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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603305A - Army Missile Defense Systems Integration			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	128776	90765	14683	Continuing	Continuing
TR4	MISSILE DEFENSE INTEGRATION	116464	78174	1660	196325
TR5	MISSILE DEFENSE BATTLELAB	12312	12591	13023	Continuing

A. Mission Description and Budget Item Justification: This Program Element funds missile defense systems integration efforts for both the US Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT) and the Program Executive Office for Missiles and Space (PEO-MS).

USASMDC/ARSTRAT: Headquarters, Department of the Army General Order 37, dated 16 October 2006, designated USASMDC/ARSTRAT as the Army proponent for space and ground-based midcourse defense (GMD), the Army integrator for global missile defense, and the Army Service Component Command (ASCC) of the U.S. Strategic Command (USSTRATCOM). As the Army proponent for space, high altitude and GMD, USASMDC/ARSTRAT is responsible to develop warfighting concepts, conduct warfighting experiments to validate those concepts, identify capabilities needed to implement the validated concepts, and develop Doctrine, Organizations, Training, Material, Leadership & Education, Personnel and Facilities (DOTMLPF) solutions to realize the GMD capabilities. As the Army integrator for global missile defense, USASMDC/ARSTRAT is responsible to review programs managed by the Army, other Services, Defense agencies and National agencies to ensure that they are correctly synchronized and will ultimately provide the capabilities required by USSTRATCOM to execute its global missile defense responsibilities.

Project TR4 funds the USASMDC/ARSTRAT to execute its proponent role for Ground-Based Missile Defense, and its role as the integrator for global missile defense.

Project TR5 funds USASMDC/ARSTRAT efforts to develop, analyze and mature warfighting concepts, focus military science and technology research, and conduct warfighting experiments associated with USASMDC/ARSTRAT's ASCC mission. Additionally, this project funds the delivery of innovations to the warfighter through prototyping, operational analysis, and experimentation in support of current and future Forces.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603305A - Army Missile Defense Systems Integration		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	127408	14005	14551
Current BES/President's Budget (FY 2010)	128776	90765	14683
Total Adjustments	1368	76760	132
Congressional Program Reductions		-300	
Congressional Rescissions			
Congressional Increases	4745	77060	
Reprogrammings			
SBIR/STTR Transfer	-3377		
Adjustments to Budget Years			132

Change Summary Explanation:

Funding
 FY 2008 - Congressional add funds for Electro-Magnetic Flak Impulse System transferred from 0605502A/M40 in the approved revised 1414, Base for Reprogramming.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603305A - Army Missile Defense Systems Integration			PROJECT TR4	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
TR4 MISSILE DEFENSE INTEGRATION	116464	78174	1660		196325

A. Mission Description and Budget Item Justification: Headquarters, Department of the Army General Order Number 37, dated 16 October 2006, designated SMDC/ARSTRAT as the Army proponent for space and ground-based midcourse defense (GMD), and the Army integrator for global missile defense. This project funds efforts associated with those roles. As the Army proponent for GMD, SMDC/ARSTRAT is responsible to develop and validate warfighting concepts, identify capabilities needed to implement the validated concepts, and develop Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel and Facilities (DOTMLPF) solutions to realize GMD capabilities. As the Army integrator for global missile defense, SMDC/ARSTRAT is responsible to review programs managed by the Army, other Services, Defense agencies and National agencies to ensure that they are correctly synchronized and will ultimately provide the capabilities required by USSTRATCOM to execute its global missile defense responsibilities.

After FY2010, this project is rolled into PE 0603308A, project 990 in recognition of the increasing interrelationship between space operations, exo-atmospheric ballistic missile defense and global missile defense.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue combat development efforts to define DOTMLPF solutions for capabilities required to execute ground-based midcourse defense operations across the four domains of missile defense (passive defense, active defense, attack operations and battle management). Ensure that the various components of a global missile defense capability remain synchronized with USSTRATCOM's concept of operations.	1739	1330	1660
Includes FY08/09 Congressional Adds for Adaptive Lightweight Materials for Missile Defense, Advanced Battery Technology, Advanced Cavitation Power Technology, Advanced Electronics Rosebud Integration, Advanced Environmental Control System, Advanced Fuel Cell Research (Advanced Laser Electric Power), Advanced Hypersonic Weapon Mission Planning, Advanced Hypersonic Weapon Technology Demonstration, Advanced Standoff Technologies for National Security, AHW BMC2 HWIL Technology Demonstration, Advanced Strap Down Seeker, Alternative Power Technology (APT) for Missile Defense, Biological Air Filtering System Technology, Compact Pulsed Power Initiative, Deployable Space and Electronic Warfare Analysis Tools, Detection Algorithms and Software for Force Protection, Detection Mitigation and Neutralization of High Explosive, Dielectrically Enhance Sensor System (DESS), Future TOC Hardware/Software Integration, Heat Dissipation for Electronic Systems & Enclosures, High Detail Architecture Analysis Tool, High Speed Digital Imaging, High Temp Polymers for Missile System Applications, Integrated Composite Mounting Hardware, Micro Seeker System for Small Steerable Projectiles, Micro-Systems and Nanotechnology for Advanced Technology Development, Model-Based Enterprise, Neutralization of IEDs, Next Generation Interceptors Materials Research, Next Generation Passive Sensors (NGPS), Orion High Altitude Long Loiter UAV, Processing DNA Data Using Classical Discrimination Techniques, Radiation Hardening Initiative (RHI), Remote Explosive Analysis and Detection System (READS), Standoff Hazardous Agent Detection & Evaluation System, Thermal and Electrical Nanoscale Transport (TENT), Transfer Missile Power System, and Vertical Integration for Missile Defense Surveillance Data.	114725	74689	
Small Business Innovative Research/Small Business Technology Transfer Programs		2155	
Total	116464	78174	1660

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603305A - Army Missile Defense Systems Integration

PROJECT

TR4

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

C. Acquisition Strategy This project employs a mix of government employees, soldiers and various contractors for different aspects of the combat development process to ensure a degree of independent thought, and to encourage the use of various analytic approaches.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603305A - Army Missile Defense Systems Integration							TR4		
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
Various	Execute Congressional Adds	Various	292042	114725	1-4Q	74689	1-4Q				481456	
Subtotal:			292042	114725		74689					481456	
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
Govt support & support contracts	Various	Various in Colorado Springs CO and Huntsville AL	11562	1739	1-4Q	3485	1-4Q	1660	1-4Q		18446	
Subtotal:			11562	1739		3485		1660			18446	
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	PE NUMBER AND TITLE						PROJECT
4 - Advanced Component Development and Prototypes	0603305A - Army Missile Defense Systems Integration						TR4
Project Total Cost:	303604	116464		78174		1660	499902

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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
4 - Advanced Component Development and Prototypes		0603305A - Army Missile Defense Systems Integration																TR4														
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
Continue integration of Army missile defense capabilities & DOTMLPF solutions	[REDACTED]																															
Execute FY08/09 Congressional Adds	[REDACTED]																															
	[REDACTED]				[REDACTED]																											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603305A - Army Missile Defense Systems Integration					PROJECT TR4	
<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>
Continue integration of Army missile defense capabilities & DOTMLPF solutions	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Execute FY08/09 Congressional Adds	1Q - 4Q	1Q - 4Q	1Q - 4Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603305A - Army Missile Defense Systems Integration			PROJECT TR5	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
TR5 MISSILE DEFENSE BATTLELAB	12312	12591	13023	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project TR5 funds USASMDC/ARSTRAT efforts to develop, analyze and mature warfighting concepts, focus military science and technology research, and conduct warfighting experiments. Additionally, this project funds the delivery of innovations to the warfighter through prototyping, operational analysis, and experimentation in support of current and future Forces. The concepts, experiments, analyses, and prototypes apply to all of the mission areas assigned to SMDC/ARSTRAT in its role as an ASCC to USSTRATCOM: Missile Defense, Space, Information Operations (IO), Global Strike (GS), Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Participated in numerous Integrated Capabilities Development Teams and provided concept development support for the Space Functional Needs Analysis (FNA), the Space Capabilities Integration Map (CIM) and the GMD Concept Capability Plan (CCP). Experimented with advanced prototype components of future operational- and tactical-level command and control (C2) systems to assess their impact on Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities (DOTMLPF) issues. Participated in major Army and Joint Experiments integrating space, missile defense, IO, GS and C4ISR integrating, functional and operational concepts into the Army Campaign Plan (ACP). For example, during FY08, SMDC/ARSTRAT participated in several technology assessments, experiments, and demonstrations including Omni Fusion 08, Joint Expeditionary Force Experiment 08, and Coalition Warrior Interoperability Demonstration (CWID) 08, Internet Protocol Routing in Space (IRIS) and Communications Air-Borne Layer Expansion (CABLE) plus several TRADOC micro experiments. Experiments and Wargames scheduled in FY09 include; Unified Quest 09, Schreiver V, STRATCOM MAST, Tactical Satellite (TacSat) 3 Joint Military Utility Assessment, High Altitude Enabled Capabilities Assessment, Earth Wind and Fire, Keen Edge 09, Coalition Warrior Interoperability Demonstration (CWID) 09, Coalition Warfighter Program (CWP) and the Intelligence, Surveillance and Reconnaissance (ISR) Warfighter Exercise. The Future Operation Capability (FOC) test bed has integrated commercial state-of-the-art technologies into C4ISR experiments, and continues to support National Capital Region operational missions, integrated emerging commercial technologies into the Future Operation Capability (FOC). Prototype derivatives of the FOC are supporting Operation Iraqi Freedom and various Homeland Defense missions including the National Capital Region Integrated Air Defense System.	7272	7488	7746
Operational Analysis/Tools, Modeling and Simulation (M&S) - Studies and Analysis accomplishments include operational assessments of concepts, doctrine, organizations, technologies and tactics. Efforts also included examination of Future Combat system/Transformation issues for space and missile defense including new doctrine for Space Superiority and Operational Analysis of High Altitude (HA) capabilities at the Tactical Level, Theater Missile Defense concepts, and Space ISR. Tools and M&S accomplishments include: M&S for experimentation and operational assessments, and the maintenance of M&S tools including developing an operational representation of HA and space based capabilities into OneSAF and the development of the Joint Embedded Messaging System (JEMS) for translation and transfer of space-based information for M&S and tactical systems. Evolving concepts will require analysis that addresses emerging needs in FY08. Space superiority and operationally responsive space will require assessments to support the military utility analysis and requirements definition in FY08. Additionally, M&S integration is required to support the fielding of Army simulations and experiments	5040	4893	5277

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Advanced Component Development and Prototypes	0603305A - Army Missile Defense Systems Integration	TR5	
for Strategic Planning, Information Operations and Global Strike. Plans include continued maintenance of M&S tools and operation of the SMD Battle Lab Collaborative Simulation Environment in support of experimentation and analysis.			
Small Business Innovative Research/Small Business Technology Transfer Programs		210	
Total	12312	12591	13023

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		
4 - Advanced Component Development and Prototypes			0603305A - Army Missile Defense Systems Integration							TR5		
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
Experiments & technology enhancements of prototypes/tools and analysis.	CPAFF/CPFF	Various Colorado Springs CO and Huntsville AL	30327	5040	1-4Q	4893	1-4Q	7746	1-4Q	Cont.	Cont.	
Govt Support and Support Contracts	MIPR/Allot	Various Colorado Springs CO and Huntsville AL	47906	7272	1-4Q	7698	1-4Q	5277	1-4Q	Cont.	Cont.	
Subtotal:			78233	12312		12591		13023		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
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	PE NUMBER AND TITLE						PROJECT		
4 - Advanced Component Development and Prototypes	0603305A - Army Missile Defense Systems Integration						TR5		
Project Total Cost:	78233	12312		12591		13023	Cont.	Cont.	

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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603305A - Army Missile Defense Systems Integration																TR5															
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
Experiments & technology enhancements of prototypes/tools and analysis.																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603305A - Army Missile Defense Systems Integration					PROJECT TR5	
<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>
Experiments & technology enhancements of prototypes/tools and analysis.	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 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				
4 - Advanced Component Development and Prototypes	0603308A - Army Space Systems Integration				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	58078	47828	117471	Continuing	Continuing
978 SPACE CONTROL	6031	6972	103102	Continuing	Continuing
990 Space and Missile Defense Integration	52047	40856	14369	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element funds space systems integration efforts performed by the US Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT).

USASMDC/ARSTRAT: Headquarters, Department of the Army General Order Number 37, dated 16 October 2006, designated SMDC/ARSTRAT as the Army proponent for space and ground-based midcourse defense (GMD), the Army integrator for global missile defense, and the Army Service Component Command of U.S. Strategic Command (USSTRATCOM). As such, SMDC is responsible to develop warfighting concepts, conduct warfighting experiments to validate those concepts, identify capabilities needed to implement the validated concepts, and develop Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel and Facilities (DOTMLPF) solutions to realize those space related capabilities.

Project #978 funds Space Control and the Long Endurance Multi-Intelligence Vehicle (LEMV). The Army Space Superiority (SS) Family of Systems (FoS) provides ground based tactically centric space information superiority capabilities to meet current Joint Requirements and validated Training and Doctrine Command (TRADOC) capability gaps. Space information superiority has gained importance with proliferation of satellite technologies and availability of space data products. Adversaries now have near equal access to a full array of space data products which reduces our information superiority. The Army Space Superiority (SS) Family of Systems (FoS) concept consists of ground based sensors for space situational awareness and advanced ground based tactical capabilities to establish and maintain assured space data access and information superiority for support of tactical operations.

The LEMV will be utilized to provide persistent Intelligence, Surveillance and Reconnaissance (ISR) support in multiple environments, including combat areas. Technical objectives for the LEMV include an unmanned aerial system capable of being controlled through an existing Department of Defense ground station, 3 week flight endurance, 2,500 pound sensor payload, 20,000 feet operating altitude, multi-intelligence capable, 16 kilowatts of power for payload, capable of station keeping (the capability to loiter or maintain position over a required mission area in different types of weather), recoverable and reusable.

Project #990 funds the Future Warfare Center (FWC) to mature warfighting concepts, and validate concepts, identify capabilities needed to implement the validated concepts, and develop DOTMLPF solutions to realize those space and high altitude related capabilities. Also sustains Joint Blue Force Situational Awareness (JBFSA) Mission Management Center and its associated testbed for both operations and spiral development for 24/7 Blue Force Tracking integration into a real-time common operating picture for Combatant Commanders, Joint Task Force Commanders and Coalition partners.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603308A - Army Space Systems Integration		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	49285	19986	27225
Current BES/President's Budget (FY 2010)	58078	47828	117471
Total Adjustments	8793	27842	90246
Congressional Program Reductions		-158	
Congressional Rescissions			
Congressional Increases		28000	
Reprogrammings	10000		
SBIR/STTR Transfer	-1207		
Adjustments to Budget Years			90246

Change Summary Explanation: : FY 2008 - \$10,000 omnibus reprogramming for the High Altitude Airship. FY 2009 - \$27,842 increase for congressional adds. FY 2010 - \$10,246 increase for the Space Control program to complete pre-Milestone B activities (Milestone B is projected for first quarter FY 2011) and technology risk reduction and \$80,000 increase for the Long Endurance Multi-Intelligence Vehicle (LEMV).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603308A - Army Space Systems Integration			PROJECT 978	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
978 SPACE CONTROL	6031	6972	103102	Continuing	Continuing

A. Mission Description and Budget Item Justification: Space Control - The mission of the Army Space Superiority (SS) Family of Systems (FoS) is the development of ground based tactically centric space information superiority capabilities to meet current Joint Requirements and validated Training and Doctrine Command (TRADOC) capability gaps. Space information superiority has gained importance with proliferation of satellite technologies and availability of space data products. Adversaries now have near equal access to a full array of space data products which reduces our information superiority. The Army Space Superiority (SS) Family of Systems (FoS) concept consists of ground based sensors for space situational awareness and advanced ground based tactical capabilities to establish and maintain assured space data access and information superiority for support of tactical operations. The Joint Requirements Oversight Council approved the first Initial Capability Document (ICD) for these capabilities in 2007, allowing an initial capability to advance towards Technology Development and Acquisition. This project supports classified activities. Additional information may be obtained by contacting the Army Technology Management Office (TMO)

Long Endurance Multi-Intelligence Vehicle (LEMV) - The LEMV will be utilized to provide persistent Intelligence, Surveillance and Reconnaissance (ISR) support in multiple environments, including combat areas. Technical objectives for the LEMV include an unmanned aerial system capable of being controlled through an existing Department of Defense ground station, 3 week flight endurance, 2,500 pound sensor payload, 20,000 feet operating altitude, multi-intelligence capable, 16 kilowatts of power for payload, capable of station keeping (the capability to loiter or maintain position over a required mission area in different types of weather), recoverable and reusable.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Space Control - Develop and maintain Space Control program plans and strategies. Program management for Space Superiority (SS) Family of System (FoS) materiel development and acquisition planning, security program establishment and associated facility security accreditation. Prepare and coordinate appropriate memorandum of agreements with associated programs and technology transition plan with designated program executive office. Develop and maintain security classification guidance and operating security plans.	2248	949	1046
Space Control - Define SS FoS System Architectural requirements and coordinate with combat developer on system requirements, concept of operations and analysis of alternates. Conduct market survey and coordinate with other services on technology development that can be leveraged by the Army. Analyze alternative materiel concepts; determine measures of performance and measures of effectiveness for system attributes. Conduct system engineering and trade studies on viable concepts. Identify risk areas in technical performance, sustainability, cost and schedule. Develop materiel acquisition documentation to support milestone decisions and contracting actions.	1567	1679	5490
Space Control - Conduct risk reduction efforts that include prototyping system representative command and control sub-elements to validate critical Command and Control connectivity and battle management functional processes early in development to demonstrate that operational security and positive system control can be achieved and accredited by appropriate authorities. Engineering testing includes characterization and demonstration of sub-system interfaces, demonstrations/validations of sub-subsystem functional interactions, validation of technology integration and performance objectives for sub-system processors, and collection of supportability related data required for development of the integrated logistic support package. Testing will be conducted in relevant operational environments to validate technology maturity.	2216	4149	16566

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	0603308A - Army Space Systems Integration	978
LEMV - Develop and maintain LEMV program plans and strategies. Program management for LEMV materiel development and acquisition planning, testing, and initial demonstration planning.		3000
LEMV - Define LEMV system architectural requirements and coordinate with combat developer on concept of operations. Coordinate with other Services on technology development. Conduct system engineering and trade studies on viable concepts. Identify risk areas in technical performance, sustainability, cost and schedule. Develop materiel acquisition documentation to support milestone decisions and contracting actions.		1000
LEMV - Conduct risk reduction efforts that include prototyping system representative command and control sub-elements to validate critical command and control connectivity and battle management functional processes early in development to show successful demonstration. Engineering testing includes characterization and demonstration of sub-system interfaces, demonstrations/validations of sub-subsystem functional interactions, validation of technology integration and performance objectives for sub-system processors, and collection of supportability related data required for development of the integrated logistic support package. Testing will be conducted in relevant operational environments to validate technology maturity.		4000
LEMV - Award contract, initiate design and fabrications, and conduct Preliminary Design Review and Critical Design Reviews.		72000
Small Business Innovative Research/Small Business Technology Transfer Program		195
Total	6031	6972 103102

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

C. Acquisition Strategy Space Control - Acquisition plans for the ground based Space Superiority Family of Systems will be developed in accordance with Department of Defense Directive 5000.1, The Defense Acquisition System and will utilize single step to full capability approaches with block software update to meet the evolving threat. In accordance with current Army policies, acquisition activities will be transitioned to the appropriate program executive office as determined by the Army Acquisition Executive. These system designs will leverage any Science and Technology Objectives (STO) or Advanced Concept Technology Demonstrations (ACTDs) from various technology developers that are ready to transition into an acquisition program. Once systems are fielded, they will be retrofitted with upgraded hardware and software.

