

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2006

BUDGET ACTIVITY

PE NUMBER AND TITLE

3 - Advanced technology development

0603313A - Missile and Rocket Advanced Technology

COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
Total Program Element (PE) Cost	136319	114018	42127	67167	81003	85248	85305
206 MISSILE SIMULATION	10466	10045	3421	3508	3562	3591	3618
263 FUTURE MSL TECH INTEGR(FMTI)	29941	39070	14485	16020	33214	43335	44919
550 COUNTER ACTIVE PROTECTION	17078	16758	12399	15515	15524	8278	5691
655 HYPERVELOCITY MISSILE TD	50863	11895	0	0	0	0	0
704 Advanced Missile Demo	7494	6776	2989	3439	0	0	0
G03 Army Hypersonics Advanced Technology	0	0	8833	28685	28703	30044	31077
NA6 Missile and Rocket Initiatives (CA)	20477	29474	0	0	0	0	0

A. Mission Description and Budget Item Justification: This Program Element (PE) matures and demonstrates advanced missile technologies to enhance weapon system lethality, survivability, agility, deployability, and affordability for the Future Modular Force and, where feasible, exploits opportunities to enhance Current Force capabilities. Efforts are conducted through system simulation, design, demonstration, and test in laboratory and operational scenarios. This PE includes demonstrations of advanced tactical missiles, real-time hardware-in-the-loop simulations, and aircraft and ground system survivability efforts. The technologies focused on in this PE enhance the warfighting capabilities of locating targets in clutter, precision guidance, hypervelocity missile flight, and missile communications, command and control. The major efforts in this PE are the Non-Line-of-Sight Launch System (NLOS-LS), Compact Kinetic Energy Missile (CKEM), Advanced Multi-Mission Precision Guided Munition (AMMPGM), Active Defense for the Current and Future Force (concentrating on defense against rockets, artillery and mortars (RAM)), Close-In Active Protection System (CIAPS) for ground and air platforms, and development and demonstration of hypersonic missile technology. The Army Hypersonics Applied Research program matures and demonstrates expendable hypersonic/hypervelocity missiles and technologies for the defeat of hypersonic threats. Survivability efforts are coordinated with PE 0602303A (Missile Technology), PE 0603003A (Aviation Advanced Technology) and PE 0603270A (Electronic Warfare Technology), 0602624A (Weapons and Munitions Technology) and 0603004A (Weapons and Munitions Advanced Technology). The emphasis in this program element is on smaller, lighter weight, more affordable missiles. 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). This work is performed at the Aviation & Missile Research, Development, and Engineering Center, Redstone Arsenal, AL.

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	FY 2005	FY 2006	FY 2007
<u>B. Program Change Summary</u>			
Previous President's Budget (FY 2006)	115332	70066	42939
Current BES/President's Budget (FY 2007)	136319	114018	42127
Total Adjustments	20987	43952	-812
Congressional Program Reductions		-499	
Congressional Rescissions		-1149	
Congressional Increases		45600	
Reprogrammings	20987		
SBIR/STTR Transfer			
Adjustments to Budget Years			-812

FY 05 increase of \$21 million attributed to: \$8.5 million reprogramming for Protector UAV for AC130 Aircraft from the Air Force; \$12 million reprogramming for Close in Active Protection System for Stryker from OSD Iraqi Freedom Fund; \$487 thousand below threshold reprogramming.

Eight FY06 Congressional adds totaling \$45600 were added to this PE.

