic warfare/countermeasures, force protection, indications and warnings, operational security, and battlefield visualization and presentation. This project also addresses ISR sensor integration and interoperability with existing and new platforms and sensors to include a common data link solution.

DCGS-A provides an enterprise level approach based on a Service Oriented Architecture (SOA) to provide Commanders' and Staffs' access to various ISR ground station information from any ground station, and data exchange between Army ISR ground stations for improved intelligence sharing and understanding. DCGS-A will achieve joint, allied and coalition interoperability through implementation of the 10.2 DCGS Integration Backbone (DIB) to access other Services data and information that is critical to the Land Component Commander.

FY10 funds design, development and test of the DCGS-A Mobile Basic configuration to include the DCGS-A Software Baseline (DSB).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue design and development of DCGS-A enterprise level net-centric architecture in support of Current and Future Force systems.	42211	5626	124416
Continue to evaluate, integrate and test new software applications and components for incorporation into the DCGS-A Software Baseline (DSB).	3775	2160	21601
Ongoing interoperability testing and evaluation to include Central Test Support Facility (CTSf) testing, Future Combat System (FCS) experimentation and integration and Joint testing and evaluation.	3050	2110	1600
Continue to migrate sensor fusion processes and Current Force systems capabilities (multi-INT sources, geospatial and weather data) into DCGS-A Service Oriented Architecture (SOA) environment. Continue development and integration of SIGINT and All Source applications and the integration framework for DCGS-A Multi-Function Workstation (MFWS). (previously Project D06)		1360	2558
Continued analysis and prototyping for porting sensor fusion mission applications into the FCS environment. (previously Project D06)			3550
Continue to develop and enhance two-way Battle Command to include Joint Command and Control (JC2) interoperability. (previously Project D07)			5665
Continue to isolate and integrate Current Force Multi-INT sensor (Human Intelligence, Imagery Intelligence, Signal Intelligence, Measurement and Signature Intelligence) modules into the DCGS-A network. Continued planning and analysis of Future Force Multi-INT sensor modules for incorporation into the DCGS-A network. (previously Project D08)			5370
Complete DCGS-A ASAS Integration.	2400		
Continue Asymmetric Threat Response and Analysis Project (ATRAP).	2400	2400	
Continue Effects Based Approach to Operations.	1000	1600	
Continue Heuristic Internet Protocol Engine.	2900	2000	
Develop Constant Look Operational Support Environment (CLOSE).		1600	
Develop Blast Risk Analysis and Mitigation Application (BRAMA).		800	
Develop Beyond Line of Sight (BLOS) Network for MASINT Sensors.		800	
Develop Silver Fox and MANTA.		2000	
Modify Intelligence Integrated Architecture (I2A) to apply cloud computing technology to operational and tactical DCGS-A architecture.			23000
Total	57736	22456	187760

<u>B. Other Program Funding Summary</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>To Compl</u>	<u>Total Cost</u>
PE 654321 All Source Analysis System (B19)(MIP)	3289	3399			6688
PE 0604321 CI/HUMINT Software Products (B41) (MIP)	3406	1716	3132		8254
K28801 ASAS Modules (MIP)	147149	58161			205310
BK5275 CI HUMINT Automated Reporting and Collection (CHARCS)(MIP)	28543	37521	38717	Continuing	Continuing
BZ7316 DCGS-A (MIP)	224271	177448	252454	Continuing	Continuing

Comment:

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0305208A - Distributed Common Ground/Surface Systems**