Long Endurance Multi-Intelligence Vehicle (LEMV) - The Army anticipates establishing an Other Transaction Authority (OTA) for this acquisition with the intention of increasing participation from non-traditional Department of Defense contractors. This acquisition is being pursued as a rapid acquisition and must complete Developmental and Operational testing within 18 months of award. As an OTA prototype acquisition, this requirement is subject to individual negotiation and bidders that can meet the stated requirements, are substantially capable of meeting the requirements or can substantially exceed requirements in specific areas are requested to submit summary information on their products for consideration and further discussion.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603308A - Army Space Systems Integration							978		
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
Space Control - Systems and technical architectures	Various	Various	378	400	1-4Q						778	
Space Control - Concept Development and Engineering Trade Studies	Various	Various	2956	1421	1-4Q	485	1-4Q	242	1-4Q		5104	
Space Control - Sub-system risk reduction, testing, and validation	Various	Various		1126	3-4Q	150	1-4Q	779	1-4Q	Cont.	Cont.	
Space Control - Design, Development and sub-system integration	Various	Various		1238	3Q	3399	1-4Q	12316	1-4Q	Cont.	Cont.	
LEMV - Systems and technical architectures	Various	Various						20000	1-4Q	Cont.	Cont.	
LEMV - Concept development and engineering trade studies	Various	Various						2000	1-4Q	Cont.	Cont.	
LEMV - Sub-system risk reduction, testing, and validation	Various	Various						10000	1-4Q	Cont.	Cont.	
LEMV - Design, development, and sub-system integration	Various	Various						40000	1-4Q	Cont.	Cont.	
Subtotal:			3334	4185		4034		85337		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
Space Control - Government support and support contracts	Various	Various	275	200	1-4Q	200	1-4Q	3423	1-4Q	Cont.	Cont.	
LEMV - Government support and support contracts	Various	Various						8000	1-4Q	Cont.	Cont.	
Subtotal:			275	200		200		11423		Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603308A - Army Space Systems Integration	PROJECT 978
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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
Space Control - T&E Support	Various	Various	250	150	1-4Q	750	1-4Q	4250	1-4Q	Cont.	Cont.	
Subtotal:			250	150		750		4250		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
Space Control - Program and Security Management	Various	Various	1311	1496	1-4Q	1688	1-4Q	2092	1-4Q	Cont.	Cont.	
Space Control - Security Facilities Upgrade					3Q	300					300	
Subtotal:			1311	1496		1988		2092		Cont.	Cont.	

Project Total Cost:	5170	6031		6972		103102		Cont.	Cont.
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603308A - Army Space Systems Integration																978															
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
Space Control - System and Technical Architectures	█				█																											
Space Control - Concept Development and Engineering Trade Studies	█				█				█																							
Space Control - Sub-system Risk Reduction, Testing and Validation	█				█				█				█				█															
Space Control - Design, Development and Sub-system Integration	█				█				█				█				█				█				█							
Space Control - System Developmental and Operational Testing	█				█				█				█				█				█				█							
Space Control - Program and Security Management	█				█				█				█				█				█				█							
Space Control - Security Facilities Upgrade	█				█				█				█				█				█				█							
LEMV - Contract Award	█				█				█				█				█				█				█							
LEMV - Concept Development and Engineering Trade Studies	█				█				█				█				█				█				█							
LEMV - Sub-System Risk Reduction, Testing and Validation	█				█				█				█				█				█				█							
LEMV - Design, Development, and Sub-System Integration	█				█				█				█				█				█				█							
LEMV - System Development, Operational Testing, and Prototype Sustainment	█				█				█				█				█				█				█							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603308A - Army Space Systems Integration						978	
<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>	
Space Control - System and Technical Architectures	1Q - 4Q								
Space Control - Concept Development and Engineering Trade Studies	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Space Control - Sub-system Risk Reduction, Testing and Validation	3Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q			
Space Control - Design, Development and Sub-system Integration	3Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Space Control - System Developmental and Operational Testing		1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Space Control - Program and Security Management	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Space Control - Security Facilities Upgrade		3Q							
LEMV - Contract Award			1Q - 2Q						
LEMV - Concept Development and Engineering Trade Studies			1Q - 2Q						
LEMV - Sub-System Risk Reduction, Testing and Validation			1Q - 3Q						
LEMV - Design, Development, and Sub-System Integration			1Q - 4Q	1Q - 4Q					
LEMV - System Development, Operational Testing, and Prototype Sustainment				2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603308A - Army Space Systems Integration			PROJECT 990
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
990 Space and Missile Defense Integration	52047	40856	14369	Continuing	Continuing

A. Mission Description and Budget Item Justification: Headquarters Department of the Army (HQDA) General Order Number 37, dated 16 October 2006, designated SMDC/ARSTRAT as the Army proponent for space and ground-based midcourse defense (GMD), the Army integrator for global missile defense, and the Army Service Component Command of the U.S. Strategic Command (USSTRATCOM). As such, USASMDC is responsible to develop warfighting concepts, conduct warfighting experiments to validate those concepts, identify capabilities needed to implement the validated concepts, and develop Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel and Facilities (DOTMLPF) solutions to realize those space related capabilities.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Plan, develop, and execute concepts and DOTMLPF solutions for Army exploitation of space systems, including Space-Based Infrared System (SBIRS), Multi-Mission Mobile Processor (M3P), and various space control capabilities. Represent Army positions and defend Army equities relative in Joint/DoD and inter-Service activities; e.g., National Security Space Architect (NSSA) Program Assessments, etc. Develop space modernization strategies and sponsor exploration of future space, High Altitude, and missile defense warfighting concepts in support of Army Transformation. Sustain Joint Blue Force Situational Awareness (JBFS) Mission Management Center and its associated testbed for both operations and spiral development for 24/7 Blue Force Tracking integration into a real-time common operating picture for Combatant Commanders, Joint Task Force Commanders and Coalition partners.	10836	12632	14369
Includes FY08/09 Congressional Adds for Applied Counterspace Technology Testbed, Army Responsive Tactical Space, Geospatial Airship Research Platform (GARP), High Altitude Airship, High Energy Matter Space Propulsion, HiSentinel, High Altitude Integration Testbed, High Altitude Shuttle System for Battlespace Coverage, High Fidelity Imaging System, Integrated Modeling of Air and Ground Environments (IMAGE), Integrated Nanosat Delivery System, Low Cost Interceptor, Missile Attack Early Warning System, Multipurpose Nanosat Missile System, Nanocomposite Enhanced Radar and Aerospace Materials, Positron Sensors and Energy Applications, Simulation and Design of Large Electromagnetic Systems, Small Agile Satellites, Spatial Acquisition and Measurement of Power Sources, Tactical Overwatch High Altitude System and Ultralight UAV Sensor Platform.	41211	27226	
Small Business Innovative Research/Small Technology Transfer Programs		998	
Total	52047	40856	14369

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

C. Acquisition Strategy Program is continuous. Various performers will conduct planned accomplishments.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603308A - Army Space Systems Integration							990		
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
Various	Various	Various	104521								104521	
Execute Congressional adds	Various	Various	62705	41211	2-4Q	28224					132140	
Subtotal:			167226	41211		28224					236661	
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
GOVT SUPPORT & SUPPORT CONTRACTS	Various	Various in Colorado Springs CO, Washington DC, and Huntsville AL	53796	10836	1-4Q	12632	1-4Q	14369	1-4Q	Cont.	Cont.	
Subtotal:			53796	10836		12632		14369		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
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												

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Advanced Component Development and Prototypes

0603308A - Army Space Systems Integration

990

Project Total Cost:

221022

52047

40856

14369

Cont.

Cont.

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603308A - Army Space Systems Integration																990															
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/synchronization of Army space and BMD DOTMLPF solutions.	[Redacted]																															
Provide 24/7 support to Blue Force Tracking.	[Redacted]																															
Execute FY08/09 Congressional Adds	[Redacted]																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603308A - Army Space Systems Integration					PROJECT 990		
<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/synchronization of Army space and BMD DOTMLPF solutions.	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Provide 24/7 support to Blue Force Tracking.	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Execute FY08/09 Congressional Adds	1Q - 4Q	1Q - 4Q	1Q - 4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603327A - Air and Missile Defense Systems Engineering			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	155669	118816	209531	Continuing	Continuing
S25 ARMY SIAP OPERATIONAL INTEGRATION	7654	4143			11797
S32 JOINT SIAP SYSTEM ENGINEERING	24303				24303
S34 AMD SYSTEM OF SYSTEMS ENGINEERING AND INTEGRATION	123712	114673	209531	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides funding for the integration of Army and Joint Integrated Air and Missile Defense (IAMD). On 9 February 2006 the Army Systems Acquisition Review Council (ASARC) designated the IAMD program a Pre-Major Defense Acquisition Program (MDAP) and approved the stand-up of the IAMD Project Office (PO). Program Executive Office Missiles and Space (PEO MS) formally stood up the IAMD PO on 9 May 2006.

The mission of the IAMD PO is to: Define, develop, acquire, field and sustain the Army's portion of the Joint IAMD system of systems capability to be deployed as integrated components in Army, Joint, interagency, and multi-national net-centric architectures. Develop, acquire, field and sustain the IAMD common battle command component of the architecture and integrate externally developed sensors and shooters to provide an effective IAMD capability. The IAMD mission is derived from analysis of the Joint Air and Missile Defense (AMD) imperatives and the four mission sets that Army AMD performs. These mission sets are: Provide Air and Missile Defense, Contribute to AMD Situational Awareness/Situational Understanding, Contribute to Airspace Management, and Integrate/contribute to operational protection. The IAMD PO is responsible for the development of an IAMD Architecture comprised of components developed within the Project Office as well as by other PEO MS Project Offices (Lower Tier Project Office (LTPO) and Cruise Missile Defense Systems (CMDS), PEO Command, Control and Communications - Tactical (C3T) Project Offices (Air and Missile Defense Command and Control Systems (AMDCCS), and Joint organizations (e.g. Single Integrated Air Picture (SIAP) Joint Program Office (JPO)). As part of this responsibility, the IAMD PO has responsibility for performing the overarching IAMD System of Systems Architecture Systems Engineering. While the IAMD Architecture is complex, it is itself part of a larger Joint System of Systems architecture. The IAMD program provides the Army's part of this larger Joint IAMD Architecture.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603327A - Air and Missile Defense Systems Engineering		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	170383	116410	81057
Current BES/President's Budget (FY 2010)	155669	118816	209531
Total Adjustments	-14714	2406	128474
Congressional Program Reductions		-394	
Congressional Rescissions			
Congressional Increases		2800	
Reprogrammings	-9947		
SBIR/STTR Transfer	-4767		
Adjustments to Budget Years			128474

Change Summary Explanation - Funding:
 FY 2010 (+\$128,474) To provide for the continuation of the Integrated Air and Missile Defense (IAMD) Program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603327A - Air and Missile Defense Systems Engineering			PROJECT S25
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S25 ARMY SIAP OPERATIONAL INTEGRATION	7654	4143			11797

A. Mission Description and Budget Item Justification: This project funds the coordination of the Single Integrated Air Picture (SIAP) requirements with the operational community: verification that operational requirements exist to support technical specifications and any subsequent changes; integration and coordination of Army SIAP operational requirements with the user community and multi-service sponsor(s); provide support to development and revision of SIAP acquisition strategy with respect to Army operational requirements. These products/tasks are required to ensure a specific, focused effort that integrates SIAP with weapons, sensors, Battle Management/Command, Control, Communications, and Computers (BMC4) and concepts of operations.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue efforts to coordinate Integrated Air and Missile Defense (IAMD) analyses, planning, tools, and requirements for Single Integrated Air Picture (SIAP) development. Evaluate IAMD/SIAP-related acquisition strategy, operational requirements, engineering tools, and current and evolving doctrine. Assess airspace awareness, combat identification, integrated fire control technologies, and risk mitigation approaches.	2436	2477	
Includes FY 2007 Congressional Adds for Area Security and Defense Systems Research, Command Responder, Joint Awareness Warfighter - Space (JAWS), and Multi View Integrated Engineering Environment Pilot. Includes FY08 Congressional adds for Army Extended Range Attack Missile (AERAM) Turbine Engine Development, Advance Extended Range Attack Missile, and Border Security and Defense System Research.	5218	1550	
Small Business Innovative Research/Small Business Technology Transfer Program		116	
Total	7654	4143	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PE 643327, Project S24, Army SIAP Systems Engineering				Continuing	Continuing
PE 643327, Project S26, Army SIAP Implementation				Continuing	Continuing
PE 643327, Project S32, Joint SIAP Systems Engineering	24994			Continuing	Continuing

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603327A - Air and Missile Defense Systems Engineering

PROJECT

S25

C. Acquisition Strategy Not applicable for this item.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603327A - Air and Missile Defense Systems Engineering							S25		
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
Execute Congressional adds	Various	Various	36662	5218		1550					43430	
Subtotal:			36662	5218		1550					43430	
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
Government support & support contracts	MIPRs, 1095s, CPFF	OGAs, Inhouse, Contact spt.	13750	2436	1-4Q	2477	1-4Q			Cont.	Cont.	
SIBR/STTR Costs						116					116	
Subtotal:			13750	2436		2593				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
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:												
Project Total Cost:			50412	7654		4143				Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
4 - Advanced Component Development and Prototypes		0603327A - Air and Missile Defense Systems Engineering																S25														
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
Coordinate & integrate SIAP rqmts into doctrine, demos, experiments, & exercise.																																
Execute Congressional Adds																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603327A - Air and Missile Defense Systems Engineering					PROJECT S25	
<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>
Coordinate & integrate SIAP rqmts into doctrine, demos, experiments, & exercise.	1Q - 4Q	1Q - 4Q						
Execute Congressional Adds	1Q - 4Q	1Q - 4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603327A - Air and Missile Defense Systems Engineering			PROJECT S32	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S32 JOINT SIAP SYSTEM ENGINEERING	24303				24303

A. Mission Description and Budget Item Justification: The Single Integrated Air Picture (SIAP) is the product of fused data from multiple sensors - a "System of Systems" (SoS) that provides unambiguous, actionable tracks of all airborne objects in a surveillance volume. All airborne objects of interest must be detected, tracked, and reported. Every object must have one and only one track and set of identified characteristics. Weapon systems from each Service must see and act on the same track data consistently. Current systems do not provide this capability.

The Single Integrated Air Picture program is a Joint Requirements Oversight Council (JROC) validated and OSD-directed collaborative enterprise comprising multiple engineering and acquisition programs in each of the Services, all linked by a joint engineering and development organization - the SIAP Joint Program Office (JPO). The SIAP JPO provides the joint SIAP system engineering to enable the System of Systems and coordinate the activities of the participating Services. The major product from the SIAP JPO is a computerized specification, the Integrated Architecture Behavior Model (IABM) that dictates a common architectural standard for systems that make up the Joint SIAP System of Systems. As a result, weapon systems incorporating the IABM will be interoperable, better able to understand the battlespace and able to employ weapons to the full extent of their design capabilities.

A spiral acquisition and development program, SIAP was designated as a Special Interest Program by OUSD (AT&L) in FY 2005. A successful Defense Acquisition Board (DAB) review in March 2006 approved the continuation of the SIAP program. The Joint SIAP System Engineering Organization (JSSEO) formally transitioned to become the SIAP Joint Program Office (SIAP JPO) during second quarter FY 2007. A successful In Process Review Defense Acquisition Board (IPR DAB) in October 2007 resulted in OSD and the Services' commitment to the next increment of Capability Drop 1 (CD-1) follow-on efforts. The SIAP JPO conducted a successful Preliminary Design Review (PDR) for the first Capability Drop (CD-1) on 20 Dec 2007. The SIAP JPO plans to deliver CD-1 in FY 2009 with an Operational Assessment scheduled for FY 2010.