FY06 Congressional adds with no R-2A (appropriated amount is shown):
 (\$20500) Applied Counterspace Tech (ACT)
 (\$6000) Close-in Active Protection System for Stryker Family of Vehicles
 (\$2700) Compact Kinetic Energy
 (\$2500) FTT50 High Efficiency Turbine Engine
 (\$7000) Missile Simulation Technology Rapid Assessment and Deployment of Systems Initiative
 (\$1800) Persistent Protective Surveillance for Rotary Winged Aircraft (Year 2)
 (\$3900) Warfighter Protection and Homeland Security Lab
 (\$1200) Waterside Wide Area Tactical Coverage and Homing (WaterWATCH)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)						February 2006	
BUDGET ACTIVITY 3 - Advanced technology development			PE NUMBER AND TITLE 0603313A - Missile and Rocket Advanced Technology				PROJECT 206
COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
206 MISSILE SIMULATION	10466	10045	3421	3508	3562	3591	3618
<p>A. Mission Description and Budget Item Justification: This project matures, develops and demonstrates modeling and simulation tools for missile design and analysis. This project accomplishes the design, expansion, and improvement of hardware-in-the-loop (HWIL) simulation capabilities. HWIL simulation is used to evaluate tactical and theater missiles and precision-guided munitions (ground-to-air, ground-to-ground, air-to-ground) guided by radar frequency (RF), millimeter-wave RF (MMW), electro-optical (EO), and passive and active infrared (IR) spectral signals. Future missile systems will use multi-mode combinations of these guidance technologies such as those envisioned for the Non-Line-of-Sight Launch System (NLOS-LS) and other systems within the Future Modular Force. Evaluation by means of HWIL provides a cost-effective method that supports missile maturation throughout weapon system life cycles and permits a reduction in the number of flight tests required, as well as improving the confidence of flight test readiness and the probability of successful flight tests. Recent developments in HWIL simulation technology have enabled these techniques to be applied to missile production lot acceptance testing and post-deployment stockpile reliability tests to reduce their costs. 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 is performed at the Aviation & Missile Research, Development, and Engineering Center, Redstone Arsenal, AL.</p>							
<u>Accomplishments/Planned Program</u>				<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	
Missile Simulation - In FY05, completed the maturation of a tri-mode (RF, semi-active laser, and IR) guidance HWIL capability for missile performance testing and demonstrated its capabilities; continued maturation of a multi-channel laser detection and ranging (LADAR) scene projector for use in HWIL simulation; completed the development of an advanced infrared (IR) scene projector with low temperature background conditions (below laboratory ambient); and continued to improve the capabilities of MMW HWIL simulation at 35 GHz by addressing synthetic aperture radar (SAR) types of missile guidance. In FY06, apply the LADAR scene projector to mature closed-loop HWIL capabilities for NLOS-LS and other related acquisition programs; initiate integrated digital electronic circuit techniques to improve MMW signal generation; extend capabilities for semi-active laser HWIL simulation using updated lasers and detailed laser illuminator scene modeling. In FY07, will complete the application of the LADAR scene projector and integrate it with an advanced passive IR scene projector with low-temperature background scene capability; will continue the development of HWIL simulation techniques for missiles guided by MMW synthetic aperture radar signals; will continue work digital circuit techniques for application in MMW signal generation; and will investigate techniques for generating modular, reusable control software applicable to disparate real time HWIL simulation facilities.				3083	3190	3421	
Missile Simulation Technology - In FY05, this Congressional Add continued maturation of the Joint Aviation, Missile, and Unmanned Systems (JAMUS) and Modeling Architecture for Technology and Research Experimentation (MATREX) systems to gain confidence in their capabilities and to initiate simulation validation exercises across a range of varied scenarios. No additional funding is required.				7383	0	0	
Missile Simulation Technology Rapid Assessment and Deployment of Systems Initiative. This one-year Congressional add will fund development of a missile simulation capability supporting a rapid assessment capability. No additional funding is required.				0	6855	0	
Total				10466	10045	3421	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)						February 2006	
BUDGET ACTIVITY 3 - Advanced technology development			PE NUMBER AND TITLE 0603313A - Missile and Rocket Advanced Technology			PROJECT 263	
COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
263 FUTURE MSL TECH INTEGR(FMTI)	29941	39070	14485	16020	33214	43335	44919
<p>A. Mission Description and Budget Item Justification: This project demonstrates advanced tactical missile technologies including seekers, propulsion, airframes, communications, and guidance and controls for future missile systems including Non-Line-Of-Sight Launch System (NLOS-LS) Technology program supporting Future Combat Systems (FCS) and the Future Force. These technologies include; multi-mode seekers, controllable thrust motors (gels, pintle-controlled solids, or air breathing), and aided target acquisition (ATA) for missile systems. Seeker technologies address imaging infrared, Laser Detection and Ranging (LADAR), and millimeter wave seeker technologies, combined with semi-active laser technology, to provide precision strike and fire-and-forget guidance modes. Affordable, controllable thrust rocket motors, such as gelled bi-propellants or pintle-controlled solids and high performance, high efficiency turbo fan engine, will be demonstrated to provide longer ranges and shorter flight times while increasing system insensitivity and robustness in air-to-ground, ground-to-ground, and ground-to-air roles. A missile communications network enables target position updates to the missiles, re-tasking orders to the missiles, and transmission of imagery to the ground for target verification and battle damage assessment. These efforts provide support for the NLOS-LS System Development and Demonstration (SDD) program and are supported by the Program Executive Officer for Missiles and Space. In future years, a technology demonstration of air defense capability for the Unit- of- Action, concentrating on defense against rockets, artillery, and mortars will be performed using technologies funded under PE 0602303A. In addition, smaller, lighter weight, and more affordable missile technologies will be demonstrated using the technology matured under PE 0602303A. 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 is performed at the Aviation & Missile Research, Development, and Engineering Center, Redstone Arsenal, AL.</p>							
<u>Accomplishments/Planned Program</u>				<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	
Enhanced Seeker Development - In FY05, continued to mature multiple seeker technologies for NLOS-LS and completed maturation of a dual-mode (enhanced uncooled infrared (UCIR)/semi-active laser (SAL)) seeker for the Precision Attack Missile (PAM). Conducted bench, captive flight, and environmental/performance evaluation testing of the seeker and transitioned the enhanced dual-mode (UCIR/SAL) PAM seeker to the Non-Line-Of-Sight Launch System (NLOS-LS) Program Office. Initiated evaluation of several next generation seeker concepts including a tri-mode (infrared/milli-meter wave/SAL) seeker for a potential future technology insertion into PAM; matured/adapted seeker designs for potential integration and performed Aided Target Acquisition (ATA) performance evaluations. In addition, performed trade studies, component maturation, bench testing, and developed conceptual system designs for a dual-mode (semi-active laser/LADAR) seeker for the for the Loiter Attack Missile (LAM) variant of NLOS-LS; Prepared the Precision Attack Missile (PAM) and Loiter Attack Missile (LAM) seekers for NLOS-LS system testing. In FY06, complete the final design of the tri-mode PAM seeker, fabricate components and begin component testing. If successful, begin fabrication and check-out of complete PAM tri-mode seeker. In addition, complete the final design of the LAM dual-mode seeker and begin fabrication and component/subsystem testing of dual-mode LAM seeker. Initiate preparation for seeker captive flight testing in early FY07. Conduct manufacturability and producibility studies of both tri-mode PAM seeker and dual-mode LAM seeker. Continue to integrate seeker model updates for both new seekers into Integrated Flight Simulation models to conduct system effectiveness and performance studies. Provide tri-mode seeker information to Navy Small Diameter Bomb technical leads. In FY07, will evaluate and mature additional seeker technology enhancements; will continue system maturation, fabricat				16745	21265	6785	
Advanced Propulsion - In FY05, identified and evaluated critical technology for an enhanced solid propellant pintle; designed, matured,				3821	5925	3500	