PROJECT

**956**

**C. Acquisition Strategy** DCGS-A will be executed via an evolutionary acquisition approach, providing incremental capability through Technology Insertion of Current Force systems and System Development and Demonstration (SDD) of Capability Demonstration Document (CDD) requirements. Each version will incorporate and validate select DCGS-A capabilities into the overall DCGS-A system baseline, emphasizing migration of current force capabilities through integrated testing and continuous evaluation opportunities.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>			PE NUMBER AND TITLE <b>0305208A - Distributed Common Ground/Surface Systems</b>							PROJECT <b>956</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Design and development of DCGS-A architecture, software baseline and mobile hardware configuration.	CPAF	Northrop Grumman		35948	2-3Q	5537	2-3Q	146490	1Q	Cont.	Cont.	Cont.
SETA Support to Visualization/Data Sharing, Modeling & Simulation	T&M	Booz-Allen, Eatontown, NJ	15225	1450	2Q					Cont.	16675	Cont.
DCGS-A Product Selection and Integration	MIPR	CERDEC/SEC, Ft. Monmouth, NJ	17270	1996	1-2Q					Cont.	19266	Cont.
SIL Software Integration	MIPR	CERDEC/RDCOM Ft. Monmouth, NJ	10285	1782	1-4Q	1252	1-4Q	1250	1-4Q	Cont.	Cont.	Cont.
Metadata Catalog	T&M	MITRE, Eatontown, NJ	6014	2460	2Q	1121	2Q	4135	2Q	Cont.	Cont.	Cont.
Asymmetric Threat Response and Analysis Project	MIPR	Battle Labs	2500	2400	2Q	2400	2Q				7300	
Effects Based Approach to Operations	MIPR	Battle Labs	1000	800	2Q	1600	2Q				3400	
DCGS-A ASAS Integration	MIPR	Battle Labs		2400	2Q						2400	
Advanced Architecture Designs for NCW	MIPR	Battle Labs		1600	2Q						1600	
Heuristic Internet Protocol Engine	MIPR	Battle Labs		1900	2Q	2000	2Q				3900	
Blast Risk Analysis and Mitigation Application	MIPR	Battle Labs	1050		2Q	800					1850	
Constant Look Operational Support Environment (CLOSE)	MIPR	Battle Labs			2Q	800					800	
Beyond Line of Sight (BLOS) Network for MASINT Sensors	MIPR	Battle Labs			2Q	800					800	
Silver Fox and MANTA	MIPR	Battle Labs			2Q	2000					2000	
ISR Surge/Cloud Development	MIPR	CERDEC/SEC, Ft Monmouth, NJ						23000			23000	
Subtotal:			53344	52736		18310		174875		Cont.	Cont.	Cont.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY				PE NUMBER AND TITLE						PROJECT		
<b>7 - Operational system development</b>				<b>0305208A - Distributed Common Ground/Surface Systems</b>						<b>956</b>		
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Objective Doctrine/TTP Development	MIPR	Ft. Huachuca, AZ	6923	100	2Q	100	2Q			Cont.	Cont.	Cont.
Matrix Support	MIPR	CECOM, Fort Monmouth NJ	5974	600	1Q	600	1Q	3765	1Q	Cont.	Cont.	Cont.
Subtotal:			12897	700		700		3765		Cont.	Cont.	Cont.
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Joint Interoperability Test and Evaluation	MIPR	CTSF, Ft. Hood	3263	250	2Q	250	2Q	250	2Q		4138	
Operational Test support for DCGS-A	MIPR	ATEC	2669	1450	2Q	2096	2Q	1450	2Q		13115	
Subtotal:			5932	1700		2346		1700			17253	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Project Management	In-House	PM, DCGS-A	7075	2600	1Q	1100	1Q	7420	1Q	Cont.	Cont.	Cont.
Subtotal:			7075	2600		1100		7420		Cont.	Cont.	Cont.
<b>Project Total Cost:</b>			<b>79248</b>	<b>57736</b>		<b>22456</b>		<b>187760</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																														
<b>7 - Operational system development</b>	<b>0305208A - Distributed Common Ground/Surface Systems</b>	<b>956</b>																														
Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Version 3.0 Fielding to OIF/OEF					Version 3.0 Fielding to OIF/OEF																											
Version 3.1 AIC					Version 3.1 AIC																											
Version 3.1 Limited User Test (LUT)					Version 3.1 LUT																											
Version 3.1 Fielding					Version 3.1 Fielding																											
Mobile Basic AIC													Mobile Basic AIC																			
Mobile Basic LUT													Mobile Basic LUT																			
(1) Mobile Basic Milestone C																	Mobile Basic Milestone C															
Mobile Basic Initial Operational Capability (IOC)																					Mobile Basic IOC											
Mobile Basic Initial Operational Test & Eval (IOT&E)																									Mobile Basic IOT&E							

# Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0305208A - Distributed Common Ground/Surface Systems</b>						PROJECT <b>956</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
Version 3.0 Fielding to OIF/OEF	2Q - 4Q	1Q - 2Q							
Version 3.1 AIC	4Q								
Version 3.1 Limited User Test (LUT)		1Q							
Version 3.1 Fielding		2Q - 4Q	1Q - 4Q	1Q - 3Q					
Mobile Basic AIC				2Q					
Mobile Basic LUT				3Q					
Mobile Basic Milestone C				4Q					
Mobile Basic Initial Operational Capability (IOC)						2Q			
Mobile Basic Initial Operational Test & Eval (IOT&E)						4Q			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305208A - Distributed Common Ground/Surface Systems</b>			<b>PROJECT</b> <b>D06</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
D06 DCGS-A FUSION INTEGRATION (MIP)	24515	6604			31119

**A. Mission Description and Budget Item Justification:** Distributed Common Ground System - Army (DCGS-A) will serve as the primary ground system of systems for airborne and ground sensor platforms defined as Future Force systems. DCGS-A enables the commander to achieve situational understanding by leveraging multiple sources of data, information, and intelligence to synchronize the elements of Joint and Combined Arms combat power (maneuver, maneuver support and maneuver sustainment support). The core functions of DCGS-A are: collection and processing of space, airborne, ground and maritime Intelligence, Surveillance and Reconnaissance (ISR) sensor data; control of select Army and joint ISR sensor systems; intelligence synchronization; ISR planning, reconnaissance and surveillance (R&S) integration; fusion of sensor information, and direction and distribution/dissemination of sensor information. It draws information from a wide variety of automated and manual sources; on-board sensors, space platforms, unattended air and ground vehicles, existing and new ISR capabilities, and an assortment of databases to enable the land component commander to execute battle command, synchronize fires and effects, rapidly shift battle focus, achieve situational understanding, protect the force, and employ his forces more effectively. DCGS-A allows commanders at all levels to visualize and understand the threat and environment, predict threat intentions, execute targeting through targeting support, conduct ISR integration and support Information Operations.

This project establishes DCGS-A sensor fusion and all source production capabilities, leveraging previously completed algorithm, on-going Future Combat System (FCS) and Science and Technology (S&T) developmental efforts to meet the requirements for battle management and situational awareness, intelligence preparation of the battlespace (battle damage assessments, course of action/predictive analysis, wargaming), target development (deliberate, time critical, high value/high payoff), collection/ISR management (requirement and mission), electronic warfare/countermeasures, force protection, indications and warnings, operational security, and battlefield visualization and presentation. The Sensor Fusion capability will address both traditional intelligence disciplines (signals intelligence, imagery intelligence, human intelligence, measurements and signatures intelligence) from organic, Theater, and National assets (systems and databases), and non-traditional sources (open source intelligence, fire support) to achieve a complete and universal understanding of the situation in support of the commander/warfighter, battle command databases, and the Common Operational Picture (COP). The sensor fusion capability will support all types of units across a broad spectrum of both traditional and non-traditional operations, and improve interoperability with Joint, Allied, and Coalition forces.