Delivery of the IABM supports CD-1 which is the set of core requirements outlined in the Capability Development Document (CDD) generated by US Joint Forces Command and as validated by the Joint Requirements Oversight Council (JROC) in Sep 2007. CD-1 provides the technology and capability for the SIAP System of Systems to generate the SIAP. That capability includes improved efficiency in processing track data, network latency reduction, improved beyond line-of-sight ability, consistent track management and combat identification performance enhancements.

Project S32 transferred from this Army PE 0603327A to the Air Force PE 0207451F in FY 09.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Product Development IABM Production - Architecture, Specification and Behavior Model	12123		
IAMD Product and Customer Support	600		
Test and Analysis	4454		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	0603327A - Air and Missile Defense Systems Engineering	S32
Program Management Support and Acquisition Architecture	6427	
Small Business Innovative Research/Small Business Technology Transfer Programs	699	
Total	24303	

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

C. Acquisition Strategy The 3 May 2006 USD (AT&L) Acquisition Decision Memorandum (ADM) directs a SIAP acquisition approach based upon development of an Open System integrated architecture with selection and integration of "Best of Breed" functions to achieve a SIAP capability. The acquisition planned represents a "Best of Breed" approach allowing assessment of alternatives at the functional computer program component level. This acquisition strategy is intended to achieve the overall Department Theater Air and Missile Defense (TAMD) modernization planning described by the Integrated Air and Missile Defense (IAMD) and Joint Battle Management Command and Control (JBMC2) Roadmaps.

The SIAP SoS capability will be developed through a SoS engineering approach that uses a Model Driven Architecture® (MDA®) computerized specification, the Integrated Architecture Behavior Model (IABM), to provide the common architectural standard for systems that make up the Joint SIAP System of Systems. The SIAP Joint Program Office (JPO), using a team of industry, government, Federally Funded Research and Development Centers (FFRDCs), and government laboratory personnel, will develop the IABM. Each Service, through its respective program offices, develops platform specific models of the IABM that are used to develop SIAP solutions for incorporation into specific sensor, weapon, combat, and tactical BMC2 systems.

Follow-on IABM development will continue to build upon the Capability Drop-1 baseline and will focus on incorporating advances in distributed sensor and resource management to further automate critical warfighting functions. The SIAP JPO will implement its Rapid Capability Insertion Process (RCIP) to enhance SIAP capability for the System of Systems with RCIP plans oriented toward acquiring capability to provide actionable data for engagement, including Global Information Grid (GIG) connectivity, active and passive combat identification, enhanced track processing and Integrated Fire Control.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603327A - Air and Missile Defense Systems Engineering							S32		
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
Product Development IABM Production - Architecture, Specification and Behavior Model	MIPR	NAVSEA - JHU/APL, Laurel, MD	10070	3097	1-4Q					Cont.	Cont.	
Product Development IABM Production - Architecture, Specification and Behavior Model	MIPR	GSA - BAH, McLean, VA	9505	2678	1-4Q					Cont.	Cont.	
Product Development IABM Production - Architecture, Specification and Behavior Model	MIPR	GSA, Northrup Grumman	5569	1164	1-4Q					Cont.	Cont.	
Product Development IABM Production - Architecture, Specification and Behavior Model	MIPR	GSA, Sparta, McLean, VA	4777	2072	1-4Q					Cont.	Cont.	
Product Development IABM Production - Architecture, Specification and Behavior Model	Various	Various	53094	3112	1-4Q					Cont.	Cont.	
IABM Product and Customer Support	Various	Various	18209	600	1-4Q					Cont.	Cont.	
Subtotal:			101224	12723						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

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
4 - Advanced Component Development and Prototypes			0603327A - Air and Missile Defense Systems Engineering								S32	
Test & Evaluation Support	Various		3818	4454	1-4Q						8272	
Subtotal:			3818	4454							8272	
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	Various		24084	7126	1-4Q					Cont.	Cont.	
Subtotal:			24084	7126						Cont.	Cont.	
Project Total Cost:			129126	24303						Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603327A - Air and Missile Defense Systems Engineering																S32															
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
Army Support to Full Range of Joint SIAP Systems Engineering Activities																																
(1) In Process Review Defense Acquisition Board (IPR DAB)																																
(2) Preliminary Design Review (PDR) Capability Drop 1 (CD-1)																																
IABM Capability Drop 1 Development																																
SIAP SOS Testing																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
4 - Advanced Component Development and Prototypes		0603327A - Air and Missile Defense Systems Engineering						S32
<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>
Army Support to Full Range of Joint SIAP Systems Engineering Activities	1Q - 4Q							
In Process Review Defense Acquisition Board (IPR DAB)	1Q							
Preliminary Design Review (PDR) Capability Drop 1 (CD-1)	1Q							
IABM Capability Drop 1 Development	1Q - 4Q							
SIAP SOS Testing	1Q - 4Q							

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603327A - Air and Missile Defense Systems Engineering			PROJECT S34
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S34 AMD SYSTEM OF SYSTEMS ENGINEERING AND INTEGRATION	123712	114673	209531	Continuing	Continuing

A. Mission Description and Budget Item Justification: Funding in this project provides the overarching Integrated Air and Missile Defense (IAMD) Architecture and IAMD Battle Command System (IBCS) components necessary to produce an IAMD capability. The IAMD Program represents a shift from a traditional system-centric weapon systems acquisition to a component-based acquisition. This component-based acquisition will provide the most efficient way to acquire and integrate the components of the incremental IAMD architectures. Unlike traditional acquisition programs that focus primarily on the development of a single system or platform, the IAMD Program is structured to enable the development of an overarching system-of-systems capability with all participating Air and Missile Defense (AMD) components functioning interdependently to provide total operational capabilities not achievable by the individual element systems. The IAMD Program achieves this objective by establishing the incremental IAMD architecture and developing the following products: the IBCS, the Integrated Fire Control (IFC) Network, and the Common Plug & Fight (P&F) Interface. The IBCS provides the common IAMD Battle Management Command, Control, Communications, Computers and Intelligence (BMC4I) capability. The IFC Network provides fire control connectivity and enabling distributed operations. The Common P&F Interface integrates the multiple sensor and weapon components. Development of the component-unique part of the P&F Interface remains within the purview of the affected components project/product office.

FY 10 funding represents the Integrated Air & Missile Defense capability. Full funding will be established at Milestone B.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Product Development	98344	80662	171983
Support Cost	12578	13020	14464
Test and Evaluation	12790	17780	23084
Small Business Innovative Research/Small Business Technology Transfer Program		3211	
Total	123712	114673	209531

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PE 0604869A, Project M06, PATRIOT/MEADS Combined Aggregate Program (CAP)	401565	429846	569182	Continuing	Continuing
SSN C50001, PATRIOT/MEADS CAP		30957	16406	Continuing	Continuing
PE 0604802A, Project S23, SLAMRAAM	33570	33662	11736	Continuing	Continuing
PE 0102419A, Proj E55, JLENS	464877	355257	360076	Continuing	Continuing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT
4 - Advanced Component Development and Prototypes	0603327A - Air and Missile Defense Systems Engineering			S34
SSN C81001, SLAMRAAM Production		40349	72920	Continuing
PE 0604820A, Proj E10, Sentinel	6828			Continuing

Comment:

C. Acquisition Strategy The Integrated Air and Missile Defense (IAMD) Program will employ an evolutionary acquisition strategy consisting of multiple capability increments leading to an objective capability in FY17. The IAMD Program will carry two development contractors through Preliminary Design Review (PDR) with a downselect at Milestone B (MS B).

Each IAMD capability increment follows the IAMD Capability Development Document (CDD) and is defined as:

- Increment 1 is a User-executed capability increment focused on realignment of current force systems into an AMD Composite Battalion (BN) organizational construct. (not part of the materiel development program)
- Increment 2 provides the first increment of an integrated materiel solution, and is the initial acquisition program to develop the objective IAMD capability.

The IAMD incremental development approach provides the opportunity for technology insertions into the program throughout each increment as high-payoff technologies mature and are ready for integration. This enables an orderly and cost-effective migration from the current system-centric architecture to the IAMD architecture.

Key principles of the IAMD acquisition approach are the following:

- Migrate from system-based acquisition to component-based acquisition
- Use system-of-systems acquisition approach with collaboration among IAMD, PEO MS, PEO C3T, and PM Future Combat System Brigade Combat Team (BCT) Component Project Offices, and other Service Project Offices to network enable weapons and sensor components
- Develop and procure common Integrated Battle Command System (IBCS) Command Post (CP) that replaces multiple weapon system unique Battle Management Command, Control, Communications, Computers and Intelligence (BMC4I) components
- Establish product lines used to evaluate and select, modify and integrate modular open systems Hardware (HW) and Software (SW) common configuration items
- Conduct architecture-based System Engineering, Integration and Test (SEI&T) activities for an incremental fielded configuration of the IAMD Integrated Fire Control (IFC) Network-compatible IBCS CP, weapons and sensor system components
- Integration of the Integrated Architecture Behavior Model (IABM) to develop a Single Integrated Air Picture (SIAP) for Army IAMD (AIAMD).

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603327A - Air and Missile Defense Systems Engineering							S34		
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
Air Space and Missile Defense (ASMD) System of Systems (SOS) Hardware-in-the- Loop Testbed	Cost Plus Fixed Fee	Multiple OGA's, Inhouse and Contractor, Huntsville, AL and various other locations	9912							Cont.	Cont.	Cont.
Concept Development	Cost Plus Incentive Fee	Contractors, Huntsville, AL		50408	1-4Q					Cont.	Cont.	Cont.
IAMD System Engineering & Integration	Cost Plus Fixed Fee	Contractor, Huntsville, AL		43725	1-4Q	27305	1-4Q	39418	1-4Q	Cont.	Cont.	Cont.
IBCS System Development and Demonstration	Cost Plus Incentive Fee	Contractor, Huntsville, AL/other locations				51726	2-4Q	119151	1-4Q	Cont.	Cont.	Cont.
Government Furnished Equipment	N/A	Multiple		2246	1-4Q	2643	1-4Q	9583	1-4Q	Cont.	Cont.	Cont.
US Army Aviation and Missile Research Development and Engineering Center (AMRDEC)	N/A	AMRDEC, AL		1965	1-4Q	2199	1-4Q	3831	1-4Q	Cont.	Cont.	Cont.
Subtotal:			9912	98344		83873		171983		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
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
Army Evaluation Center/Developmental Test Command/Operational Test	MIPR	Various		750	1-4Q	1100	1-4Q	780	1-4Q	Cont.	Cont.	Cont.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes			PE NUMBER AND TITLE 0603327A - Air and Missile Defense Systems Engineering							PROJECT S34		
Command												
Modeling & Sim/Joint Interoperability Test Spt	MIPR	Huntsville, AL		12040	1-4Q	16680	1-4Q	22304	1-4Q	Cont.	Cont.	Cont.
Subtotal:				12790		17780		23084		Cont.	Cont.	Cont.

Remarks: Military Interdepartmental Purchase Request (MIPR)

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 System Engineering & Program Management (SEPM)	N/A	Multiple OGAs, Inhouse and Contractor, Huntsville, AL		12578	1-4Q	13020	1-4Q	14464	1-4Q	Cont.	Cont.	Cont.
Subtotal:				12578		13020		14464		Cont.	Cont.	Cont.

Project Total Cost:	9912	123712		114673		209531		Cont.	Cont.	Cont.
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
4 - Advanced Component Development and Prototypes		0603327A - Air and Missile Defense Systems Engineering																S34														
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) IBCS Contract Awards (IAMD Incr 2)					▲ 1																											
(2) Preliminary Design Review (PDR) (IBCS Incr 2)									▲ 2																							
(3) Preliminary Design Review (PDR) (IAMD Incr 2)													▲ 3																			
(4) MS B (IAMD Incr 2)																	▲ 4															
(5) Interim Design Review (IDR)																					▲ 5											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603327A - Air and Missile Defense Systems Engineering						PROJECT S34	
<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>	
IBCS Contract Awards (IAMD Incr 2)	4Q								
Preliminary Design Review (PDR) (IBCS Incr 2)		3Q							
Preliminary Design Review (PDR) (IAMD Incr 2)		4Q							
MS B (IAMD Incr 2)			1Q						
Interim Design Review (IDR)			2Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603460A - Joint Air-to-Ground Missile (JAGM)			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
JA2	JOINT AIR-TO-GROUND MISSILE (JAGM)	51690			51690

A. Mission Description and Budget Item Justification: The Joint Air-to-Ground Missile (JAGM) is an air-launched missile system that provides advanced line-of-sight (LOS) and beyond-line-of-sight (BLOS) capabilities, including precision point and fire-and-forget (active and passive) seeker targeting technologies; increased range; and increased lethality against soft and hardened moving and stationary targets. The system will be used with fixed-wing aircraft, rotary-wing aircraft, and unmanned aircraft systems (UAS).

The JAGM System will replace aviation-launched TOW, the HELLFIRE family of missiles, and the Navy's Maverick family of missiles. JAGM is a joint program with the Army, Navy and USMC that addresses rotary/fixed wing and UAS requirements. The Army is funding missile development and integration to Army unique platforms with the Navy funding their platform integration requirements. The Super Hornet (F/A 18E/F), the Apache (AH-64D), and the Super Cobra (AH-1Z) are Milestone C threshold platforms with integration occurring no later than (NLT) the end of FY13 and Initial Operational Capability (IOC) beginning NLT the end of FY16. Other threshold platforms are the Seahawk (MH-60R) and Extended Range Multi Purpose (ERMP) UAS, and an Army Light Armed Scout Helicopter. MH-60R integration occurs NLT FY14. Integration timelines for ERMP and the Light Armed Scout Helicopter are notional and will be updated prior to Milestone B as those programs mature. JAGM will increase the Warfighter's operational flexibility by effectively engaging a variety of stationary and mobile targets on the battlefield, including advanced heavy/light armored vehicles, bunkers, buildings, patrol craft, command and control vehicles, transporter/erector (e.g., SCUD) launchers, artillery systems, and radar/air defense systems. Its multi-mode seeker will provide robust capability in adverse weather, day or night, and in an obscured/countermeasure environment, against both stationary and moving targets. JAGM supports more efficient logistics for expeditionary force tailoring by replacing several missile variants with a single, interoperable weapon. The warhead is designed for high performance against both armored and non-armored targets. It also allows flexibility in the location of resupply on the battlefield, thereby minimizing the logistics burden of the combat force. The JAGM System includes missile, trainers, containers, support equipment, and launcher MODS. Six prototype missiles per contractor will be procured to support Technology Development.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603460A - Joint Air-to-Ground Missile (JAGM)		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	53160		
Current BES/President's Budget (FY 2010)	51690		
Total Adjustments	-1470		
Congressional Program Reductions			
Congressional Recissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-1470		
Adjustments to Budget Years			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT	
4 - Advanced Component Development and Prototypes	0603460A - Joint Air-to-Ground Missile (JAGM)			JA2	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
JA2 JOINT AIR-TO-GROUND MISSILE (JAGM)	51690				51690

A. Mission Description and Budget Item Justification: The Joint Air-to-Ground Missile (JAGM) is an air-launched missile system that provides advanced line-of-sight (LOS) and beyond-line-of-sight (BLOS) capabilities, including precision point and fire-and-forget (active and passive) seeker targeting technologies; increased range; and increased lethality against soft and hardened moving and stationary targets. The system will be used with fixed-wing aircraft, rotary-wing aircraft, and unmanned aircraft systems (UAS).

The JAGM System will replace aviation-launched TOW, the HELLFIRE family of missiles, and the Navy's Maverick family of missiles. JAGM is a joint program with the Army, Navy and USMC that addresses rotary/fixed wing and UAS requirements. The Army is funding missile development and integration to Army unique platforms with the Navy funding their platform integration requirements. The Super Hornet (F/A 18E/F), the Apache (AH-64D), and the Super Cobra (AH-1Z) are Milestone C threshold platforms with integration occurring no later than (NLT) the end of FY13 and Initial Operational Capability (IOC) beginning NLT the end of FY16. Other threshold platforms are the Seahawk (MH-60R) and Extended Range Multi Purpose (ERMP) UAS, and an Army Light Armed Scout Helicopter. MH-60R integration occurs NLT FY14. Integration timelines for ERMP and the Light Armed Scout Helicopter are notional and will be updated prior to Milestone B as those programs mature. JAGM will increase the Warfighter's operational flexibility by effectively engaging a variety of stationary and mobile targets on the battlefield, including advanced heavy/light armored vehicles, bunkers, buildings, patrol craft, command and control vehicles, transporter/erector (e.g., SCUD) launchers, artillery systems, and radar/air defense systems. Its multi-mode seeker will provide robust capability in adverse weather, day or night, and in an obscured/countermeasure environment, against both stationary and moving targets. JAGM supports more efficient logistics for expeditionary force tailoring by replacing several missile variants with a single, interoperable weapon. The warhead is designed for high performance against both armored and non-armored targets. It also allows flexibility in the location of resupply on the battlefield, thereby minimizing the logistics burden of the combat force. The JAGM System includes missile, trainers, containers, support equipment, and launcher MODS. Six prototype missiles per contractor will be procured to support Technology Development.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Source Selection Evaluation Board (SSEB)	3200		
Contractor Establishment of Teams and Ramp-Up	31758		
Controls Establishment (Schedule and Cost Center)	4447		
Finalize Integrated Flight Simulation and Hardware in the Loop (HWIL)	6971		
Government Preparation for Integrated Baseline Review (IBR)	2124		
Software Simulation Algorithm Maturity	3190		
Total	51690		

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE				PROJECT
4 - Advanced Component Development and Prototypes	0603460A - Joint Air-to-Ground Missile (JAGM)				JA2
Joint-Air-To-Ground Missile (JAGM) PE: 655450		118125	127439	Continuing	Continuing
Joint Air-to-Ground Missile (JAGM) SSN: C70302				Continuing	Continuing
Navy (RDTE) Joint Air-to-Ground Missile (JAGM)	11626	61757	81434	Continuing	Continuing
Navy (Procurement) Joint Air-to-Ground Missile (JAGM)				Continuing	Continuing

Comment: JAGM RDT&E funding for FY 2008 was received under Budget Activity 4, Advanced Component Development and Prototypes (ACD&P). Following solicitation and formal source selection, the government competitively awarded Fixed Price Incentive (FPI) contracts (with full cost reporting) to two contractors for the 27 month Technology Development (TD) phase with FY2008 funds. All JAGM RDT&E funding for FY 2009 and out has been established under Budget Activity 5, System Development and Demonstration.