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
3 - Advanced technology development	0603313A - Missile and Rocket Advanced Technology	263	
and fabricated critical PAM propulsion subsystems and performed laboratory subsystem/system level testing, began system trade studies and maturation of a high efficiency turbofan engine leveraging from Loiter Attack Missile - Aviation (LAM-A) propulsion technology advancements. In FY06, continue the design, maturation, and fabrication of critical PAM propulsion subsystems (composite case, igniter, nozzle/pintle/actuator, propellant grain) and perform laboratory/relevant environment system level testing; conduct static tests of flight weight prototype systems (ambient/cold/hot) and perform insensitive munition screening tests; mature and demonstrate a high efficiency turbofan engine and conduct rig testing of critical hardware. In FY07, will continue the design, maturation, and fabrication of critical PAM propulsion subsystems for spiral insertion and perform laboratory/relevant environment subsystem/system level testing; will fabricate and integrate flight worthy prototype subsystems and prepare for controlled test flight; will mature and demonstrate a high efficiency turbofan engine, conduct baseline evaluations and testing of critical hardware and demonstrate prototype engine hardware.			
Warhead Testing and Integration - In FY05, matured advanced, lighter, unitary/multi-purpose warhead technologies and integrated these technologies for increased lethality against anti-armor and other target sets/environments including non-lethal effects; exploited various fragmentation and shape charge technologies and optimized for NLOS-LS; matured explosive fill technologies including thermobarics; matures lethality toolset/models for warhead lethality assessments. In FY06, mature advanced, lighter, unitary/multi-purpose combined effects warhead technologies for potential spiral insertion into NLOS-LS; fabricate, integrate and static/dynamic test critical technologies (fragmentation, shape charge, and explosive fill); and perform verification/validation of toolset/models. In FY07, will continue maturation of warhead technologies and integration for increased lethality against anti-armor and other target sets/environments including non-lethal effects for spiral insertion into NLOS-LS. Will perform integrated warhead static and dynamic tests and validate modeling and simulation tools with test results.	3126	3960	1400
Modeling /Simulation and System Performance Evaluation - In FY05, established an initial integrated flight simulation (IFS) capability, developed capability for few-on-few full-system simulation and performed trade studies to help identify alternate technologies to achieve NLOS-LS Objective System performance. In addition, addressed manufacturing and affordability issues for NLOS-LS and performed component, and system level testing for performance evaluations. In FY06, increase fidelity of models to support few-on-few simulations; perform trade studies, identifying alternate variants and critical subsystem requirements to achieve NLOS-LS Objective System performance and address manufacturing and affordability issues through system research, design and maturation. In FY07, will conduct preflight and post flight reconstruction of flight tests performed and will support simulation formal accreditation process. In addition, will continue trade studies taking into account various regions, targets, environments and countermeasures, identifying alternate variants and critical subsystem requirements to achieve NLOS-LS Objective System performance; will address manufacturing and affordability issues; will conduct excursions to expand the envelope of conditions evaluated by the simulation.	6249	7920	2800
Total	29941	39070	14485