FY09 funds the development and integration of traditional and non-traditional multi-intelligence sensor fusion products and technologies into the DCGS-A Fixed, Mobile and Embedded configurations to produce a fully automated fusion capability.

Funding for this effort continues under Project 956 beginning in FY 2010.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue normalization and integration of sensor fusion process and Multi-INT sources, geospatial and weather data.	5159	2145	
Continue to enhance controlled interface technology for improved product distribution at multiple security levels.	2087	2119	



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0305208A - Distributed Common Ground/Surface Systems</b>	<b>PROJECT</b> <b>D06</b>
Continued analysis and prototyping for porting sensor fusion mission applications into the FCS environment.	1309	1043
Continue to migrate sensor fusion processes and Current Force systems capabilities into DCGS-A architecture/Service Oriented Architecture (SOA) environment.	15960	1297
<b>Total</b>	<b>24515</b>	<b>6604</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PE 654321 ASAS Evolutionary ACQ (B19) (TIARA)	3322	3411			6733
K28801 ASAS Modules	52485	58718	9992		140235

Comment:

**C. Acquisition Strategy** DCGS-A will be executed via an evolutionary acquisition approach, providing incremental capability through Technology Insertion of Current Force systems and System Development and Demonstration (SDD) of Capability Demonstration Document (CDD) requirements. Each increment will incorporate and validate select DCGS-A capabilities into the overall DCGS-A system baseline, emphasizing migration of current force capabilities through integrated testing and continuous evaluation opportunities.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305208A - Distributed Common Ground/Surface Systems</b>			<b>PROJECT</b> <b>D07</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
D07 DCGS-A COMMON MODULES (MIP)	34591	28066			62657

**A. Mission Description and Budget Item Justification:** Distributed Common Ground System - Army (DCGS-A) will serve as the primary ground system of systems for airborne and ground sensor platforms defined as Objective Force systems. DCGS-A enables the commander to achieve situational understanding by leveraging multiple sources of data, information, and intelligence to synchronize the elements of Joint and Combined Arms combat power (maneuver, maneuver support and maneuver sustainment support). The core functions of DCGS-A are: collection and processing of space, airborne, ground and maritime Intelligence, Surveillance and Reconnaissance (ISR) sensor data; control of select Army and joint ISR sensor systems; intelligence synchronization; ISR planning, reconnaissance and surveillance (R&S) integration; fusion of sensor information, and direction and distribution/dissemination of sensor information. It draws information from a wide variety of automated and manual sources; on-board sensors, space platforms, unattended air and ground vehicles, existing and new ISR capabilities, and an assortment of databases to enable the land component commander to execute battle command, synchronize fires and effects, rapidly shift battle focus, achieve situational understanding, protect the force, and employ his forces more effectively. DCGS-A allows commanders at all levels to visualize and understand the threat and environment, predict threat intentions, execute targeting through targeting support, conduct ISR integration and support Information Operations.

This project provides for the design, development, integration and test of the DCGS-A system of systems at all echelons, from embedded DCGS-A up to Fixed Site operations. The effort includes system engineering, software integration and development, test & evaluation, and use of Modeling and Simulation (M&S) to develop DCGS-A Mobile systems with common multi-function hardware and software combinations (i.e. user workstations) capable of performing all DCGS-A functions. Development will focus on common module hardware and software that is scalable to allow commanders increased flexibility in the intelligence force package deployed such that it can be tailored to the echelon, location, and mission that DCGS-A will be required to support. Included in the development will be the stand-up of a Federated Systems Integration Lab (SIL) to assess and implement existing and new candidate software applications and components into the DCGS-A baseline design. A common set of ISR Analysis Tools to support collaboration, exploitation, fusion and collection management will be developed that operate within the construct of distributed, reach operations within the DCGS-A enterprise in order to maximize data access and minimize forward footprint. This will ultimately result in a DCGS-A design that reduces physical and logistics footprint, eases training burden, and decreases sustainability requirements.

FY09 funds development of Technology Insertion modules providing DCGS-A capabilities into Current Force systems, common module multi-function hardware, Battle Command interoperability and integration and test of new software applications.

Funding for this effort continues under Project 956 beginning in FY 2010.

<b><u>Accomplishments/Planned Program:</u></b>	<b><u>FY 2008</u></b>	<b><u>FY 2009</u></b>	<b><u>FY 2010</u></b>
Continuation of Embedded DCGS-A design/analysis and Future Combat System (FCS) support.	3060	3140	
Continue to evaluate, integrate and test existing and new software applications. Integrate Best Value components from DoD wide systems into DCGS-A baseline.	6524	3350	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0305208A - Distributed Common Ground/Surface Systems</b>	<b>PROJECT</b> <b>D07</b>
Continue to develop and enhance two-way Battle Command to include Joint Command and Control (JC2) interoperability.	3135	2475
Continued Technology Insertion of Current Force capabilities into integrated DCGS-A baseline.	21872	19101
<b>Total</b>	<b>34591</b>	<b>28066</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
BZ7316 DCGS-A Unit of Employment	146632	179146	201430	Continuing	Continuing
KA2550 Digital Topographic SPT SYS (DTSS)	38591	26979	8500		74070

Comment:

**C. Acquisition Strategy** DCGS-A will be executed via an evolutionary acquisition approach, providing incremental capability through Technology Insertion of Current Force systems and System Development and Demonstration (SDD) of Capability Demonstration Document (CDD) requirements. Each increment will incorporate and validate select DCGS-A capabilities into the overall DCGS-A system baseline, emphasizing migration of current force capabilities through integrated testing and continuous evaluation opportunities.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0305208A - Distributed Common Ground/Surface Systems</b>			<b>PROJECT</b> <b>D08</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
D08 DCGS-A SENSOR INTEGRATION (MIP)	10826	10871			21697

**A. Mission Description and Budget Item Justification:** Distributed Common Ground System - Army (DCGS-A) will serve as the primary ground system of systems for airborne and ground sensor platforms defined as Future Force systems. DCGS-A enables the commander to achieve situational understanding by leveraging multiple sources of data, information, and intelligence to synchronize the elements of Joint and Combined Arms combat power (maneuver, maneuver support and maneuver sustainment support). The core functions of DCGS-A are: collection and processing of space, airborne, ground and maritime Intelligence, Surveillance and Reconnaissance (ISR) sensor data; control of select Army and joint ISR sensor systems; intelligence synchronization; ISR planning, reconnaissance and surveillance (R&S) integration; fusion of sensor information, and direction and distribution/dissemination of sensor information. It draws information from a wide variety of automated and manual sources; on-board sensors, space platforms, unattended air and ground vehicles, existing and new ISR capabilities, and an assortment of databases to enable the land component commander to execute battle command, synchronize fires and effects, rapidly shift battle focus, achieve situational understanding, protect the force, and employ his forces more effectively. DCGS-A allows commanders at all levels to visualize and understand the threat and environment, predict threat intentions, execute targeting through targeting support, conduct ISR integration and support Information Operations.

This project addresses Intelligence, Surveillance and Reconnaissance (ISR) sensor integration and interoperability with existing and new platforms and sensors to include a common data link solution.

FY09 funds integration of new and modified sensor data into DCGS-A Systems, Test and Training of the new capability.

Funding for this effort continues under Project 956 beginning in FY 2010.

<u><b>Accomplishments/Planned Program:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue to isolate and integrate Current Force Multi-INT sensor (Human Intelligence, Imagery Intelligence, Signal Intelligence, Measurement and Signature Intelligence) data into the DCGS-A network.	2859	2344	
Continued planning and analysis of Future Force Multi-INT sensor modules for incorporation into the DCGS-A network.	4276	4283	
Continue to refactor Current Force ISR capabilities in the DCGS-A infrastructure.	1606	1020	
Continued development of training materials for V3 and Mobile systems.	2085	3224	
<b>Total</b>	<b>10826</b>	<b>10871</b>	

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
BZ7316 DCGS-A Unit of Employment	146632	179146	201430	Continuing	Continuing

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

**7 - Operational system development**

PE NUMBER AND TITLE

**0305208A - Distributed Common Ground/Surface Systems**

PROJECT

**D08**

Comment:

**C. Acquisition Strategy** DCGS-A will be executed via an evolutionary acquisition approach, providing incremental capability through Technology Insertion of Current Force systems and System Development and Demonstration (SDD) of Capability Demonstration Document (CDD) requirements. Each increment will incorporate and validate select DCGS-A capabilities into the overall DCGS-A system baseline, emphasizing migration of current force capabilities through integrated testing and continuous evaluation opportunities.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0307207A - Aerial Common Sensor (ACS)</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
024      AERIAL COMMON SENSOR (MIP)			210035	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Aerial Common Sensor (ACS) is an Airborne Reconnaissance, Surveillance and Target Acquisition (RSTA)/Intelligence, Surveillance, and Reconnaissance (ISR) capability directly supporting Battlespace Awareness for tactical commanders in irregular warfare scenarios. Specifically, ACS will provide real-time, persistent, precision, networked, wide-area, high-capacity, multi-sensor intelligence collection capability throughout the joint battlespace. ACS will quickly produce actionable intelligence that provides commanders and soldiers critical shared situational understanding delivered with the speed, accuracy, and timeliness necessary to conduct successful and when necessary, lethal joint operations. ACS will support focused Intelligence Preparation of the Battlespace (IPB), Indications and Warnings (I&W), precision targeting, Battle Damage Assessment (BDA), situational development, battle command, and Force Protection. Each of these will be synchronized with operations in order to develop and maintain situational awareness and reduce clutter in the maneuver environment. ACS will be a manned, fixed-wing aircraft capable of worldwide deployment carrying multiple sensor payloads and intelligence processing, appropriate air/ground/satellite data links, and air crew (i.e., pilots and intelligence systems operators). The RSTA/ISR payload will consist of a suite of modular, scaleable Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Ground Moving Target Indicator (GMTI) and Measurement and Signature Intelligence (MASINT) sensors and processors that can operate alone or simultaneously in combination with each other (e.g., automated cross-cueing). The intelligence processing suite onboard ACS and in the ground station, provided by the Distributed Common Ground System-Army (DCGS-A), will integrate the products from all ACS Sensor payloads as well as the sensor feeds from other joint force sensors, including manned/unmanned (MUM) teaming with Army Unmanned Aircraft Systems (UAS), to provide a correlated near-real-time picture of the tactical operational environment with the greatest degree of granularity possible. Onboard communications will consist of a robust set of line-of-sight (LOS) and satellite communications (SATCOM) datalinks that will enable direct linkage to Brigade Combat Teams, Manned-Unmanned teaming with Army UAS, wideband/worldwide connectivity to DCGS and the Global Information Grid, and interoperability with other Army, Joint and National RSTA/ISR assets. ACS will be a critical and integral component of the future force.