C. Acquisition Strategy The JAGM System is an ACAT 1D Joint Army/Navy/USMC program with the Army designated as lead service. The JAGM system is a common air-to-ground precision guided missile for use by Joint Service manned and unmanned aircraft to destroy high-value stationary, moving, and relocateable land and naval targets. JAGM provides current and future aviation platforms a common, multi-mode weapon, with reactive targeting capability, which satisfies the sum of needs across the joint platforms and eliminates the requirement for separate upgrades to multiple existing missile systems. The JAGM program has four phases: a TD phase including system integration and preliminary design review (PDR), an Engineering Manufacturing, and Development (EMD) phase, a Production & Deployment (PD) phase, and an Operations & Support phase. Following solicitation and formal source selection, the government competitively awarded Fixed Price Incentive (FPI) contracts (with full cost reporting) to two contractors for the 27-month TD phase. The TD phase culminates with PDR and competitive fly-off of the contractor's prototype missiles. Approximately 22-months after TD phase contract award, TD contractors will be asked to submit proposals for the EMD and Low Rate Initial Production (LRIP) phases. A second source selection process will evaluate the contractor's TD performance and proposals for the EMD and PD phases. Offeror's plans to facilitate competition during the PD phase will be considered during the evaluation process for the EMD contract. The government plans to award one cost plus incentive fee/award fee (CPIF/AF) contract for the 48-month EMD phase, including provisions for procurement of long lead-time items to support the follow-on PD phase. Fixed Price Type contracts are planned for the PD phase (LRIP and full rate production (FRP)).

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603460A - Joint Air-to-Ground Missile (JAGM)							JA2		
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
Lockheed Martin	FPI	Orlando, Florida		24140	4Q						24140	
Raytheon	FPI	Tucson, Arizona		18000	4Q						18000	
Support Contracts	Various	Various		1375	2-4Q						1375	
Development Engineering	Various	Various		1657	2-4Q						1657	
Subtotal:				45172							45172	
Remarks: Fixed Price Incentive Fee/Award Fee (FPIF/AW)												
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 Support	Various	Various		835	2-4Q						835	
Subtotal:				835							835	
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 Gov Agencies	Various	Various		734	3-4Q						734	
Subtotal:				734							734	
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
System Eng/ Project Management	Various	Various		4949	2-4Q						4949	
Subtotal:				4949							4949	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Advanced Component Development and Prototypes

0603460A - Joint Air-to-Ground Missile (JAGM)

JA2

Project Total Cost:

51690

51690

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603460A - Joint Air-to-Ground Missile (JAGM)																JA2															
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) Contract Award	▲																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603460A - Joint Air-to-Ground Missile (JAGM)					PROJECT JA2	
<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>
Contract Award	4Q							

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Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Advanced Component Development and Prototypes	0603460A - Joint Air-to-Ground Missile (JAGM)	JA2	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
Joint Air-To-Ground Missile (JAGM)			
Total Termination Liability Funding:			
<p>Remarks: For the FPIF Phase I, the JAGM Prime Contract incorporates the "Limitation of Government's Obligation" clause (DFARS 252.232-7007) to limit the Government's liability. For the CPIF/AF Phase II, the JAGM Prime Contract will incorporate the "Limitation of Funds" clause (FAR 52.232-22) to limit the Government's liability. For the JAGM Program, these two clauses limit 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			
4 - Advanced Component Development and Prototypes		0603619A - Landmine Warfare and Barrier - Adv Dev			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
606 CNTRMN/BARRIER ADV DEV	19120	14186	17536	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides for advanced development of all landmine and counter landmine technologies. Currently it contains one funded project line. It provides for component development of new countermine systems for neutralizing, clearing, and detection concepts that will enhance the effectiveness of the Route Clearance Family of Systems Capabilities Development Document. One of these programs is planned for FY2010 - the Autonomous Mine Detector System (AMDS). AMDS provides stand off detection for the dismounted soldier. AMDS consist of three payloads for a robotic platform. The payloads are for remote mine detection and marking, explosive hazard detection and marking, and neutralization.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
4 - Advanced Component Development and Prototypes	0603619A - Landmine Warfare and Barrier - Adv Dev

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	24580	29234	18873
Current BES/President's Budget (FY 2010)	19120	14186	17536
Total Adjustments	-5460	-15048	-1337
Congressional Program Reductions		-15048	
Congressional Recissions			
Congressional Increases			
Reprogrammings	-4772		
SBIR/STTR Transfer	-688		
Adjustments to Budget Years			-1337

Change Summary Explanation:

FY 2008: \$4.7M was reprogrammed to PE 0604808A/Project 415 for ASTAMIDS program.

FY 2009: \$15.0M Congressional Reduction for delays in the AMDS program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603619A - Landmine Warfare and Barrier - Adv Dev			PROJECT 606	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
606 CNTRMN/BARRIER ADV DEV	19120	14186	17536	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project provides for component development of new countermines systems for neutralizing, clearing, and detection concepts that will enhance the effectiveness of the Route Clearance Family of Systems Capabilities Development Document. One of these programs is planned for FY2010 - the Autonomous Mine Detector System (AMDS). AMDS provides stand off detection for the dismounted soldier. AMDS consist of three payloads for a robotic platform. The payloads are for remote mine detection and marking, explosive hazard detection and marking, and neutralization.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Initiate Autonomous Mine Detection Sensors (AMDS) program	19120		
Build and test AMDS Brassboards (2)		13788	17536
Small Business Innovative Research/Small Business Technology Transfer Program		398	
Total	19120	14186	17536

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

C. Acquisition Strategy Autonomous Mine Detection Sensors (AMDS) - The AMDS is currently in a risk reduction effort that started in FY08 and will be completed in FY10. Future technical development effort will occur leading to a transition from Concept Development (6.4) to Engineering Manufacturing Development (6.5)

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT		
4 - Advanced Component Development and Prototypes			0603619A - Landmine Warfare and Barrier - Adv Dev								606		
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	
Adv Mine Detection Sensors - BAAs	C/CPFF	Various		6992	2Q	5390	3Q				12382		
Adv Mine Detectio Sensors Tech Dev	C/CPFF	To Be Selected				881	3Q	9634	2Q		10515		
AMDS Other Component Development	C/FP, T&M	Various		7681	2Q	1209	2Q	3228	2Q		12118		
Subtotal:				14673		7480		12862			35015		
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	
Adv Mine Detection Sensors	MIPR	Various OGAs		2969	2Q	4267	2Q	2889	2Q		10125		
Subtotal:				2969		4267		2889			10125		
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	
AMDS	MIPR	Various OGA		59	2Q	84	2Q	184	2Q		327		
Subtotal:				59		84		184			327		
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	PM Close Combat	900	925	1Q	1414		477	1Q		4284		

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603619A - Landmine Warfare and Barrier - Adv Dev							606		
		Systems Picatinny NJ/ Ft Belvoir VA										
Program Management Contractor	C/FP	Millenium Arlington, VA						256	2Q			506
Program Management Contractor Support	C/FP	FALCON, Fairfax VA	122	494	2Q	543		868	2Q			2625
SBIR/STTR						398						398
Subtotal:			1022	1419		2355		1601				7813
Project Total Cost:			1022	19120		14186		17536				53280

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603619A - Landmine Warfare and Barrier - Adv Dev																606															
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
Risk Reduction Effort - Broad Agency Announcement	[Redacted]																															
Advanced Mine Detection Sensors Technology Development	[Redacted]																															
(1) AMDS Milestone A					▲ 1																											
Build Multiple Brassboards									[Redacted]																							
(2) AMDS MS A Preliminary Design Review													▲ 2																			

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603619A - Landmine Warfare and Barrier - Adv Dev						606	
<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>	
Risk Reduction Effort - Broad Agency Announcement	2Q - 4Q	1Q - 4Q	1Q - 4Q						
Advanced Mine Detection Sensors Technology Development		2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 3Q				
AMDS Milestone A		2Q							
Build Multiple Brassboards		4Q	1Q - 2Q						
Test Brassboards				2Q - 4Q					
AMDS MS A Preliminary Design Review			4Q						
AMDS MS A Critical Design Review				4Q					
AMDS Milestone B					4Q				
HMDS Milestone A				1Q					
HMDS Sensor Technology Development				2Q - 4Q	1Q - 2Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603627A - Smoke, Obscurant and Target Defeating Sys-Adv Dev			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
E79 SMOKE/OBSCURANT SYSTEM	9104	3826	4920	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project supports the development and improvement of an array of obscurant agents, munitions, and devices to improve survivability of the combined armed forces, support extended range capability, complement combined weapon systems, and enhance force effectiveness and combat power. This program element supports critical management studies and analyses that are conducted on a continuing basis to ensure that engineering and manufacturing development efforts are targeted against the emerging threat. US Forces must be able to effectively neutralize and degrade energy weapon systems and electro-optical systems/smart weapons that operate in the full range of the electromagnetic spectrum. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and launched smoke systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603627A - Smoke, Obscurant and Target Defeating Sys-Adv Dev		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	9363	3840	18544
Current BES/President's Budget (FY 2010)	9104	3826	4920
Total Adjustments	-259	-14	-13624
Congressional Program Reductions		-14	
Congressional Recissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-259		
Adjustments to Budget Years			-13624

Change Summary Explanation: Funding - FY 10: Funds realigned to higher priority Army programs.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603627A - Smoke, Obscurant and Target Defeating Sys-Adv Dev			PROJECT E79
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
E79 SMOKE/OBSCURANT SYSTEM	9104	3826	4920	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project supports the development and improvement of an array of obscurant agents, munitions, and devices to improve survivability of the combined armed forces, support extended range capability, complement combined weapon systems, and enhance force effectiveness and combat power. This program element supports critical management studies and analyses that are conducted on a continuing basis to ensure that engineering and manufacturing development efforts are targeted against the emerging threat. US Forces must be able to effectively neutralize and degrade energy weapon systems and electro-optical systems/smart weapons that operate in the full range of the electromagnetic spectrum. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and launched smoke systems.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Conducted test and evaluation of Screening Obscuration Devices (SOD) alternatives.	1986		
Initiate and continue environmental studies.	414		500
Initiate and continue SOD and SOM visible items development.	4671	2426	2170
Conducted and completed SOD Milestone C and Low Rate Initial Production	1330		
Initiate test and evaluation of SOD and SOM alternatives.	703	1138	1750
Initiate SOD infrared alternatives Milestone B.			500
Small Business Innovative Research/Small Business Technology Transfer Program		262	
Total	9104	3826	4920

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
New OFS item					

Comment:

C. Acquisition Strategy Acquisition Strategy: The Advanced Component Development effort acquisition strategy uses full and open competition and cost plus fixed fee (CPFF) contracting to test and build multispectral grenades and smart dischargers.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603627A - Smoke, Obscurant and Target Defeating Sys-Adv Dev							E79		
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
Hardware Development		JPM NBCCA, APG, MD	10094	4290	1-2Q			1000	1-2Q		16009	
Hardware Development	MIPR	Pine Bluff Arsenal, AR		730	2Q						730	
Hardware Development	C/CPFF TBD					1236	1-2Q	1000	1-2Q		2861	
Subtotal:			10094	5020		1236		2000			19600	
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
Environmental Tox Studies			800	414	2Q			500	1-2Q		1964	
Engineering Studies				1084	1Q	1139	1Q				2223	
Subtotal:			800	1498		1139		500			4187	
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
SOD Eng Design Test		OGA Various	200								100	
SOD Test & Evaluation		OGA Various	2230	1986	2Q	900	2-3Q				5116	
SOM Test & Evaluation		OGA Various						1250	1-2Q		1250	
Subtotal:			2430	1986		900		1250			6466	
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		
4 - Advanced Component Development and Prototypes			0603627A - Smoke, Obscurant and Target Defeating Sys-Adv Dev							E79		
	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
Engineering Support		JPMNBCCA, APG, MD	300	600	1Q	551	1Q	1170	1Q		2621	
Subtotal:			300	600		551		1170			2621	
Project Total Cost:			13624	9104		3826		4920			32874	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																																						
4 - Advanced Component Development and Prototypes	0603627A - Smoke, Obscurant and Target Defeating Sys-Adv Dev	E79																																																						
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) Milestone C (Screening Obscuration Devices -Visual Restricted Terrain (SOD-VR))																																																								
(2) Milestone C (SOD-Visual) Full Rate Production (FRP)																																																								
(3) Milestone B (SOD Bi-spectral)																																																								

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603627A - Smoke, Obscurant and Target Defeating Sys-Adv Dev	PROJECT E79
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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>
Milestone C (Screening Obscuration Devices -Visual Restricted Terrain (SOD-VR))	1Q							
Milestone C (SOD-Visual) Full Rate Production (FRP)		3Q						
Milestone B (SOD Bi-spectral)					3Q			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603639A - Tank and Medium Caliber Ammunition			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	46160	40731	33934	147300	268125
652 ADVANCED KINETIC ENERGY (AKE) 120MM CARTRIDGE			33934	147300	181234
656 FCS Mounted Combat System (MCS) Ammunition	43068	40731			83799
694 MEDIUM CALIBER AMMUNITION	3092				3092

A. Mission Description and Budget Item Justification: The Tank and Medium-caliber Ammunition (TMA) Program Element (PE) encompasses a comprehensive program to develop, rapidly transition to production, and field advanced tank, medium caliber, and other munitions. These programs will ensure continued battlefield overmatch and lethality of U.S. maneuver forces despite worldwide development and proliferation of enhanced armored vehicle protection technologies. To achieve this, TMA will identify and develop promising technologies through competitive development and streamlined acquisition procedures. All ammunition development funds within this PE are managed to facilitate transitions between phases, avoid administrative delays, and focus resources on the most promising areas.

FY 2010 funding supports EMD initiation of the Advanced Kinetic Energy (AKE) cartridge. The AKE round is an unguided, direct fire, platform-delivered Line of Sight (LOS) munition that will provide fast response lethality to rapidly destroy threat targets with Explosive Reactive Armor (ERA) and Active Protection Systems (APS) in the close fight from 0km to 2km. AKE will be compatible with both 120mm Current Force Abrams Main Battle Tank.

In FY 2010, the FCS Mounted Combat System (MCS) Ammunition is terminated due to restructuring of the MGCV portion of the FCS program and the refocusing to spin out FCS technologies faster to the IBCT. Funding in FY 2010 has been deleted.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
4 - Advanced Component Development and Prototypes	0603639A - Tank and Medium Caliber Ammunition

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	47474	45866	71451
Current BES/President's Budget (FY 2010)	46160	40731	33934
Total Adjustments	-1314	-5135	-37517
Congressional Program Reductions		-5135	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	15		
SBIR/STTR Transfer	-1329		
Adjustments to Budget Years			-37517

Change Summary Explanation:

FY 2009: \$5.0M Congressional Reduction for MRM Follow-on Cartridge Integration Test forward funding.

FY 2010: Increase of \$33.9M for Advanced Kinetic Energy (AKE) Cartridge, Project 652.

FY 2010: FCS Mounted Combat System (MCS) Ammunition is terminated.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603639A - Tank and Medium Caliber Ammunition			PROJECT 652
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
652 ADVANCED KINETIC ENERGY (AKE) 120MM CARTRIDGE			33934	147300	181234

A. Mission Description and Budget Item Justification: FY 2010 supports Phase I of the Advanced Kinetic Energy (AKE) cartridge Engineering and Manufacturing Development (EMD).

The AKE round is a platform-delivered Line of Sight (LOS) munition that will provide capability for the current force's Heavy Brigade Combat Teams (HBCT) and Future Combat System Brigade Combat Team's (FCS BCT) commander to conduct decisive operations and destroy current and future Main Battle Tanks (MBTs) with Explosive Reactive Armor (ERA) and Active Protection Systems (APS) at ranges from 0-2km (T) and 0-4km (O). The AKE will provide the capability to destroy and or neutralize the adversary and his capabilities, at any given time or place, while minimizing fratricide and noncombatant casualties in a joint environment.

The AKE is the next generation premier kinetic energy (KE) round and will replace the current Abrams KE round (M829A3). The AKE will provide lethal overmatch against designated threats throughout all combat operations, to include Military Operation in urbanized Terrain (MOUT), mountain, and non-traditional battlefields. The increased performance against standard armor, ERA, and APS will allow for the use of fewer rounds and will increase survivability of the platform with faster engagement of follow-on targets.