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)						February 2006	
BUDGET ACTIVITY 3 - Advanced technology development			PE NUMBER AND TITLE 0603313A - Missile and Rocket Advanced Technology				PROJECT 550
COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
550 COUNTER ACTIVE PROTECTION	17078	16758	12399	15515	15524	8278	5691
<p>A. Mission Description and Budget Item Justification: This project matures and demonstrates integrated survivability technologies and techniques for lightweight combat platforms including light armored vehicles, tactical wheeled vehicles, and helicopters. Current aircraft survivability materiel solutions have limited effectiveness against optically aimed (i.e. "dumb") weapons such as Rocket Propelled Grenades (RPGs) and small arms. The Close-In Active Protection Systems (CIAPS) Phase 1 prototype has been demonstrated on a light armored vehicle. New sensor and interceptor technologies are being matured in CIAPS Phase 2 to enable the system to be mounted on tactical wheeled vehicles for protection against RPGs. A new integrated aircraft survivability technology maturation program with mature new survivability techniques and technologies optimized to work in concert with components already matured and being fielded is being explored. System modeling and simulation conducted with user participation will maximize the opportunities for operator input to survivability system configuration and guide all aspects of technology maturation. Systems approach will ensure the avoidance of interference among survivability system components and techniques while taking every advantage of synergy and assistance from existing aircraft survivability components to improve the performance of the entire survivability suite. This project complements work done on adaptive IR suppressor, Manned Unmanned Rotorcraft Enhanced Survivability (MURES), Survivability Planner Associate Re-router (SPAR) acoustic signature technologies matured in the Aviation Advanced Technology (PE 63003/313). This effort is building on the expertise developed in support of rockets, missile, sensors, and active control to develop innovative solutions survivability. 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 is performed at the Aviation & Missile Research, Development, and Engineering Center, Redstone Arsenal, AL.</p>							
<u>Accomplishments/Planned Program</u>				<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	
- Close-In Active Protection Systems (CIAPS) - In FY06, demonstrate a prototype CIAPS and technology matured under PE 0602303A missile technology, mounted on a HMMWV that defeats RPGs fired from short range with multiple threats; conduct live range testing of system while stationary and on-the-move.				0	5000	0	
- Close-In Active Protection Systems (CIAPS) Congressional Add - In FY05, this Congressional add completed the fabrication of the science and technology prototype radar sensor.				5078	0	0	
- Integrated Aircraft Survivability Technology - In FY06 evaluate, analyze, and initiate component development of a guided interceptor for active defense of air/ground vehicles against RPGs and other non-traditional threat weapons. Initiate analysis of feasibility to incorporate small arms/RPG indication and warning systems with automated threat avoidance, and active defeat concepts for aircraft. In FY07, will continue development of guided interceptor technology, build components and begin component and subsystem testing for a guided interceptor. Demonstrate initial system breadboard implementations of integrated system solutions capable of enhancing aircraft survivability. Complete analysis of feasibility to incorporate small arms/RPG indication and warning systems with automated threat avoidance, and active defeat concepts for aircraft and develop implementation plan.				0	6000	12399	
Close-In Active Protection Systems (CIAPS) on Stryker: In FY05 this Congressional Add funded an integrated CIAPS design for Stryker. Initiated performance and integration testing of the CIAPS system S&T prototype on Stryker vehicle. Began development of both system specific mounting (A-kit) and common active protection system components (B-kit) prototypes for Stryker. In FY06 this Congressional will fund the continued development integration and evaluation of a fieldable CIAPS prototype.				12000	5758	0	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)			February 2006	
BUDGET ACTIVITY 3 - Advanced technology development	PE NUMBER AND TITLE 0603313A - Missile and Rocket Advanced Technology		PROJECT 550	
Total		17078	16758	12399