The National Security Agency's Military Intelligence Program (MIP) provides funding to support enhanced SIGINT capabilities.

Project 024: This is not a new start. Previous years were funded through PE 0203744A - Aircraft Modifications/Product Improvement Programs Project 028

FY10 funds continued Increment 1 Technology Development (TD) efforts, oversight of two (2) TD contracts, purchase of two (2) prototype aircraft and PME, support for Government Furnished Equipment (GFE), sensor data server software development, DCGS on-board processing System Integration Lab (SIL), Test Support, Program Management Office (PMO) support.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0307207A - Aerial Common Sensor (ACS)</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)			
Current BES/President's Budget (FY 2010)			210035
Total Adjustments			210035
Congressional Program Reductions			
Congressional Recissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Adjustments to Budget Years			210035

Project 024: This is not a new start. Previous years were funded through PE 0203744A - Aircraft Modifications/Product Improvement Programs Project 028. OSD directed that this MIP program be moved to it's own separate program element, 0307207A.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0307207A - Aerial Common Sensor (ACS)</b>			<b>PROJECT</b> <b>024</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
024 AERIAL COMMON SENSOR (MIP)			210035	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Aerial Common Sensor (ACS) is an Airborne Reconnaissance, Surveillance and Target Acquisition (RSTA)/Intelligence, Surveillance, and Reconnaissance (ISR) capability directly supporting Battlespace Awareness for tactical commanders in irregular warfare scenarios. Specifically, ACS will provide real-time, persistent, precision, networked, wide-area, high-capacity, multi-sensor intelligence collection capability throughout the joint battlespace. ACS will quickly produce actionable intelligence that provides commanders and soldiers critical shared situational understanding delivered with the speed, accuracy, and timeliness necessary to conduct successful and when necessary, lethal joint operations. ACS will support focused Intelligence Preparation of the Battlespace (IPB), Indications and Warnings (I&W), precision targeting, Battle Damage Assessment (BDA), situational development, battle command, and Force Protection. Each of these will be synchronized with operations in order to develop and maintain situational awareness and reduce clutter in the maneuver environment. ACS will be a manned, fixed-wing aircraft capable of worldwide deployment carrying multiple sensor payloads and intelligence processing, appropriate air/ground/satellite data links, and air crew (i.e., pilots and intelligence systems operators). The RSTA/ISR payload will consist of a suite of modular, scaleable Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Ground Moving Target Indicator (GMTI) and Measurement and Signature Intelligence (MASINT) sensors and processors that can operate alone or simultaneously in combination with each other (e.g., automated cross-cueing). The intelligence processing suite onboard ACS and in the ground station, provided by the Distributed Common Ground System-Army (DCGS-A), will integrate the products from all ACS Sensor payloads as well as the sensor feeds from other joint force sensors, including manned/unmanned (MUM) teaming with Army Unmanned Aircraft Systems (UAS), to provide a correlated near-real-time picture of the tactical operational environment with the greatest degree of granularity possible. Onboard communications will consist of a robust set of line-of-sight (LOS) and satellite communications (SATCOM) datalinks that will enable direct linkage to Brigade Combat Teams, Manned-Unmanned teaming with Army UAS, wideband/worldwide connectivity to DCGS and the Global Information Grid, and interoperability with other Army, Joint and National RSTA/ISR assets. ACS will be a critical and integral component of the future force.

The National Security Agency's Military Intelligence Program (MIP) provides funding to support enhanced SIGINT capabilities.

This is not a new start. Previous years were funded through PE 0203744A - Aircraft Modifications/Product Improvement Programs Project 028

FY10 funds continued Increment 1 Technology Development (TD) efforts, oversight of two (2) TD contracts, purchase of two (2) prototype aircraft and PME, support for Government Furnished Equipment (GFE), Sensor Data Server software development, DCGS on-board processing System Integration Lab (SIL), Test Support, and Program Management Office (PMO) support.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continued Increment 1 Technology Development (TD) contracts, purchase of two (2) prototype aircraft and PME, Government Furnished Equipment (GFE) support, continues sensor data server software development and DCGS on-board processing SIL			180997
Oversight of TD contracts, and test support and PMO support.			29038



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>	<b>PE NUMBER AND TITLE</b> <b>0307207A - Aerial Common Sensor (ACS)</b>	<b>PROJECT</b> <b>024</b>
Total		210035

<u><b>B. Other Program Funding Summary</b></u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
ACS NSA MIP			2094	Continuing	Continuing
CHALS NSA MIP			1777	Continuing	Continuing
GRCS NSA MIP			2885	Continuing	Continuing
Army PE 0203744A Project 028	12581	170960			183541

Comment: FY10 National Security Agency (NSA) Military Intelligence Program (MIP) funding provides for the development of ACS core SIGINT technologies.