AKE will be compatible with both 120mm Current Force Abrams main battle tank and the FCS BCT Mounted Combat System (MCS) platforms.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Phase I Engineering and Manufacturing Development (EMD)			31234
Lethal Mechanism Test			1200
Mid-Point Gate Review System Test			1500
Total			33934

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

C. Acquisition Strategy The Advanced Kinetic Energy (AKE) cartridge is at Technology Readiness Level 6 (TRL6). A competitive Request for Proposal (RFP) for the initial Engineering and Manufacturing Development (EMD) phase will be issued with the plan to accept two separate contractors for Phase I. Following milestone B, scheduled for the fourth quarter FY 2009, EMD Phase I, will begin in FY 2010 and end in FY 2011 when there will be a down-select to one contractor. The down-select will be based on the cartridge design performance and program cost estimate of each contractor at the time of down-select testing. The selected contractor will be awarded the option to continue and

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603639A - Tank and Medium Caliber Ammunition

PROJECT

652

conclude EMD Phase II in FY 2013. Upon successful completion of Milestone C, a production option will be awarded to the EMD Phase II contractor.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603639A - Tank and Medium Caliber Ammunition							652		
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
TBS (Phase I)	C/CPFF	TBS						10000	1Q		10000	
TBS (Phase I)	C/CPFF	TBS						10000	1Q		10000	
Aerojet	SS/FFP	Johnson City, TN						7000	1Q		7000	
PM-MAS	MIPR	Picatinny Arsenal, NJ						994	1-4Q		994	
Subtotal:								27994			27994	
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
ARDEC	MIPR	Picatinny Arsenal, NJ						2770	1-4Q		2770	
Army Research Lab	MIPR	APG, MD						500	1-4Q		500	
Miscellaneous	MIPR	TBS						400	1-4Q		400	
Subtotal:								3670			3670	
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
Yuma Proving Ground	MIPR	Yuma, AZ						1100	2-3Q		1100	
Aberdeen Proving Ground	MIPR	APG, MD						550	2-3Q		550	
Army Research Lab	MIPR	APG, MD						500	2-3Q		500	
ATEC	MIPR	APG, MD						120	2-3Q		120	
Subtotal:								2270			2270	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603639A - Tank and Medium Caliber Ammunition	PROJECT 652
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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:												

Project Total Cost:								33934			33934	
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																						
4 - Advanced Component Development and Prototypes	0603639A - Tank and Medium Caliber Ammunition	652																																						
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) Phase I Contract Award																	▲ Phase I Contract Award																							
Engineering and Manufacturing Development (EMD) Phase I																	■ EMD Phase I																							
(2) Lethal Mechanism Test																					▲ Lethal Mech Test																			
(3) Mid-Point Gate Review System Test																					▲ MGRS Test																			
(4) Critical Design Review																					▲ CDR																			

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603639A - Tank and Medium Caliber Ammunition					PROJECT 652	
<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>
Phase I Contract Award			1Q					
Engineering and Manufacturing Development (EMD) Phase I			1Q - 4Q					
Lethal Mechanism Test			2Q					
Mid-Point Gate Review System Test			3Q					
Critical Design Review			4Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603639A - Tank and Medium Caliber Ammunition			PROJECT 656
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
656 FCS Mounted Combat System (MCS) Ammunition	43068	40731			83799

A. Mission Description and Budget Item Justification: This project supports the development of ammunition for the Future Combat System (FCS) Mounted Combat System (MCS). The Mid Range Munition (MRM) is critical to FCS force effectiveness, reinforcing the Beyond Line of Sight (BLOS) capability, and allows FCS to meet Key Performance Parameter #3, Networked Lethality. The MRM Capabilities Development Document (CDD) has a Key Performance Parameter (KPP) that requires the munition to be interoperable with the Abrams M256 cannon, breech, and ammunition wells / racks. MRM would provide a new capability for Abrams that drastically increases the lethal range of the platform well beyond that of any other large caliber munition. Required modifications to the platform include an ammunition data link, which is also required for the other large caliber future munitions including the Advanced Kinetic Energy and the Advanced Multi Purpose. Incorporation of MRM into Abrams will require additional qualification testing beyond what is currently planned for the FCS Mounted Combat System (MCS).

The MRM round is a precision-guided munition that provides the capability for the FCS BCT commander to both shape and set conditions in his battlespace to conduct decisive operations and destroy enemy forces by engaging moving and stationary targets throughout his area of operations. The MRM round will incorporate a seeker(s) that enables the munition to attack targets designated by the Mounted Combat System or another remote (manned/unmanned) sensor, or autonomously attack targets if designation is lost or not available.

MRM is a first generation fire and forget gun-launched munition that is being developed to provide the Mounted Combat System with a BLOS capability. MRM is a precision-guided munition that provides a moving or stationary Mounted Combat System the capability to engage and destroy moving and stationary enemy targets throughout his area of operations (2-12km (T) or 2-16km (O)) in a BLOS mode. MRM will have a seeker to enable it to engage designated targets or autonomously guide itself to and attack targets if designation is lost or not present.

There are three modes of operation when employing the MRM round: autonomous, designate, and designate only. The sensor/observer must decide which mode to use based on the factors of mission, enemy, troops, terrain, time, and civil considerations (METT-TC) and the commander's intent, in the Attack Guidance (AG) matrix. Autonomous shall be utilized when a sensor/observer does not want to give away his position, if a designator is not available or inoperative, or if inter-visibility terrain lines prevent illumination of the target.

Prior to firing, integration of battlefield command and control information (range to target, laser designation code, etc) will be transmitted to the munition through a data link connecting the MRM to the Mounted Combat System fire control system. Once fired, no further command and control from the MCS is required. The round will guide itself to the target using on board sensors or possibly a laser reflection with a properly encoded pulse rate. The munition will employ state-of-the-art kill mechanisms to achieve the highest probability of kill possible against a variety of armored targets. The technologies that provide both guidance and lethality shall be all weather and countermeasure resistant. Sensors for the Autonomous mode will also be enabled at a range that will reduce the probability of collateral damage.

The MRM successfully acquired, identified, guided and hit a stationary T-72 tank at 5.2 kilometers in December 2008.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	0603639A - Tank and Medium Caliber Ammunition	656

In FY 2010, the FCS Mounted Combat System (MCS) Ammunition is terminated due to restructuring of the MGV portion of the FCS program and the refocusing to spin out FCS technologies faster to the IBCT. The funding has been zeroed for FY2010.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
MRM Engineering and Manufacturing Development (EMD) activities. Program Management activities consist of risk and Unit Production Price (UPP) management, finance/budgeting efforts, scheduling efforts, configuration management, and supply chain management. Systems Engineering activities consist of systems architecture efforts, functional analysis efforts, requirements allocation, interface definition, system design and performance efforts, system safety, and reliability/availability. Cartridge design activities include overall cartridge development/engineering activities. These are overall design architecture, airframe design, sensor suite design, guidance and electronics, lethality, and software. System Test and Evaluation activities include test architecture development, test facilities development and support, test equipment development/manufacture, engineering lab design, engineering field design, and test support. System Test and Evaluation will include Cartridge Integration Testing and Guided Flight Testing along with testing to include Live Fire Test and Evaluation (LFT&E) and armor/lethality testing. Manufacturing activities include manufacturing architecture development, material management and pilot production line development.	24143	18522	
EMD Initial Cartridge Integration Test units (Qty=3) Leveraged use of S&T hardware.		56	
EMD Initial Cartridge Integration Test		225	
EMD Software Seeker Integration	9347	10091	
EMD Producibility	2019	3099	
EMD Prototype Manufacture (various components, subsystems, systems and assemblies, inspections)	7559	7597	
Small Business Innovative Research/Small Business Technology Transfer Programs		1141	
Total	43068	40731	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604646A F72 Non Line of Sight - Launch System	246071	208009	88660		542740
0604647A F58 Non Line of Sight - Cannon	133139	89545	58216		280900
0604660A FC1 FCS Manned Grd Vehicles & Common Grd Vehicle Components	635846	782664	368557		1787067
0604661A FC2 FCS System of Systems Engr & Program Management	1292514	1414756	1067191	Continuing	Continuing
0604662A FC3 FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604663A FC4 FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE				PROJECT
4 - Advanced Component Development and Prototypes	0603639A - Tank and Medium Caliber Ammunition				656
0604664A FC5 FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604665A FC6 FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604666A FC7 FCS Spin Out Tech/Capability Integ	84111	111032		Continuing	Continuing
WTCV G86100 Future Combat System	78932	154127			233059
WTCV G86200 FCS Spin Out	1370	67268			68638

Comment:

C. Acquisition Strategy The Mid Range Munition (MRM) Program completed the Technology Development phase. MRM achieved Design Requirements in both autonomous and designated firing modes, and transitioned (Milestone B) to Engineering and Manufacturing Development (EMD) at the end of FY 2007. There were two competing technical concepts by Raytheon Inc. and Alliant Tech Systems. A single contractor, Raytheon with one design, was selected based on a full and open competition in the first quarter of FY 2008. The MRM schedule coincides with the Mounted Combat System's development schedule, supporting the Future Combat System (FCS) Initial Operational Capability (IOC) milestone. The EMD effort will integrate MRM into the Mounted Combat System. In FY 2010, the MRM is terminated due to restructuring of the MGCV portion of the FCS program and the refocusing to spin out FCS technologies faster to the IBCT.

This strategy will deliver a proven, fully capable multi-mode munition that will meet the FCS MCS requirements and support the FCS IOC milestone.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603639A - Tank and Medium Caliber Ammunition							656		
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
Raytheon	CPIF/AF	Tucson, AZ		35800	1Q	36590	1Q				72390	245530
PM-MAS		Picatinny Arsenal, NJ		1290	1-4Q	900	1-4Q			2929	5119	5688
Subtotal:				37090		37490				2929	77509	251218
II. Support Costs			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
ARDEC / Benet Weapons Labs		Picatinny Arsenal, NJ		4580	1Q	1100	1-4Q			10068	15748	22760
Miscellaneous Support				1064	1-4Q						1064	
Subtotal:				5644		1100				10068	16812	22760
III. Test And Evaluation			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
Yuma Proving Ground		Yuma AZ		200	4Q	500	1-4Q			9226	9926	12881
Army Research Lab		Aberdeen PG, MD/White Sands, NM		119	3Q	350	3Q			2400	2869	5908
Redstone Arsenal		Huntsville, AL				100	1Q				100	
Miscellaneous		Multiple		15	3Q	50	3Q				65	1042
Subtotal:				334		1000				11626	12960	19831
IV. Management Services			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

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603639A - Tank and Medium Caliber Ammunition							656		
	Type				Date		Date		Date		Contract	
Miscellaneous.	MIPR	Multiple				1141					1141	956
Subtotal:						1141					1141	956
Project Total Cost:				43068		40731				24623	108422	294765

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT																			
4 - Advanced Component Development and Prototypes	0603639A - Tank and Medium Caliber Ammunition																656																			
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				
Engineering and Manufacturing Development (EMD)	EMD																																			
(1) Initial Cartridge Integration Test					▲ Initial Cartridge Integration Test																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603639A - Tank and Medium Caliber Ammunition					PROJECT 656	
<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>
Engineering and Manufacturing Development (EMD)	1Q - 4Q	1Q - 4Q						
Initial Cartridge Integration Test		1Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603639A - Tank and Medium Caliber Ammunition			PROJECT 694
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
694 MEDIUM CALIBER AMMUNITION	3092				3092

A. Mission Description and Budget Item Justification: This project will develop Medium Caliber Ammunition for the Bradley Fighting Vehicle System (BFVS), the Future Combat System (FCS) and other systems using Medium Caliber Armaments.

FY2008 Congressional funding supported the development of the 25mm High Explosive Airburst (HEAB) cartridge.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue design efforts of the 25mm High Explosive Airburst (HEAB) Scalable Fuze.	3092		
Total	3092		

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

C. Acquisition Strategy There is no budget beyond FY 2008 Congressional funding.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
C03 INTERIM ARMORED VEHICLE (IAV) FAMILY	127662	79350	90299	127641	424952

A. Mission Description and Budget Item Justification: This program element supports the development of the Family of Stryker vehicles. A critical need exists to improve the deployability and operational effectiveness of rapid response/early entry forces. The Stryker equipped Brigade Combat Team (BCT) is capable of deployment to anywhere on the globe in a combat ready configuration. Immediate response by a lethal, versatile, tactically agile joint force capable of operational maneuver once in the Area of Operations has been essential in fulfilling the warfighting needs of the U. S. Army. The Stryker family includes: Infantry Carrier Vehicle (ICV), Reconnaissance Vehicle (RV), Mobile Gun System (MGS), Mortar Carrier (MC), Commander's Vehicle (CV), Fire Support Vehicle (FSV), Engineer Squad Vehicle (ESV), Medical Evacuation Vehicle (MEV), Anti-Tank Guided Missile Vehicle (ATGM), and Nuclear/Biological/Chemical Reconnaissance Vehicle (NBCRV). The use of the common platform/common chassis design reduces requirements for repair parts and logistics support in the area of operations. RDT&E base funding is for integration of the mission equipment packages that make each platform unique and effective, and for vehicle testing to include developmental, production qualification, live fire, and Initial Operational Test and Evaluation (IOT&E). We will continue to address Overseas Contingency Operations, survivability, and Operational Needs Statements (ONS) issues with the Stryker base program. Funding will also be used to support RDT&E efforts required for the Stryker Modernization (S-MOD) program and correction of MGS deficiencies. The total Cost to Complete amount represents current funding in FY11 and FY12, not funding requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	143568	108012	
Current BES/President's Budget (FY 2010)	127662	79350	90299
Total Adjustments	-15906	-28662	90299
Congressional program reductions		-28662	
Congressional rescissions			
Congressional increases			
Reprogrammings	-11889		
SBIR/STTR Transfer	-4017		
Adjustments to Budget Years			90299

Change Summary Explanation - Funding: FY08 reflects reprogrammings to Weapons and Munitions Advanced Technology and Paladin (\$11.889 million.) FY09 reflects a net Congressional reduction of \$28.663 million, and FY10 reflects a funding increase to continue the Stryker program.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE									
4 - Advanced Component Development and Prototypes			0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)									
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
Stryker Development/Engineering-Base Program	CPFF	GDLS Sterling Heights, MI	349459	43211	2-4Q	12933	2-3Q				405603	395188
Stryker Modernization (SMOD) and Correction of Mobile Gun System (MGS) Deficiencies	CPFF	GDLS Sterling Heights, MI		79952	1-4Q	64422	3Q	73284	1-3Q	60799	344196	341974
Subtotal:			349459	123163		77355		73284		60799	749799	737162
Remarks: Stryker development/engineering supports the Stryker Family of Vehicles base program efforts.												
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 Gov't Agencies - Active Protection System (APS)	MIPR	TACOM, Warren, MI / Various	19291			1600	2-3Q				20891	20891
Subtotal:			19291			1600					20891	20891
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 Test & Evaluation	MIPR	DPG, Utah	105786	83	3Q			5212	3Q	46210	157291	157291
Light Weight Stryker Reactive Armor Tile (LW SRAT)	MIPR	Army Test & Evaluation Command, DTC, MD, OTC, TX, AEC, VA						4063	1-2Q		4063	4063
Stryker Modernization (SMOD) Testing (PQT)	MIPR	Army Test & Evaluation Command, DTC, MD, OTC, TX, AEC, VA								37131	40486	40486
SMOD Live-Fire Test	MIPR	Army Test & Evaluation Command, DTC, MD,								14406	14406	14406

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE										
4 - Advanced Component Development and Prototypes			0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)										
		OTC, TX, AEC, VA											
SMOD Initial Operational Test & Evaluation (IOT&E)	MIPR	OTC, Ft. Knox, KY									45977	45977	45977
Contractor Support to Test	CPFF	GM GDLS DG L.L.C. Shelby, MI	21251	935	2Q			1430	3Q	18820	43628	43628	
Subtotal:			127037	1018				10705		162544	305851	305851	
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 Office (PMO)	N/A	TACOM, Warren, MI	10818	3481	1Q	395	1Q	7781	1Q	16610	47125	47125	
Subtotal:			10818	3481		395		7781		16610	47125	47125	
Project Total Cost:			506605	127662		79350		91770		239953	1123666	1111029	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)

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) NBCRV Extended LRIP	▲ NBCRV Extended LRIP																															
NBCRV Extended Reliability Growth Test					NBCRV Extended RGT																											
(2) NBCRV Milestone (MS) III Full-Rate Production									NBCRV MS C ▲																							
Mobile Gun System (MGS) IOT&E MGS IOTE	■																															
(3) MGS Extended LRIP	▲ MGS Extended LRIP																															
MGS DAB					MGS DAB ■																											
(4) Stryker Modernizatoin Program (SMOD) MS B (T)									Stryker MOD MS B (T) ▲																							
(5) Stryker Modernizatoin MS C (T)																	Stryker MOD MS C (T) ▲															
Stryker Light Weight Stryker Reactive Armor Tiles (LW SRAT)					LW SRAT LFT				■																							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						
4 - Advanced Component Development and Prototypes		0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)						
<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>
Milestone (MS) II								
Stryker Initial Production								
IOC								
IOT&E								
MS III								
Full Production - Stryker 8	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
Nuclear/Biological/Chemical Reconnaissance Vehicle (NBCRV)								
NBCRV IPR								
NBCRV Initial Production								
Nuclear/Biological/Chemical Reconnaissance Vehicle (NBCRV) IOT&E								
NBCRV Extended LRIP	1Q							
NBCRV Extended Reliability Growth Test		1Q - 4Q	1Q - 4Q					
NBCRV Milestone (MS) III Full-Rate Production			4Q					
Mobile Gun System (MGS) Development								
MGS IPR (14)								
MGS Initial Production								
MGS IPR (58)								
Mobile Gun System (MGS) IOT&E	1Q							
MGS Extended LRIP	2Q							
MGS DAB		3Q						
Stryker Modernizatop Program (SMOD) MS B (T)			4Q					
Stryker Modernizatop MS C (T)					3Q			

Stryker Light Weight Stryker Reactive Armor Tiles (LW SRAT)			1Q - 2Q					
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Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
Total Termination Liability Funding:			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)			PROJECT C03
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
C03 INTERIM ARMORED VEHICLE (IAV) FAMILY	127662	79350	90299	127641	424952