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)						February 2006			
BUDGET ACTIVITY 3 - Advanced technology development			PE NUMBER AND TITLE 0603313A - Missile and Rocket Advanced Technology				PROJECT 655		
COST (In Thousands)			FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
655	HYPERVELOCITY MISSILE TD		50863	11895	0	0	0	0	0
<p><u>A. Mission Description and Budget Item Justification:</u> This program matures and demonstrates hypervelocity missile technology that will enable the Future Force by providing overwhelming lethality with a small, light, fast hypervelocity compact kinetic energy missile. The goal of the Compact Kinetic Energy Missile (CKEM) Advanced Technology Demonstration is to demonstrate enhanced system lethality with a threshold of 60-inch long, 100-lb missile and an objective of 54-inch long, 65-lb missile. Miniature guidance inertial measurement unit (IMU) technology will be demonstrated to survive high-g missile launch and will provide precision guidance to kill targets at ranges of 0.4-5 kilometer. The program will mature and demonstrate advanced component and subsystem and system level technologies in a missile system configuration to achieve next-generation system level performance improvements. 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 is performed at the Aviation & Missile Research, Development, and Engineering Center, Redstone Arsenal, AL.</p>									
<u>Accomplishments/Planned Program</u>						<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	
Compact Kinetic Energy Missile (CKEM) - In FY05, provided a detailed design that is traceable to a tactical system; fabricated the missile, and integrated it with a surrogate weapon system for demonstration; conducted testing in a Hardware-in-the-Loop (HWIL) facility and independently evaluated the system simulation of the design to verify performance for the Critical Design Review (CDR). In addition, conducted Design Verifications Tests (DVT) (Umbilical Separation, Fin Deployment & Loads, Nozzle Release Test, Missile Pull Through, Sabot Separation, Missile Bending / Load, Missile Modal Survey, In-Line Fin Deployment, RF Plume Test, RF Range Test) in order to demonstrate sufficiently mature missile flight components (TRL 5) in preparation for flight tests to be conducted in FY06. In FY06, conduct eight flight tests of the CKEM missile from a platform representative of a Future Combat Systems (FCS) vehicle and a launcher with a surrogate fire control. Conduct flight tests against threat armor, buildings, and fortified bunkers.						49904	9367	0	
Compact Kinetic Energy Missile (CKEM) Stabilized Mobile Launcher - This one-year Congressional add conducted research in developing a mobile launcher for CKEM. No additional funding is required.						959	0	0	
Compact Kinetic Energy - This one-year Congressional add supports additional development and maturation of the Compact Kinetic Energy Missile (CKEM). No additional funding is required.						0	2528	0	
Total						50863	11895	0	