**C. Acquisition Strategy** The Aerial Common Sensor (ACS) Capabilities Development Document (CDD) was approved by the Joint Requirements Oversight Council (JROC) on 25 November 2008. ACS development will be achieved on an incremental basis. A competitive award of two (2) Cost Plus Fixed Fee (CPFF) contracts is planned for the Increment 1 Technology Development (TD) phase in FY09. The TD phase will reduce risk through demonstration of system prototype flight demonstrations. Following the TD phase a single contractor will continue through EMD. As the development program evolves, future competitive opportunities will be assessed.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0307207A - Aerial Common Sensor (ACS)</b>							<b>024</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Increment 1 TD efforts	CPFF	TBD						149397	4Q		149397	
DCGS on-board processing SIL	TBD	TBD						27000	1-2Q		27000	
Multi-Role-Tactical Common Data Link (Support)	SS	L-3 Communications, Salt Lake City, UT						600	1Q		600	
Subtotal:								176997			176997	
Remarks: This is not a new start. Previous were years funded through PE 0203744A - Aircraft Modifications/Product Improvement Programs Project 028												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Sensor Data Server Software Development	TBD	I2WD Ft. Monmouth, NJ						4000	1-2Q		4000	
Subtotal:								4000			4000	
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support	MIPR	Gov't/various						5400	1-2Q		5400	
Subtotal:								5400			5400	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PMO Staff/travel/O/H expenses	In-House	PM, AC Sensors: Ft. Monmouth, NJ;						6550	1-4Q	Cont.	Cont.	Cont.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0307207A - Aerial Common Sensor (ACS)</b>							<b>024</b>		
		Aberdeen, MD										
Program SETA Support	C-T&M	CACI NJ/ DC						3200	1-2Q	Cont.	Cont.	Cont.
SETA Mgmt Support	Kr, Various	Multiple						3188	1-3Q	Cont.	Cont.	Cont.
Engineering SETA Support	Kr; various	Multiple						4100	1-2Q	Cont.	Cont.	Cont.
Gov't Matrix Support	MIPR	Ft. Monmouth, NJ						3400	1-2Q	Cont.	Cont.	Cont.
Govt Matrix Support	MIPR/CPFF	Multiple						3200	1-2Q	Cont.	Cont.	Cont.
Subtotal:								23638		Cont.	Cont.	Cont.
<b>Project Total Cost:</b>								<b>210035</b>		<b>Cont.</b>	<b>Cont.</b>	<b>Cont.</b>

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
7 - Operational system development

PE NUMBER AND TITLE  
0307207A - Aerial Common Sensor (ACS)

PROJECT  
024

Event Name	FY 08				FY 09				FY 10				FY 11				FY 12				FY 13				FY 14				FY 15			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(1) CDD Approval					▲ CDD Approval																											
RFP Process and Source Selection Activities					RFP/SSEB																											
Milestone Preparation Activities					MS Prep																											
(2) Milestone A Decision									▲ MDD/MS A																							
ACS Increment 1 Technology Development Phase									Increment 1 TD Phase																							
(3) Milestone B													▲ MS B																			
EMD Phase													EMD Phase																			
(4) Milestone C																									▲ MSC							

## Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0307207A - Aerial Common Sensor (ACS)</b>						PROJECT <b>024</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	
CDD Approval		1Q							
RFP Process and Source Selection Activities	1Q - 4Q	1Q - 4Q							
Milestone Preparation Activities	1Q - 4Q	1Q - 4Q							
Milestone A Decision		4Q							
ACS Increment 1 Technology Development Phase		4Q	1Q - 4Q	1Q - 4Q	1Q				
Milestone B					1Q				
EMD Phase					1Q - 4Q	1Q - 4Q	1Q - 4Q		
Milestone C							4Q		

This is not a new start. Previous years were funded with PE 0203744A - Aircraft Modifications/Product Improvement Programs Project 028 Aerial Common Sensor (ACS).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**May 2009**

BUDGET ACTIVITY <b>7 - Operational system development</b>		PE NUMBER AND TITLE <b>0702239A - Avionics Component Improvement Program</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
C92 AVIONICS COMPONENT ANALYSIS	989	1019			2008

**A. Mission Description and Budget Item Justification:** The Avionics Component Improvement Program (AvCIP) is a Joint Services initiative to combat parts obsolescence, improve reliability, safety and accelerate technology infusion into avionics programs.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0702239A - Avionics Component Improvement Program</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	1017	1023	
Current BES/President's Budget (FY 2010)	989	1019	
Total Adjustments	-28	-4	
Congressional Program Reductions		-4	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-28		
Adjustments to Budget Years			

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> 7 - Operational system development		<b>PE NUMBER AND TITLE</b> 0702239A - Avionics Component Improvement Program			<b>PROJECT</b> C92
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
C92 AVIONICS COMPONENT ANALYSIS	989	1019			2008

**A. Mission Description and Budget Item Justification:** The Avionics Component Improvement Program (AvCIP) is a Joint Services initiative to combat parts obsolescence, improve reliability, safety and accelerate technology infusion into avionics programs.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Determine critical avionics (communications, navigation, surveillance, sensors, combat identification, mission planning, and interoperability) deficiencies, prioritize and conduct initial technology improvements effort.	637	581	
Identify software techniques and opportunities associated with open system architectures targeted to reduce initial and recurring avionics integration costs.	300	335	
Continue Program Management Support	52	75	
Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Reduction		28	
<b>Total</b>	<b>989</b>	<b>1019</b>	

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** The Acquisition Strategy is to identify emerging avionics performance and obsolescence problems. AvCIP is an initiative that enables streamlined management of present-day common avionics/electronics critical readiness degraders, technology insertion opportunities and cost reduction solutions. The program will annually compete candidate solutions according to criticality of operational contribution, technical risk, return on investment, commonality and breadth of application across multiple platforms.



# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
<b>7 - Operational system development</b>		<b>0708045A - End Item Industrial Preparedness Activities</b>			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	91305	90782	68466	Continuing	Continuing
E25 MFG SCIENCE & TECH	64690	68855	68466	Continuing	Continuing
EA2 MANTECH INITIATIVES (CA)	26615	21927			48542

**A. Mission Description and Budget Item Justification:** This program element (PE) demonstrates manufacturing processes that enable producibility and affordability of emerging and enabling technologies. Initiatives within the PE result in cost savings and reduced risk of transitioning military-unique manufacturing processes into production. This PE also fosters the transfer of new/improved manufacturing technologies to the industrial base, including manufacturing efforts that have potential for high payoff across the spectrum of Army systems and/or significant impact on national manufacturing issues (project E25). Major investment areas include Aviation Systems, Armor and Survivability, Sensors, Electronics and Power Systems, Precision Munitions and Armaments, and Flexible Displays. Project EA2 funds congressional special interest items.

Work in this PE is related to, and fully coordinated with, PE 0603710A (Night Vision Advanced Technology), PE 0602303A (Missile Technology), PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0602601A (Combat Vehicle and Automotive Technology), and PE 0603005A (Combat Vehicle and Automotive Advanced Technology) and PE 0602705A (Electronics and Electronic Devices).

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM) and efforts are executed by the Army Research Laboratory (ARL) and appropriate Army Research, Development, and Engineering Centers (RDECs).

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational system development</b>	<b>0708045A - End Item Industrial Preparedness Activities</b>		
<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	87311	69084	69630
Current BES/President's Budget (FY 2010)	91305	90782	68466
Total Adjustments	3994	21698	-1164
Congressional Program Reductions		-302	
Congressional Rescissions			
Congressional Increases		22000	
Reprogrammings	6331		
SBIR/STTR Transfer	-2337		
Adjustments to Budget Years			-1164

FY09 increase is due to congressional adds.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0708045A - End Item Industrial Preparedness Activities</b>			<b>PROJECT</b> <b>E25</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
E25 MFG SCIENCE & TECH	64690	68855	68466	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This project develops and demonstrates advanced manufacturing processes, equipment, and systems that enhance the quality and/or quantity of products, while achieving reductions in cost and/or transfer of improved manufacturing technologies to the industrial base. Efforts within this project have potential for high payoff across the spectrum of Army weapon systems, and significant positive impact on national manufacturing issues and the US industrial base. Current investment areas include: Aviation, Armor and Survivability, Sensors, Electronics and Power Systems, Precision Munitions and Armaments, and Display Technology.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

Work in this project is performed by the Army Research, Development, and Engineering Command (RDECOM) and efforts are executed by the Army Research Laboratory (ARL) and appropriate Army Research, Development, and Engineering Centers (RDECs).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Aviation Systems - Embedded Sensor Processes for Aviation Component Structures (ESPACS): In FY09, produce prototype stabilizer, develop composite manufacturing processes for sensors with flexible substrate and adhesive binding techniques. In FY10 will demonstrate conductivity with airframes and insert into Apache Block III. Low Cost Cabin Floor Structures: In FY09, optimize the process used to manufacture survivable, affordable, repairable airframe components. In FY10, will combine materials, design, and process improvements for airframe components.		4000	3843
Base Structural Armor: In FY08, evaluated and qualified integrated subassembly processes for Future Combat Systems (FCS) armor structure and hybrid mine floor. In FY09, demonstrate process improvements and model-centric manufacturing for the fabrication of full-up upper and lower hulls for select protective armor structures in a production environment. In FY10 will demonstrate armor using hot pressing techniques that lower the cost of tiles for low rate production and combat vehicle production applications.	14712	14092	15767
Overlay Armor: In FY08, continued to address advanced armor solution affordability, and began the development of manufacturing technologies for producing novel armor materials critical to 3rd generation ballistic and underbelly armor. Delivered a multi-materials kit and supporting processes, to include prepreg, particulate metal-matrix composites, nano-bonds, and backing that enable affordable production of armor solutions. In FY09, integrate stiffening materials and demonstrate producible, affordable armor manufacturing processes that include hybridized fibrous metal matrix composites and 3-D composites backing. Develop low cost grinding methods for transparent armors. In FY10, will build to print armor and demonstrate 3-D hybrid composite armor for large transparent structures.	19249	14000	15767
Low Cost Manufacturing of Materials for Improved Warfighter Protection: In FY08, completed prototype fabrication process for next generation helmet shell development and manufacturing. In FY09, combine hydrostatic, multiple tow deposition, and multifunctional material technologies, and start full-scale implementation of these technologies into a variety of manufacturing lines. Transition manufacturing process for protective materials used on advanced combat helmets and soldier systems.	1320	2271	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational system development</b>	<b>0708045A - End Item Industrial Preparedness Activities</b>	<b>E25</b>	
Sensors Infrared PbSe Focal Plane Arrays: In FY09, develop production line and Indium-Tin-Oxide process for 8-in substrates. Develop high volume, high yield process and transition read out integration circuit for design and optimization. In FY10, will implement high yield processes for production of active protection systems.		4814	4927
Third Gen Infrared (IR) Dewar / Cooler Aperture: In FY08, developed variable aperture coating deposition processes, fabricated precision tooling, and tested smaller motors to verify improved manufacturability of the variable aperture mechanism, while maintaining performance and improving reliability and survivability in the Dewar vacuum environment. In FY09, integrate improved manufacturing components and processes for variable aperture and compact cold stage components to validate tooling documentation and perform manufacturing demonstration. In FY10, will increase yield, reduce weight, and increase reliability of cooled and uncooled systems and will increase reliability and capacity for guided devices.	2935	3500	2956
Software Defined Radio (SDR) Components: In FY08, demonstrated efficient manufacturability of the Silicon Germanium Radio Frequency (RF) Integrated Circuit, providing a 60 percent size, 75 percent weight, and 40 percent power reduction. In FY09, begin system integration of improved manufacturing technologies and processes for RF chipset, power amplifiers, and wideband tunable filter for low rate production. In FY10, will transition manufacturing technologies to Joint Tactical Radio System (JTRS), ManPack and Small Form Fit systems.	7500	6000	5913
Affordable Phase Shifters for Phased Arrays: In FY08, optimized manufacturing processes for ferroelectric and MEMS-based components enabling lower cost improved capability antennas for Warfighter Improved Network - Tactical (WIN-T) and Future Combat Systems.	2315		
Electronics/Power Systems - Silicon Carbide (SiC) Switches: In FY08, improved processes to reduce thickness of SiC material and improve uniformity. In FY09, improve manufacturing techniques to produce 4" substrates, and reduce the manufacturing cost of low voltage diodes and switches. In FY10, will develop manufacturing processes for SiC materials and energy storage devices for electronic systems.	6480	4270	3942
High Energy Density (HED) Capacitors: In FY08, demonstrated cost reduction from \$100 to \$60 for Army and Navy pulse power system demonstrators.	800		
Very High Power (VHP) Batteries: In FY08, reduced battery pack manufacturing time from 950 hours to 350 hours, and reduced cost from \$115,000 to \$58,000 per pack. In FY09, develop and demonstrate efficient manufacturing process that increases cell performance from 1 kilowatt to 3 kilowatts, while reducing cell capacity loss from 40 percent to 20 percent. In FY10 will complete battery certifications and transition production capabilities in support of combat vehicles and/or weapon systems.	4200	3772	2807
Low Cost Zinc Sulfide Missile Dome: In FY10, will develop flow model to increase product yield of dome; will develop extensive flow model and improve zinc sulfide (ZnS) chemical vapor deposition processes; will improve ZnS dome blank growth processes and improvements for demonstration and transition.			2956
Precision Munitions/Armaments, Scale up of (PAX-3): In FY08, conducted prototype scale production for PAX-3 insensitive munitions. In FY09, demonstrate efficient system process and manufacturing optimization of PAX-3 explosives suitable for dual purpose munitions. In FY10, will further optimize production process and demonstrate on large production scale for bunker defeat munitions.	230	3312	2690
Laser Ignition: In FY09, develop metal-to-ceramic brazing process and manufacturing methodology for Artillery Laser Ignition System (LIS) components. In FY10, will demonstrate prototype laser ignition diodes using new manufacturing processes.		2004	1971
Flexible Display Technology: In FY08, integrated reflective laminates and manufactured pilot line processes into 2nd generation (GEN	4949	5011	4927