A. Mission Description and Budget Item Justification: This project supports the development of the Family of Stryker vehicles. A critical need exists to improve the deployability and operational effectiveness of rapid response/early entry forces. The Stryker equipped Brigade Combat Team (BCT) is capable of deployment to anywhere on the globe in a combat ready configuration. Immediate response by a lethal, versatile, tactically agile joint force capable of operational maneuver once in the Area of Operations has been essential in fulfilling the warfighting needs of the U. S. Army. The Stryker family includes: Infantry Carrier Vehicle (ICV), Reconnaissance Vehicle (RV), Mobile Gun System (MGS), Mortar Carrier (MC), Commander's Vehicle (CV), Fire Support Vehicle (FSV), Engineer Squad Vehicle (ESV), Medical Evacuation Vehicle (MEV), Anti-Tank Guided Missile Vehicle (ATGM), and Nuclear/Biological/Chemical Reconnaissance Vehicle (NBCRV). The use of the common platform/common chassis design reduces requirements for repair parts and logistics support in the area of operations. RDT&E base funding will continue to address Overseas Contingency Operations (OCO), survivability, and Operational Needs Statements (ONS) issues with the Stryker base program. Funding will also be used to support RDT&E efforts required for the Stryker Modernization (S-MOD) fleet and correction of MGS deficiencies outlined in the 5 Aug 08 Acquisition Decision Memorandum (ADM). The total Cost to Complete amount represents current funding in FY11 and FY12, not funding requirements.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Completed MGS IOT&E 1QFY08. Operational Test and Evaluation (OT&E) for the NBCRV is scheduled for the May/June 2010 timeframe in preparation for the upcoming NBCRV Milestone (MS) III Full-Rate Production Decision.	54	510	4672
Government testing of OCO, Survivability and ONS efforts 1QFY08 through 4QFY09.	3565	500	
Undergo development and engineering for OCO, survivability and ONS issues on the Stryker vehicles, e.g., Hull Protection Kits, Tire Fire Suppression Kits, and Improved Common Ballistic Shields.	5740	2500	2500
Undergo development and engineering of Stryker Reactive Armor Tiles (SRAT) II	20635	11627	
Government testing of SRAT II begins in FY09 completes in FY10.		5270	4663
Contractor support to tests. To include MGS IOTE 1QFY08, NBCRV Operational Test and Evaluation (OTE), OCO Testing and SRAT II Testing.	1224	483	937
Support the S-MOD Program and the correction of MGS deficiencies effort. S-MOD target date for MS B is 4QFY10 and MS C is 3QFY14. Will develop system performance specifications, conduct trade studies, develop concept designs, undergo modeling and simulation activities and conduct technical demonstrations.	89922	51031	71320
Government Systems Engineering and Program Management (Base Program and Stryker Modernization Program)	6522	3607	6207
Active Protection System (APS) Radar		1600	
Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)		2222	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)	PROJECT C03
Total	127662	79350

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PA, WTCV, G85100 Stryker	2792070	1308984	388596		4489650

Comment: FY09 funding includes the Bridge and Main Supplemental. Anticipating a Defense Aquisition Board (DAB) review for the Mobile Gun System (MGS) 3/4QFY09 which would allow additional procurements of the MGS. Anticipate a Milestone III review for the Nuclear/Biological/Chemical Reconnaissance Vehicle (NBCRV) 4QFY10.

C. Acquisition Strategy FY08 funding continues engineering and development efforts related to Overseas Contingency Operations (OCO), survivability, Operational Needs Statements (ONS) issues, and corrections of the Mobile Gun System (MGS) deficiencies outlined in the 5 Aug 08 Acquisition Decision Memorandum (ADM). FY08 funding also begins Technology Development Phase (TDP) activities for future enhancements and product improvements to all configurations within the Stryker family of vehicles. This portion of the program is the Stryker Modernization (S-MOD) program which includes long term solutions for MGS deficiencies as outlined in the 5 Aug 08 ADM. As the Stryker family of vehicles continues to be deployed, we will explore, enhance and increase the survivability of the Stryker. Examples of improvement are the vehicle's Hull Protection, Tire Fire Suppression Kits, Improved Common Ballistic Shields, and Belly Armor initiatives.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)							C03		
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
Stryker Development/Engineering-Base Program	CPFF	GDLS Sterling Heights, MI	349459	26375	2-4Q	14127	2-3Q	2500		5000	397461	397461
Stryker Modernization (S-MOD) and Correction of Mobile Gun System (MGS) Deficiencies	CPFF	GDLS Sterling Heights, MI		89973	1-4Q	51031	3Q	71320	1-3Q	106960	319284	319284
Subtotal:			349459	116348		65158		73820		111960	716745	716745
Remarks: Stryker development/engineering supports the Stryker Family of Vehicles base program efforts.												
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 -Base Program	MIPR	TACOM, Warren, MI / Various	19291	4570	1-4Q	3817	1-4Q				27678	27678
Other Government Agencies-S-MOD Program				1121	1-4Q	997	1-4Q				2118	2118
Subtotal:			19291	5691		4814					29796	29796
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 Test & Evaluation and OCO Testing	MIPR	DPG, Utah	105786	3619	3Q	1010	2-4Q	4672	3Q		115087	115087
Stryker Reactive Armor Tile (SRAT II)	MIPR	Army Test & Evaluation Command, DTC, MD, OTC, TX, AEC, VA				5270	2-4Q	4663	1-2Q		9933	9933
Stryker Modernization (S-MOD) Testing Production Qualification	MIPR	Army Test & Evaluation Command, DTC, MD,										

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
4 - Advanced Component Development and Prototypes			0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)								C03	
Test (PQT)		OTC, TX, AEC, VA										
S-MOD Live-Fire Test	MIPR	Army Test & Evaluation Command, DTC, MD, OTC, TX, AEC, VA										
S-MOD Initial Operational Test & Evaluation (IOT&E)	MIPR	OTC, Ft. Knox, KY										
Contractor Support to Test	CPFF	GM GDLS DG L.L.C. Shelby, MI	21251	1224	2Q	483	1-4Q	937	3Q		23895	23895
Subtotal:			127037	4843		6763		10272			148915	148915

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 Office (PMO) Base Program	N/A	TACOM, Warren, MI	10818	272	1Q	408	1Q	380	1Q	804	12682	12682
Project Management Office (PMO) S-MOD Program		TACOM, Warren, MI		508	2-4Q	2207	2-4Q	5827	1Q	14877	23419	23419
Subtotal:			10818	780		2615		6207		15681	36101	36101

Project Total Cost:	506605	127662		79350		90299		127641	931557	931557
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)																C03															
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) NBCRV Extended LRIP Decision	▲ ₁ NBCRV Extended LRIP Decision																															
NBCRV Extended LRIP Production					NBCRV LRIP																											
NBCRV Reliability Growth Test					NBCRV RGT																											
(2) NBCRV Milestone (MS) III					NBCRV MS III ▲ ₂																											
(3) MGS Extended LRIP Decision	▲ ₃ MGS Extended LRIP Decision																															
MGS Extended LRIP Production									MGS Extended LRIP Production																							
(4) MGS Defense Acquisition Board (DAB) Decision	MGS DAB Decision ▲ ₄																															
(5) Stryker Modernization Program (S-MOD) MS B (T)					Stryker MOD MS B (T) ▲ ₅																											
Stryker Modernization Program (S-MOD) Testing													S-MOD Testing																			
(6) Stryker Modernization MS C (T) Full Rate Production																	Stryker MOD MS C (T) ▲ ₆															
Stryker Reactive Armor Tiles (SRAT) II Development Effort					SRAT II Development Effort																											
SRAT II Testing					SRAT II Testing																											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603653A - ADVANCED TANK ARMAMENT SYSTEM (ATAS)						C03	
<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>	
Milestone (MS) II									
Stryker Initial Production									
IOC									
IOT&E									
MS III									
Full Production - Stryker 8	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q			
Nuclear/Biological/Chemical Reconnaissance Vehicle (NBCRV)									
NBCRV IPR									
NBCRV Initial Production									
Nuclear/Biological/Chemical Reconnaissance Vehicle (NBCRV) IOT&E									
NBCRV Extended LRIP Decision	2Q								
NBCRV Extended LRIP Production		3Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 3Q				
NBCRV Reliability Growth Test		1Q - 4Q	1Q - 4Q						
NBCRV Milestone (MS) III			4Q						
Mobile Gun System (MGS) Development									
MGS IPR (14)									
MGS Initial Production									
MGS IPR (58)									
Mobile Gun System (MGS) IOT&E	1Q								
MGS Extended LRIP Decision	4Q								
MGS Extended LRIP Production			2Q - 4Q	1Q - 2Q					
MGS Defense Acquisition Board (DAB) Decision		3Q							
Stryker Modernizatoin Program (S-MOD) MS B			4Q						

(T)								
Stryker Modernization Program (S-MOD) Testing					4Q	1Q - 4Q	1Q - 2Q	
Stryker Modernization MS C (T) Full Rate Production							3Q	
Stryker Reactive Armor Tiles (SRAT) II Development Effort		2Q - 4Q	1Q					
SRAT II Testing		3Q - 4Q	1Q - 2Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603747A - Soldier Support and Survivability			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	36851	32575	31752	Continuing	Continuing
610 FOOD ADV DEVELOPMENT	3634	3877	4208	Continuing	Continuing
C08 RAPID EQUIPPING FORCE	33217	28698	27544	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element supports component development and prototyping for organizational equipment, improved individual clothing and equipment that enhance Soldier battlefield effectiveness, survivability, and sustainment. This program element also supports the component development and prototyping of joint service food and combat feeding equipment designed to reduce logistics burden.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	5751	30716	5277
Current BES/President's Budget (FY 2010)	36851	32575	31752
Total Adjustments	31100	1859	26475
Congressional Program Reductions		-5085	
Congressional Rescissions			
Congressional Increases	31261	6944	
Reprogrammings			
SBIR/STTR Transfer	-161		
Adjustments to Budget Years			26475

Change Summary Explanation: FY 2008: Supplemental funds received to support Rapid Equipping Force (REF). FY 2009: Includes the anticipated Congressional Overseas Contingency Operations increase of \$6.944 million to support Rapid Equipment Force efforts. FY 2010: Funding increase in support of the Rapid Equipment Force program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603747A - Soldier Support and Survivability			PROJECT 610	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
610 FOOD ADV DEVELOPMENT	3634	3877	4208	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This project provides for the advanced component development and prototyping of joint service food and combat feeding equipment designed to reduce the logistics burden and Operation and Support (O&S) costs of subsistence support to service personnel. Project supports development of rations and rapidly deployable field food service equipment. Project conducts demonstration and validation of improved subsistence and subsistence support items used to enhance soldier effectiveness and quality of life in all four Services, as part of an integrated Department of Defense (DoD) Food Research, Development, Test, Evaluation and Engineering Program. The Program is reviewed and validated twice annually by the DoD Combat Feeding Research and Engineering Board (CFREB) as part of the Joint Service Food Program. This project develops critical enablers that support the Joint Future Force Capabilities and the Joint expeditionary mindset by maintaining readiness through fielding and integrating new equipment. This equipment enhances the field soldier's well-being and provides the soldier with usable equipment, in addition to reducing sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands on lift, combat zone footprint, and costs for logistical support.

This PE/Project supports Field Feeding Programs for all the services.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY10: Review and validate Ice usage/consumption requirements for Battlefield Ice Supply System (BISS) with Combined Arms Support Command (CASCOM) and the Joint Service Community. Perform market research to evaluate existing Commercial Off the Shelf / Non-Developmental (COTS/NDI) bulk Ice Making and bagging Systems. Develop a Draft Performance Specification or a Commercial Item Description (CID). Prepare a Request for Proposal/Statement of Work (SOW) to award a subsequent developmental contract to design and fabricate BISS prototype(s)			71
FY08: Transition technology and prototype Self Powered Tray Ration (STRH) from Science and Technology (S&T) activity to Produce Manager Force Sustainment Systems (PM FSS) for possible inclusion into the Assault Kitchen. Perform independent Production Qualification Test (PQT) on prototype items and draft a Performance Specification. Transition to 6.5.	96		
FY08: Evaluate COTS Medical Feeding Cart to transport food to patients in field hospitals and transition to the Integrated Logistics Support Center (ILSC). The Medical Feeding Cart will be a Common Table of Allowance (CTA) item and replace the current gurney in the Medical Field Kitchen Kit.	98		
FY09-10: Transition Solar Refrigeration Technology from S&T to system development phase. Prepare solicitation for prototype and award contract. Initiate fabrication of prototype and transition to 6.5 for testing and evaluation.		220	178
FY10: Transition Waste to Energy Converter (WEC) technology to advanced component development phase after successful demonstration of exit criteria outlined in the Technology Transition Agreement. Review and validate requirements outlined in the Capability Production Document (CPD) with CASCOM and Joint Service Community. Establish design and evaluation criteria to meet desired capability.			409
FY10: Transition Man-portable appliance technology to advanced component development phase to integrate into the Battlefield Kitchen			323