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BUDGET ACTIVITY 3 - Advanced technology development			PE NUMBER AND TITLE 0603313A - Missile and Rocket Advanced Technology			PROJECT 704	
COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
704 Advanced Missile Demo	7494	6776	2989	3439	0	0	0
<p>A. Mission Description and Budget Item Justification: This project demonstrates advanced state-of-the-art missile system concepts to enhance weapon system lethality, survivability, agility, versatility, deployability and affordability for Future Combat Systems (FCS) and the Future Force. Current planned advanced demonstrations are Fire Control-Node Engagement Technology (FC-NET) and Advanced Multi-Role Miniature Precision Guided Missile (AMMPGM). The FC-NET program objective is to mature a common fire control architecture for combat vehicles. The resulting Fire Control Architecture will enable a platform to host, and a commander to effectively manage, an interchangeable and distributed suite of weapons. The system will recommend Weapon-Target Pairings for multiple weapons (missiles & guns) and is expandable to include future weapon types. The objective of AMMPGM program is to mature and demonstrate advanced, miniature, multi-role precision-guided missile technology that provides robust defeat of a variety of non-armored threats from multiple platforms including manned and unmanned air and ground platforms with a significantly reduced logistics footprint. This program uses technology developed under 0602303A Missile Technology. 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 is performed at the Aviation & Missile Research, Development, and Engineering Center, Redstone Arsenal, AL.</p>							
<u>Accomplishments/Planned Program</u>					<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
- FC-NET - In FY05, developed a technical fire control interface to the tactical fire control infrastructure to enable a platform to host a suite of weapons (instead of a single weapon) and a commander to effectively manage and control an interchangeable and distributed suite of weapons. In addition, completed development of Weapon-Target Pairing Algorithms. These algorithms recommend to a platform gunner/commander the optimal weapon/round combination that should be used against an identified target. Demonstrated and tested Weapon-Target Pairing Algorithms in a virtual simulation environment. In FY06, finalize the technical fire control and validate the weapon target paring algorithms and demonstrate the ability to gave a common fire control for both missiles and guns in a live exercise.					3400	3900	0
- Advanced Multi-Mission Precision Guided Munition (AMMPGM) - In FY05, completed static and dynamic warhead testing and limited qualification testing, including insensitive munition (IM) testing. In FY06, mature a common joint Army/Navy smart 2.75 inch launcher; design an advanced insensitive munition rocket motor to improve minimum and maximum range system performance and perform heavywall and static test; and investigate advanced multimode fuzing concepts to increase lethality. In FY07, will build a prototype launcher and demonstrate it in HWIL and bench testing; will perform ballistic flight test of enhanced IM motor to verify aerodynamic and ballistic performance and perform IM requirement testing; and will design and construct breadboard prototype of advanced multimode fuze.					2594	2876	2989
- In FY05, integrated temperature and shock sensors into PAC-3 Missile and evaluated performance. Sensors provide remote monitoring and diagnostic capability to help identify potential missile failure conditions.					1500	0	0
Total					7494	6776	2989

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BUDGET ACTIVITY 3 - Advanced technology development			PE NUMBER AND TITLE 0603313A - Missile and Rocket Advanced Technology				PROJECT G03
COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
G03 Army Hypersonics Advanced Technology	0	0	8833	28685	28703	30044	31077
<p>A. Mission Description and Budget Item Justification: This project funds advanced technology development to mature and validate, through experimental testing, the critical technologies required to develop expendable hypersonic/hypervelocity missiles and interceptors of defeat hypersonic threats. Primary focus areas are those deemed critical for hypersonic/hypervelocity weapon maturation to enhance Army operational capability. These focus areas include propulsion components, active and passive thermal management systems, material selection and evaluation, airframe structural analysis and missile subcomponent design and development. Efforts will include experimental model design and fabrication, instrumentation of experimental modes, extensive ground testing of matured component technology and will build on preceding missile and engine component design efforts and will focus on further development, integration and validation through ground test activities at duplicated operational conditions. 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 is performed at the Aviation & Missile Research, Development, and Engineering Center, Redstone Arsenal, AL.</p>							
<u>Accomplishments/Planned Program</u>				<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	
Engine and Missile Component Design: In FY07, will transition technology from PE 0602303A G02 to complete component technology designs; validate system design concepts and begin fabrication of components and subsystems for integration and testing.				0	0	8833	
Total				0	0	8833	