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational system development</b>	<b>0708045A - End Item Industrial Preparedness Activities</b>	<b>E25</b>	
II) production line. In FY09, demonstrate pilot production lines to manufacture GEN II reflective and emissive 7.5" displays. In FY10, will increase wafer yield, and demonstrate improved processing for 1280x1024 resolution micro displays and micro-displays transition to PEO Soldier systems.			
Small Business Innovative Research/Small Business Technology Transfer Programs		1809	
Total	64690	68855	68466

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** Not applicable for this item.

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

<b>BUDGET ACTIVITY</b> <b>7 - Operational system development</b>		<b>PE NUMBER AND TITLE</b> <b>0708045A - End Item Industrial Preparedness Activities</b>			<b>PROJECT</b> <b>EA2</b>
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
EA2      MANTECH INITIATIVES (CA)	26615	21927			48542

**A. Mission Description and Budget Item Justification:** Congressional Interest Item funding for Mantech Initiatives.

<b><u>Accomplishments/Planned Program:</u></b>	<b><u>FY 2008</u></b>	<b><u>FY 2009</u></b>	<b><u>FY 2010</u></b>
National Center for Defense Manufacturing and Machining	1544		
High Temperature Ceramic Manufacturing Technology for Helicopter Rotor Blade Erosion Protection	1930		
Laser Engineered Net Shaping (LENS) Qualification for Aging Weapon Systems	1546		
Electrodeposited Coatings Systems	1546		
Legacy Aerospace Gear Drive Re-Engineering Initiative	966	1938	
Smart Machine Platform Initiative	2898	3875	
Spring Suspended Airless Tires for Convoy Protection	4345	2712	
SuperPulse Laser System Development for Turbine Engine Applications	1546		
High Performance Alloy Materials, Steel Castings	1987		
Next Generation Combat Helmet	2318		
Advanced Materials Processing for Ultra-Efficient Power Systems	966		
Specialized Compact Automated Mechanical Clearance Platform (SCAMP)	386		
Aging Weapons Systems Structural Repair	1546		
Improved Manufacturing Process for SAPI	3091		
Manufacturing Metrology for Weapon System Production and Sustainment (M2WSPS)		1705	
Advanced Modeling Technology for Large Structure Titanium Machining Initiative		775	
Vehicle Common Armor Manufacturing Process (VCAMP)		1938	
Superior Weapons Systems Through Castings		1550	
Near-Net Shaped Direct-Sintered Silicon Carbide Torso Plates		1550	
Solid State Processing of Titanium Alloys for Defense Material Armaments		1395	
Network Centric Prototype Manufacturing		3875	
SBIR/STTR		614	

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

**May 2009**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
<b>7 - Operational system development</b>	<b>0708045A - End Item Industrial Preparedness Activities</b>	<b>EA2</b>
Total	26615	21927

**B. Other Program Funding Summary** Not applicable for this item.

**C. Acquisition Strategy** Not applicable for this item.

# ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>7 - Operational system development</b>			<b>0708045A - End Item Industrial Preparedness Activities</b>							<b>EA2</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												
<b>Project Total Cost:</b>												