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability	610		
(BK) after successful demonstration of exit criteria outlined in the Capability Development Document (CDD) with CASCOM and Joint Service Community. Establish design and evaluation criteria to meet desired capability.				
FY08: Based on warfighter recommendations, identified and obtained Commercial-Off-The-Shelf/Non-developmental Item (COTS/NDI) and completed development of Meal, Ready-to-Eat (MRE) components and packaging innovations (for 2011 Date of Pack (DOP)) to improve acceptability, expand variety and improve consumption. Developed prototype nanocomposite MRE packaging material (menu bag, primary ration component) to eliminate foil laminate, reduce weight and volume of packaging waste on the battlefield while maintaining barrier properties. FY09: Based on warfighter preferences incorporate COTS, NDI and developmental components (for 2012 DOP) into prototype MRE menus. Integrate packaging/food processing science and technology (S&T) transitions to improve operational and functional performance. Select field test site (4Q09) and complete draft procurements documents and transition to 6.5 for field testing (4Q09). FY10: Continue to identify suitable COTS/NDI candidate items and conduct in-house product development of food components for fielded individual operational rations (MRE 2013/2014 DOP) to enhance acceptability, increase consumption and improve nutritional intake. Conduct pilot scale in-house production to support engineering design, technology insertion, and producibility. Work with vendors and assemblers as needed to ensure feasibility and technology transition. Develop, integrate, and validate state-of-the-art science and technology, food processing and primary/secondary packaging innovations into individual ration platforms to increase operational effectiveness, functionality and improve logistics. processing and packaging to introduce targeted component items into individual ration platforms for enhanced acceptability, nutrition and performance.	989	961	888	
FY09: Increase availability and consumption of dietary fiber in combat rations in accordance with Surgeon General nutritional standards for operational rations based on Military Dietary Reference Intakes (MDRI) established through military nutrition research. Identify intake mechanisms and/or carriers to promote healthy diets, increase broad, beneficial health effects, and ensure warfighters health and fitness for optimal mission performance. Identify fiber types and formats, categorize and select suitable candidates, conduct menu adaptation or product reformulation, and develop prototype candidates. FY10: Collaborate with Natick Soldier Research, Development and Engineering Center (NSRDEC) Consumer Research/ Cognitive Science Team to conduct focus groups and identify effective sensory procedures to obtain desired information. Conduct technical sensory panels on selected candidate components, perform storage testing, and shelf life studies/analyses. Down-select products for evaluation by consumer and military panels and final product evaluation based on cost, user acceptability and suitability. Develop technical data on new high fiber combat ration components and transition to Fielded Individual ration improvement Program (FIRIP) and Assault and General Purpose Improvement Program (ASPIP) to complete validation and field testing prior to transition to procurement.		101	97	
FY08: Completed Meal Cold Weather (MCW)/Long Range Patrol (LRP) component down select (COTS, NDI, developmental items and S&T transitions), completed draft procurement documents and prototype menu development to improve quality, acceptability, eat on the move capability and consumption rate. Evaluated redesign of Food Packet, Abandon Ship with Navy, completed transition of documentation to DSCP. Initiated integration of supplements to increase caloric availability and improve warfighter cognitive and physical performance in environmental extremes developed to augment Assault/Special Purpose Rations. Identified and incorporated FSR nutritional data to include analysis conducted under the US Army Research Institute for Environmental Medicine (USARIEM) Ration Analysis Program into the nutritional data base. Coordinated future FSR menu nutritional profiles with USARIEM as part of menu expansion. FY09: Analyze field test results of new components. Recommend components and menu profiles to Services. Optimize development of S&T components from Nutritionally Optimized FSR project. Design expanded FSR menus with developmental and non-developmental performance enhancing components. Evaluate range of developmental, non-developmental, and COTS components for modification and expansion of FSR menus based on warfighter feedback, R&D progress, and product development. Complete prototype development and assembly, conduct test planning; transition to 6.5 for field test. Complete procurement documents for new	250	301	300	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability	610		
items and new assembly documentation for FSR and MCW/LRP. Conduct production testing of new components. FY10: Continue identification and selection of new candidate items. Conduct in-house product development as needed; assemble test menus, select test site, and transition to 6.5 for field test. Complete procurement documents for new items and new assembly documentation for FSR and MCW/LRP. Conduct production testing of new components.				
FY08: Initiated work on Modular Operational Ration Enhancement (MORE) program intended to design and provide specific tailored supplement packs to enhance performance warfighter performance and nutritional status in environmental/altitude extreme. Initial supplement focused on high altitude use. Consulted with high altitude subject matter experts from the Thermal Mountain Division at the US Army Research Institute of Environmental Medicine (USARIEM). Identified candidate items to counter deleterious effects of altitude exposure including acute mountain sickness, hypoxia, malabsorption, dehydration, and gastrointestinal disorders. Conducted critical examination of products to decrease recovery time and improve performance. Conducted additional focus group with recently deployed warfighters operating at high altitudes in Southwest Asia to assist in identification/ down-selection of high value components. Completed in-house sensory evaluations, ensured shelf life, product sensory characteristics and overall user acceptability of items. FY09: Conduct field evaluation/test of prototypes. Identify and select new commercial and in-house developmental and product improvements as well as science and technology insertions supporting scenario specific supplemental packs to optimize warfighter performance, high altitude, cold weather, and high intensity/long duration. Establish baseline for essential nutrients to maintain the proper energy levels, nutritional balance, body weight, mental and physical alertness within intended scenarios. Coordinate with USARIEM and OTSG to assess and determine optimal amounts of nutraceuticals, functional foods, and phytonutrients to maximize benefit and performance levels. FY10: Complete product evaluations and product refinement as needed. Prepare final technical data for commercial production and transition to Defense Supply Center Philadelphia ration system procurement of final modular supplements.	243	245	96	
FY08: Completed Unitized Group Ration - Heat and Serve (UGR-H&S) (2011 DOP), UGR-A (2010 DOP) and UGR-E (2011 DOP) component development to improve family of UGRs. Based on Warfighter recommendations, incorporated COTS, NDI, and developmental components into prototype menus. Completed draft procurement documents. Secured test site and transitioned to 6.5 for field testing. FY09: Improve family of UGRs (H&S (2012), A (2011), B and E (2012)) to increase overall Warfighter acceptability, and consumption. Based on Warfighter recommendations incorporate COTS, NDI, and developmental components into prototype menus. Select field test site and transition to 6.5 for field testing. Complete draft procurement documents. Integrate state of the art packaging and combat ration processing technologies for improved operational and functional performance. FY10: Improve family of UGRs (H&S (2013/2014), A (2012/2013), B and E (2013/2014)) to increase overall Warfighter acceptability, and consumption. Based on Warfighter recommendations, incorporate COTS, NDI, and developmental components into prototype menus. Select field test site and transition to 6.5 for field testing. Complete draft procurement documents. Integrate state of the art packaging and combat ration processing technologies for improved operational and functional performance.	1276	1138	995	
FY09: Transition from 6.3 and conduct advanced development of HOT PAC, a low-cost, disposable self-heating package for dispensing hot water in the field. Optimize performance of package via material, fitment, and self-heating technology changes. Field test under the Fielded Group Ration Improvement Project (FGRIP). Draft performance-based procurement documents and transition to Procurement.			46	
FY09: Update and improve the Medical Nutrition Supplement (MNS) for the family of UGRs to support the military requirement of meeting the unique nutritional needs of all hospitalized patients in a combat environment. Develop/test MNS prototypes consisting of essential food items (broth, gelatin, high protein / high calorie liquid supplements) and supplies for patient diets, and unitize into a supplemental module. FY10: Revise performance-based documents and transition to Procurement.			76	
FY08: Conducted producibility testing of MRE non-retort pouches fabricated from polymer nanocomposites. Completed package	158			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability	610	
performance testing of non-retort nanocomposite pouches to include rough handling, permeability and storage stability. Completed second accelerated storage study which indicated that increased barrier properties on nanocomposite menu bag provided improvement in key properties, however, nano menu bags did not pass rough handling tests. Additional development will be required before the material can transition to procurement.			
FY09: Transition from 6.3 and optimize treated fiberboard based on characterization studies to reduce cost, weight, and improve environmental properties. Fabricate prototype shipping containers using coated alternative fiberboard materials. Evaluate prototype shipping containers for wet strength, compression and rough handling. Initiate producibility study, transportation study and secure test site for FY10 user evaluation. FY10: Complete evaluation of prototype shipping containers. Complete producibility and transportation studies of optimized shipping containers. Conduct user evaluation of shipping containers.		260	
FY08: Integrated new technology/automation concepts and new food service equipment to maintain high standards of food preparation while accommodating a reduction in Culinary Specialists by reducing labor/preparation time of food items for legacy and future Navy carrier platforms. Coordinated with Commander Naval Air (COMNAVAIR) to identify and prioritize equipment for galley applications to accommodate reduction in food service attendants. Conducted testing on combination ovens to support decision by Navy for modernization of the carrier galley requirements. Recommend galley design based on reconfiguration of crews mess, wardroom, scullery, and serving lines to properly support automated self-service feeding equipment and transitioned to 6.5.	116		
FY08: Transitioned from 6.3, integrated technology advances in smart process control systems to provide automation and operational monitoring of Navy food service equipment. Demonstrated bi-directional communication network which provides real time equipment status monitoring that utilizes industry accepted North American Association of Food Equipment Manufacturers (NAFEM) protocols. Food service equipment prototypes were developed and in-house testing was conducted to validate the concept for shipboard transition into the future Smart Galley. Transition to 6.5.	304		
FY09: Review and validate shipboard refrigeration and ice consumption requirements with Navy. Conduct tradeoff and Front Analysis for comparing conventional bulk refrigerator/freezers with dual temperature capabilities. Conduct design analysis for incorporating ice-making capabilities into the dual temperature footprint to derive requirements for ice making capabilities.		40	
FY08: Initiated upgrade to replace obsolete Communication Zone (COMMZ) kitchen with commercial food equipment to increase reliability, maintainability, and significantly enhance operational performance capability/ efficiency. Established design system layout meeting user requirements and installed new COTS equipment. Simplified overall logistics footprint to reduce life cycle costs and training requirements by incorporating modular systems concept. Initiated in-house testing and evaluation, and transitioned to 6.5.	104		
FY09: Identify and prioritize food service areas for upgrade on the Virginia Class Submarines, and legacy submarines platforms. Conduct market investigation and develop recommendations to address issues with the galley and scullery. FY10: Procure equipment, develop test plans, and conduct land-based testing to support Navy goals. Standardize and optimize the food service equipment, reducing manpower requirements, and supporting NAVSUP's Standard Core Menu for submarines.		225	321
FY09: Collaborate with Naval Support Command (NAVSUP) to identify product segments for Navy Standard Core Menu (NSCM) refresh scheduled in 2008/2009. Work with commercial suppliers to research advanced foods and conduct sensory evaluation panels and nutrition research. Identify existing Trans Fats in the NSCM for modification of menu items. Prepare yearly product recommendations and support NAVSUP field testing for new menu item introductions. Transition to NSCM. FY10: Coordinate with NAVSUP to identify and collect information to determine menu goals and constraints; investigate emerging food preparation techniques to reduce labor for shipboard feeding; and provide annual reports and product recommendations. FY11: Provide NAVSUP with continuous product		155	177

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability	610	
identification, evaluations and menu development to support NSCM upgrades and revision changes.			
FY10: Transitioning from Technology Transition Initiative, complete transition of a fully functional alternate chemical heating technology for the UGR-E. Verify performance as drop-in component of the UGR-E. Revise performance-based procurement documents, field test under the FGRIP and transition procurement documents to DSCP.			241
FY10: Initiate program to provide ration components in fully integrated, multi-functional, active packaging materials beyond traditional polymer laminate films and oxygen scavenger sachets to improve storage stability & acceptability, reduce product waste, and increase consumption/nutrition. Performance oriented "smart" packaging materials protect food products from microorganisms, oxygen, moisture, and UV light, play an active role in preserving food throughout product shelf-life and improve product acceptability. Based on utility/functionality and technology readiness, primary technical focus will be on embedded oxygen scavenging, anti-oxidant, and olfactory/aromatic based innovative film structures that can be applied to combat ration components. Conduct market research and transition novel functional films from tech base effort. Produce limited scale production quantity of ration compatible films and/or pouches for further laboratory examination.			112
Small Business Innovative Research/Small Business Technical Transfer Program (SBIR/STTR)		109	
Total	3634	3877	4208

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE, 0604713.548, Military Subsistence System	2485	2499	2139	Continuing	Continuing
OPA 3, M65801, Refrigerated Containers	16826	34270	30549	Continuing	Continuing

Comment:

C. Acquisition Strategy Project development will transition to System Development & Demonstration and production.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603747A - Soldier Support and Survivability							610		
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
Joint Service Food/Combat Feeding Equipment	In-House	RDECOM, Natick, MA	26784	1326	1-4Q	1480	1-4Q	1676	1-4Q	Cont.	Cont.	Cont.
Joint Service Food/Combat Feeding Equipment	Contracts	Various	15066	1346	1-4Q	1487	1-4Q	1688	1-4Q	Cont.	Cont.	Cont.
Subtotal:			41850	2672		2967		3364		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
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
Joint Service Food/Combat Feeding Equipment	MIPR	DTC, Maryland & AEC, Virginia	6421	602	1-4Q	538	1-4Q	535	1-4Q	Cont.	Cont.	Cont.
Subtotal:			6421	602		538		535		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
Combat Feeding Program Management	In-House	RDECOM, Natick, MA	2862	360	1-4Q	372	1-4Q	309	1-4Q	Cont.	Cont.	Cont.
Subtotal:			2862	360		372		309		Cont.	Cont.	Cont.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603747A - Soldier Support and Survivability						PROJECT 610			
Project Total Cost:	51133	3634		3877		4208		Cont.	Cont.	Cont.

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability																610															
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
Evaluate the SBIR automated scullery prototype onboard a Navy aircraft carrier																																
(3) Quantify manning reductions for the scullery process based on testing results																																
Integrate control systems for diagnostics/prognostics of the automated scullery																																
Identify, evaluate, and consolidate service requirements for TriCon Kitchen																																
(4) Award a contract to design and develop a prototype modular TriCon kitchen																																
Review Marine Corp Field Feeding Doctrine identify capability of current systems																																
Battlefield Ice Supply market research																																
Fabricate prototype Solar Powered Refrigeration System																																
Test Vapor Compression Improvement prototype																																
Test prototype Battlefield Kitchen																																
Test Self Powered Trav Ration Heater																																
Test/ Evaluate Multi-Serving Instant Hot Water Package (HOT PAC)																																

Transition HOT PAC procurement documents to DSCP
0603747A (010)
FOOD ADV DEVELOPMENT

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT																																											
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability																610																																											
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																												
Test/ Evaluate the improved medical nutrition supplement (MNS)																																																												
(5) Transition MNS procurement documents to DSCP																																																												
(6) Transition medical cart to procurement																																																												
(7) Transition self powered Tray Ration Heater to System Development Phase																																																												
(8) Transition Solar Power Refrigeration Technology to System Development phase																																																												
Test and evaluate Non-Retort ISPs for the UGR																																																												
Transition Non-Retort ISP procurement docs to DSCP																																																												
Test and evaluate Thermoformed Corrugated Trays for UGR																																																												
Transition Thermoformed Corrugated Trays procurement docs to DSCP																																																												
Test and evaluate Common Box for UGR																																																												
Transition Common Box procurement docs to DSCP																																																												
Test and evaluate UGR-E Alternate Chemical Heater																																																												

(9) Transition UGR-E Alternate Heater procurement docs to DSCP

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																						
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability	610																																						
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								
(10) Conduct Milestone C on Battlefield Kitchen																																								
Conduct DT on JP8 Fired Commerical Appliances																																								
USMC Field Kitchen Modernization Effort																																								
Joint Service Refrigeration Systems Enhancement Effort																																								
Conduct DT on Assault Kitchen Refrigeration System																																								
(11) Conduct Milestone B on Waste to Energy Converter																																								

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603747A - Soldier Support and Survivability						610	
<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>	
Test and evaluate MRE, FSR, MCW & LRP	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q			
Test and evaluate UGR Enhancements	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Transition mature items to System Development & Demonstration or procurement.	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q			
Develop Modular Food Service equipment and transition to the Navy.	1Q - 4Q	1Q - 4Q							
Transition First Strike Ration (FSR) components to SDD.	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q			
Transition advanced development of individual and group ration components to SDD	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Compare Advanced Component Development of WEC systems for joint service kitchen	4Q	1Q - 4Q							
Update ADR300 perf-spec for AF BEAR program office, prepare scope for contract		1Q - 4Q	1Q - 4Q						
Award R&D contract to design and fabricate prototypes for the ADR P3I				2Q					
Validate shipboard refrigeration and ice consumption requirements with Navy		1Q - 2Q							
Conduct NSCM Waste Study to identify menu's impact in environmental requirements		1Q - 4Q							
Provide NAVSUP w/CPI, evaluations and menu development to support NSCM upgrades			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Evaluate the SBIR automated scullery prototype onboard a Navy aircraft carrier				2Q - 4Q					
Quantify manning reductions for the scullery process based on testing results				4Q					
Integrate control systems for diagnostics/prognostics of the automated scullery					2Q - 4Q				

Identify, evaluate, and consolidate service requirements for TriCon Kitchen	2Q - 3Q							
Award a contract to design and develop a prototype modular TriCon kitchen		2Q						
Review Marine Corp Field Feeding Doctrine identify capability of current systems					2Q - 4Q			
Battlefield Ice Supply market research			1Q - 4Q					
Fabricate prototype Solar Powered Refrigeration System			1Q - 4Q					
Test Vapor Compression Improvement prototype				3Q - 4Q				
Test prototype Battlefield Kitchen				3Q - 4Q				
Test Self Powered Tray Ration Heater	2Q - 4Q							
Test/ Evaluate Multi-Serving Instant Hot Water Package (HOT PAC)		1Q - 4Q						
Transition HOT PAC procurement documents to DSCP			1Q - 3Q					
Test/ Evaluate the improved medical nutrition supplement (MNS)		1Q - 4Q	1Q - 4Q					
Transition MNS procurement documents to DSCP			4Q					
Transition medical cart to procurement	4Q							
Transition self powered Tray Ration Heater to System Development Phase	4Q							
Transition Solar Power Refrigeration Technology to System Development phase		4Q						
Test and evaluate Non-Retort ISPs for the UGR			1Q - 4Q					
Transition Non-Retort ISP procurement docs to DSCP				1Q - 3Q				
Test and evaluate Thermoformed Corrugated Trays for UGR				1Q - 4Q				
Transition Thermoformed Corrugated Trays procurement docs to DSCP				1Q - 3Q				
Test and evaluate Common Box for UGR				1Q - 4Q				
Transition Common Box procurement docs to					1Q - 3Q			

DSCP								
Test and evaluate UGR-E Alternate Chemical Heater			1Q - 4Q					
Transition UGR-E Alternate Heater procurement docs to DSCP			4Q					
Conduct Milestone C on Battlefield Kitchen						4Q		
Conduct DT on JP8 Fired Commerical Appliances							2Q - 4Q	
USMC Field Kitchen Modernization Effort							1Q - 4Q	1Q - 4Q
Joint Service Refrigeration Systems Enhancement Effort						1Q - 4Q	1Q - 4Q	1Q - 4Q
Conduct DT on Assault Kitchen Refrigeration System					2Q - 4Q			
Conduct Milestone B on Waste to Energy Converter				1Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603747A - Soldier Support and Survivability			PROJECT C08	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
C08 RAPID EQUIPPING FORCE	33217	28698	27544	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The US Army Rapid Equipping Force (REF) was established to provide urgently needed state-of-the-art technology to soldiers in the field to meet immediate warfighter needs under operational conditions in the current theaters. The REF Forward Teams in Iraq and Afghanistan work with Combatant Commanders and the soldiers to identify warfighter needs while REF Rear formulates solutions and rapidly delivers/fields new equipment to the deployed units. REF solutions are rapid responses to evolving, adaptable and changing threats, in any operational environment. REF Rear evaluates, utilizes or adapts currently available military or civilian items (COTS/GOTS) which typically have not been type classified for Army-wide use but are available and adaptable to the current Operational Combatant Commander's needs. For the REF, necessary materiel solutions can only be determined as "real time" threat modes are identified. Countermeasures to these evolving threats must be developed/purchased/modified, often within weeks, for the first cycle of spiral type responses. Specifically the REF is charged to: EQUIP operational commanders with off-the-shelf (government or commercial) solutions or near term developmental items that can be researched, developed and acquired quickly - ideally within 90 days. INSERT future force technology solutions that engaged and deploying forces require by developing, testing and evaluating key technologies and systems under operational conditions. ASSESS capabilities and advise Army stakeholders of findings that will enable forces to confront an adaptive enemy rapidly.

The REF process rapidly provides capabilities to meet immediate warfighter needs and supports efforts to mitigate asymmetric and traditional threats. A key element of this process is the provision for execution flexibility. The REF process provides the mechanism to respond rapidly to an adaptive enemy who changes in days and months, not years. The REF focuses on finding effective capabilities to counter emerging and future threats.

The REF works directly with operational commanders to find solutions to identified equipping requirements. These solutions may result in procurement of new or existing military/commercial materiel equipment, or accelerated development of a Future Force materiel solution for insertion into the current force now. The REF adaptive practices are at the forefront of Army modernization and serve as a catalyst and change agent for Army transformation. The REF accomplishes its mission by working in partnership with industry, academia, Army senior leaders, the Army Training and Doctrine Command (TRADOC), the Army acquisition community, and the Army Test and Evaluation Command (ATEC) to meet immediate warfighter needs.

The REF ensures safety testing of all equipment prior to release to the soldier. All equipment must pass Safety Confirmation and have a Capabilities and Limitations Report completed prior to being issued to operational units/soldiers.

FY2008 funding total includes \$23.999 Million in Base Program.
FY2008 funding total includes \$9.218 Million in FY08 GWOT Supplemental.

FY 09 Overseas Contingency Operations Supplement (OCO) Request funding will provide the Asymmetric Warfare Group funding to accomplish its mission. The Asymmetric Warfare Group provides operational and advisory assistance to Army and Joint Force Commanders to enhance the effectiveness of the operating force and enable the defeat of asymmetric threats.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Advanced Component Development and Prototypes

0603747A - Soldier Support and Survivability

C08

Note that: (a) Equipment mix and configuration may change based on changes in operational environment and circumstances. (b) REF- Resource Management Capabilities Needs equipment and funding execution details will be provided in the Secretary of Army report to the Congressional Defense Committee in March and October of each year(per HAC Report #108-553, DoD APPNs Bill 2005, June 18, 2004, page 134.)

Accomplishments/Planned Program:

FY 2008

FY 2009

FY 2010

FY08 Base: The REF was designed to bridge the gap between the lengthy acquisition process and warfighter equipping needs that should not be delayed. Specifically the Rapid Equipping Force is charged to: EQUIP operational commanders with off-the-shelf (government or commercial) solutions or near-term developmental items that can be researched, developed and acquired quickly - ideally, within 90 days. INSERT future force technology solutions that engaged and deploying forces require by developing, testing and evaluating key technologies and systems under operational conditions. ASSESS capabilities and advise Army stakeholders of findings that will enable forces to confront an adaptive enemy rapidly. The REF ensures safety testing of all equipment prior to release to the soldier. REF focuses on the development and testing of systems and mechanisms designed to detect, identify and defeat enemy equipment and actions designed to injure or kill and devices to help protect the warfighter.

23966

FY08 GWOT: Provides for GOTS/COTS and near term developmental items to support Soldiers in OIF/OEF and flexibility to facilitate requirements associated with emerging research shortfalls to enhance force protection and soldier survivability.

9251

FY09 Base: The REF was designed to bridge the gap between the lengthy acquisition process and warfighter equipping needs that should not be delayed. Specifically the Rapid Equipping Force is charged to: EQUIP operational commanders with off-the-shelf (government or commercial) solutions or near-term developmental items that can be researched, developed and acquired quickly - ideally, within 90 days. INSERT future force technology solutions that engaged and deploying forces require by developing, testing and evaluating key technologies and systems under operational conditions. ASSESS capabilities and advise Army stakeholders of findings that will enable forces to confront an adaptive enemy rapidly. The REF ensures safety testing of all equipment prior to release to the soldier. REF focuses on the development and testing of systems and mechanisms designed to detect, identify and defeat enemy equipment and actions designed to injure or kill and devices to help protect the warfighter. The REF continues to maintain our support to commanders to ensure that we provide a solution in the areas of Protecting the Force and Intelligence, Surveillance and Reconnaissance (ISR).

21145

FY09 OCO REQUEST: The AWG will focus efforts to investigate, evaluate, and assist in the development and improvement of existing jamming devices, Electro Magnetic Pulse emitting devices, and crew, vehicle, electronics disrupting devices. Specifically focus on enhancements to existing jamming devices as well as future developments. Provide RDTE with flexibility for working with industry, DoD assets, as well as technical institutes for the R&D of new and emerging technologies.

1795

FY09 OCO REQUEST: The AWG will focus efforts to investigate, evaluate, and assist in the development and improvement of both existing and developmental Information Operations capabilities. We shall continue to focus efforts on developmental and Product Improvement Programs (PIPs) to existing shortfalls and gaps. Provide RDTE flexibility for emerging research, shortfalls to enhance platform durability, longevity, and detection capabilities.

1540

FY09 OCO REQUEST: The AWG will focus efforts to investigate, evaluate, and quantify various Commercial-Off-The-Shelf/Government-Off-The-Shelf platforms and systems for purposes of research and development, testing, capability and limitation testing, and procurement. These efforts will be focused on near term, leveraging existing technology, and addressing capability gaps. Provide RDTE for emerging research shortfalls, PIPs, leap ahead technologies, and fixes to existing shortfalls

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)	May 2009
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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Advanced Component Development and Prototypes	0603747A - Soldier Support and Survivability	C08	
<i>(reliability, sustainability, and durability)</i>			
FY09 OCO REQUEST: The AWG will focus efforts to investigate, evaluate, and assist in the development and improvement of both existing and developmental Intelligence Surveillance Reconnaissance capabilities. We shall continue to focus efforts on developmental and PIPs to existing shortfalls and gaps. Provide RDTE flexibility for emerging research, shortfalls to enhance platform durability, longevity, and detection capabilities.		1795	
FY09 OCO REQUEST: The AWG will focus efforts to investigate, evaluate, and assist in the development and improvement of existing vehicle and personal systems. Specifically focus efforts on developing enhancements to existing shortfalls and gaps. Provide RDTE flexibility for emerging research shortfalls to enhance vehicle reliability, blast sustainment, medical evacuation capability, and assault platforms. Efforts shall continue to research and test blast mitigating capabilities.		1160	
FY10 Base: The REF was designed to bridge the gap between the lengthy acquisition process and warfighter equipping needs that should not be delayed. Specifically the Rapid Equipping Force is charged to: EQUIP operational commanders with off-the-shelf (government or commercial) solutions or near-term developmental items that can be researched, developed and acquired quickly - ideally, within 90 days. INSERT future force technology solutions that engaged and deploying forces require by developing, testing and evaluating key technologies and systems under operational conditions. ASSESS capabilities and advise Army stakeholders of findings that will enable forces to confront an adaptive enemy rapidly. The REF ensures safety testing of all equipment prior to release to the soldier. REF focuses on the development and testing of systems and mechanisms designed to detect, identify and defeat enemy equipment and actions designed to injure or kill and devices to help protect the warfighter. The REF continues to maintain our support to commanders to ensure that we provide a solution in the areas of Protecting the Force and Intelligence, Surveillance and Reconnaissance (ISR). New Accomplishment			27544
Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)		609	
Total		33217	28698
			27544

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Other Procurement, Army	451851	20190	24067	Continuing	Continuing
Operations and Maintenance, Army	13049	12986	11632	Continuing	Continuing

Comment:

C. Acquisition Strategy The REF provides urgently needed, state-of-the-art technology to soldiers in the field to meet immediate requirements. REF Rear evaluates, utilizes or adapts currently available military or civilian items (COTS/GOTS) which typically have not been type classified for Army-wide use but are available and adaptable to the current Operational Combatant Commander's needs.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603747A - Soldier Support and Survivability							C08		
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
Arena - 360 Degree Camera (Force Protection)	MIPR	APG		1278							1278	
Blackout - UVA Detection, Tracking and Modeling (Protect the Force)	MIPR	AFRL		810							810	
Blank Firing Attachement Mount (Train the Force)	MIPR	CERDEC		12							12	
Blaze 2 - Self Activating (Fire Supperssion Sys)(Protect the Force)	MIPR	PM-CIE		81							81	
Bonaza B - Scent Detection Technologies (Protect the Force)	MIPR	NAVSEA		228							228	
Charade - Portable Explosive Trade Detector (Protect the Force)	MIPR	NAVEODTECH DIV		322							322	
Clip-on Thermal Imager (Protect the Force)	MIPR	NVESD		135							135	
Crossbow - IED Command Wire Tracing Device(Protect the Force)	MIPR	OSD		226							226	
Crosshairs v1- Projects (Protect the Force)	MIPR	REDCOM AMCOM		2500							2500	
Ground Torch - Removal Vegetation in Canals (Protect the Force)	MIPR	Marine Corps Logistics Command		68							68	
High Antennas for Radio Communication (HARC) (Enhanced ISR)	MIPR	PM Robotic and Unmanned Sensors		365							365	
ISO Balance - Traumatic Brain Injury Studies ((Medical and Logistics in COIN)	MIPR	Natick		202							202	
Knight - Wire Detection Device (Protect the Force)	MIPR	SMDC		440							440	
Lucky - Specialized Search and	MIPR	NSMA		882							882	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT	
4 - Advanced Component Development and Prototypes			0603747A - Soldier Support and Survivability							C08	
Patrol Dogs (Protect the Force)											
Meteor - Close Proximity Thermal Signature Detonation Device	MIPR	Night Vision and Electronic Sensors Directorate		300							300
Obelisk - Pole Mounted Thermal Camera (Protect the Force)	MIPR	APG		79							79
Oberon V11 - Multi Screen Display for Joint EOD Rapid Response Vehicle (MIPR	DTIC		100							100
Packer - A Semi-autonomous Vehicle (Protect the Soldier)	MIPR	INL		193							193
Prince - Concept Vehicle Prototypes (Protect force in Counter Insurgency)	MIPR	ARDEC		372							372
RMS v1 - Programmable Minature Wide Band Reciever/Process	MIPR	RDECOM CERDEC		950							950
Rocket Launcher Demonstration for Quick Release Functionality	MIPR	PM Joint Attack Munition Systems		200							200
Stryker ICV Rhino Bracket Test Demonstration	MIPR	ARDEC and RDECOM AMSRD		115							115
Talon Battery V1 Testing Kits	MIPR	ARDEC		600							600
Trailer - Mounted Military Vehicle Non Intrusive Gamma Ray Imaging System	MIPR	NSMA		31							31
Base: Various Projects - Protect The Force in Counter Insurgency		Various Locations TBD		7402		8142		10188			25732
Base: Various Projects - Enhance Intelligence Surveillance Recon				4920		4714		6158			22187
Base: Various Projects - Logistics/Medical in Counterinsurgency Opns				896		911		1120			4090
Base: Various Projects - Timeliness of Analysis and Information Dissemination				3803		3643		4759			17147

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY				PE NUMBER AND TITLE							PROJECT	
4 - Advanced Component Development and Prototypes				0603747A - Soldier Support and Survivability							C08	
FY 09 Oversease Contingency Operations: Various projects to include force protection & ISR	TBD	TBD				6944	1-4Q				6944	
Subtotal:				27510		24354		22225			86589	
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
Various Projects	MIPR	Various Locations				27					27	
Subtotal:						27					27	
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
ATEC - Protect Force in Counterinsurgency Operations	MIPR	Various locations		5707		4317		5319			20866	
Subtotal:				5707		4317		5319			20866	
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:												
Project Total Cost:				33217		28698		27544			107482	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603766A - Tactical Electronic Surveillance System - Adv Dev			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
907 Tactical Surveillance Systems - MIP	14428	12235	18228	Continuing	Continuing

A. Mission Description and Budget Item Justification: Per direction by the CSA/SECARMY memorandum (signed 23 Oct 2007), the Army Space Program Office (ASPO) will integrate National and Theater capabilities into the tactical Army architecture and force structure to support intelligence targeting and situational awareness. This involves an extensive amount of studies, technology integration, simulations and experiments with National Agencies, Joint Services and Army commands. In the short term, the mission is to evaluate promising National developmental technology and potential Concepts of Operations (CONOPS), and then integrate these capabilities into Tactical Exploitation of National Capabilities (TENCAP) systems/architectures/CONOPS. In the long term, the mission is to influence the type/direction of National technological/CONOPS development to meet Future Force requirements.

Capabilities will be incorporated into any Service system requiring space and theater ISR capabilities such as Future Combat System, Tactical Exploitation System (TES), Distributed Common Ground System-Army (DCGS-A). TENCAP programs address National and theater-asset integration into a common TENCAP architecture, key activities and ongoing/planned initiatives having potential application to future National, theater and tactical intelligence, surveillance and reconnaissance (ISR) capabilities.

FY10, FY11 Funding provides for technical expertise, training and simulation development, CONOPS development, and engineering activities necessary to research, exploit and integrate Joint and National space/airborne sensor capabilities (IMINT and SIGINT), and TACSAT, MERIT and Urgent Material Release (UMR) project achievements into Army systems, advancing ISR collection, targeting, and situational awareness.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603766A - Tactical Electronic Surveillance System - Adv Dev		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	14423	12275	4385
Current BES/President's Budget (FY 2010)	14428	12235	18228
Total Adjustments	5	-40	13843
Congressional Program Reductions		-40	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	5		
SBIR/STTR Transfer			
Adjustments to Budget Years			13843

Change Summary Explanation: Funding - FY 2010: Funding increase to support the Tactical Electronic Surveillance System development.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603766A - Tactical Electronic Surveillance System - Adv Dev			PROJECT 907	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
907 Tactical Surveillance Systems - MIP	14428	12235	18228	Continuing	Continuing

A. Mission Description and Budget Item Justification: Per direction by the CSA/SECARMY memorandum (signed 23 Oct 2007), the Army Space Program Office (ASPO) will integrate National and Theater capabilities into the tactical Army architecture and force structure to support intelligence targeting and situational awareness. This involves an extensive amount of studies, technology integration, simulations and experiments with National Agencies, Joint Services and Army commands. In the short term, the mission is to evaluate promising National developmental technology and potential Concepts of Operations (CONOPS), and then integrate these capabilities into Tactical Exploitation of National Capabilities (TENCAP) systems/architectures/CONOPS. In the long term, the mission is to influence the type/direction of National technological/CONOPS development to meet Future Force requirements.

Capabilities will be incorporated into any Service system requiring space and theater ISR capabilities such as Future Combat System, Tactical Exploitation System (TES), Distributed Common Ground System-Army (DCGS-A). TENCAP programs address National and theater-asset integration into a common TENCAP architecture, key activities and ongoing/planned initiatives having potential application to future National, theater and tactical intelligence, surveillance and reconnaissance (ISR) capabilities.

FY10 Funding provides for technical expertise, training and simulation development, CONOPS development, and engineering activities necessary to research, exploit and integrate Joint and National space/airborne sensor capabilities (IMINT and SIGINT), and TACSAT and MERIT project achievements into Army systems, advancing ISR collection, targeting, and situational awareness.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Research, collaborate, develop and exploit emerging IMINT, SIGINT, MASINT, HUMINT, and space-based technologies to advance ISR collection, targeting, and situational awareness, leveraging NRO, Services, and DoD science and technology achievements	3468	2360	7528
Develop simulations for TENCAP mission rehearsals, warfighter exercises, and CONOPS revision and development	755	1125	1200
Maintain a ready core competency of technical expertise to research and evaluate classified/unclassified commercial and government prototypes and emerging technologies	5555	3875	4500
Support ASPO program management activities	4650	4875	5000
Total	14428	12235	18228

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

C. Acquisition Strategy As pioneers in streamlined acquisition, ASPO's success in delivering National and theater asset capabilities to war fighters is directly attributed to an environment emphasizing stable funding, maintaining personnel with specialized core competencies, and keeping abreast of technology development activities with potential

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603766A - Tactical Electronic Surveillance System - Adv Dev

PROJECT

907

applications to improve intelligence, surveillance and reconnaissance. By influencing new technology direction, tailoring existing technology, leveraging the best commercial practices, and using commercial and Government off-the-shelf software, ASPO minimizes risk while maximizing efficiency.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603766A - Tactical Electronic Surveillance System - Adv Dev							907		
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 Insertion - Emerging Technologies	SS/CPAF	Multiple	94258	3468	1-4Q	2360	1-4Q	7528	1-4Q	Cont.	Cont.	Cont.
Subtotal:			94258	3468		2360		7528		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
ASPO Program Management	In House	ASPO, Alexandria, VA	25369	4650	1-4Q	4875	1-4Q	5000	1-4Q	Cont.	Cont.	Cont.
Subtotal:			25369	4650		4875		5000		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
Exercises and Architecture	SS/CPAF	Multiple		755	1-4Q	1125	1-4Q	1200	1-4Q	Cont.	Cont.	Cont.
Subtotal:				755		1125		1200		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
Technology Insertion - Subject Matter Experts	Competitive/CPAF	Northrup Grumman, ASPO, Alexandria, VA		5555	2Q	3875	2Q	4500	2Q		18780	
Subtotal:				5555		3875		4500			18780	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT			
4 - Advanced Component Development and Prototypes	0603766A - Tactical Electronic Surveillance System - Adv Dev						907			
Project Total Cost:	119627	14428		12235		18228		Cont.	Cont.	Cont.

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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
4 - Advanced Component Development and Prototypes		0603766A - Tactical Electronic Surveillance System - Adv Dev																907														
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
Technology Insertion - Emerging Technologies	ISR Studies, Collaborations, Prototypes, MERIT																															
Technology Insertion - Exercises and Architecture	Trainings, Simulations, Mission Rehearsals, CONOPS development																															
Technology Insertion - Subject Matter Expertise	Technical and Engineering services																															
ASPO TENCAP Program Management	Gov Salaries, Travel, Office Costs																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603766A - Tactical Electronic Surveillance System - Adv Dev						907	
<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>	
Technology Insertion - Emerging Technologies	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Technology Insertion - Exercises and Architecture	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Technology Insertion - Subject Matter Expertise	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
ASPO TENCAP Program Management	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603774A - Night Vision Systems Advanced Development				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
131 NIGHT VISION SYS A/DEV	2519	2580			5099

A. Mission Description and Budget Item Justification: This program addresses initiatives to develop and transition technologies from the laboratories and industry in order to improve fielded equipment in the current force as well as initiation, development, and engineering/program management support of systems for fielding to the Current, Modular, and Future Forces (FF). 3rd Generation Forward Looking Infrared (3rd Gen FLIR) high performance thermal imaging technology will allow significantly improved ranges for acquisition of enemy forces. A major thrust will be to transition technologies to acquisition programs that meet required, advanced sensor capabilities of the Modular Force, FF, and FCS requirements documents. This will include the ability for sensors to accomplish Advanced Unmanned Aerial Vehicle (UAV) Payload missions, and Close Surveillance Support System (CS3) for 360 degree situational awareness for vehicles. CS3 will allow vehicle occupants to see outside the vehicle in day or night with improved vision. This will allow much improved maneuvering in urban/complex terrain, tracking of friendly soldiers and vehicles, and detection and engagement of dismounted and vehicular threats. Overwatch and other technologies provide for detecting, classifying, and locating weapons based on firing signatures (snipers/hostile fires). Other emerging concepts resulting from ongoing operations will be supported by this program, to include route reconnaissance for road hazards, battle damage assessment including decoy and camouflage detection, detection of threat soldiers carrying Rocket Propelled Grenades (RPGs), and identification of Improvised Explosive Devices (IED) and suicide bombers.

There are no FY 2010 funds.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603774A - Night Vision Systems Advanced Development		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	3432	2588	5644
Current BES/President's Budget (FY 2010)	2519	2580	
Total Adjustments	-913	-8	-5644
Congressional Program Reductions	-22	-8	
Congressional Recissions			
Congressional Increases			
Reprogrammings	-891		
SBIR/STTR Transfer			
Adjustments to Budget Years			-5644

Change Summary Explanation: FY08 funds (\$0.891) realigned to higher priority requirements. FY10 funds (\$5.644) realigned to higher priority requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603774A - Night Vision Systems Advanced Development				PROJECT 131
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
131 NIGHT VISION SYS A/DEV	2519	2580			5099

A. Mission Description and Budget Item Justification: This program addresses initiatives to develop and transition technologies from the laboratories and industry in order to improve fielded equipment in the current force as well as initiation, development, and engineering/program management support of systems for fielding to the Current, Modular, and Future Forces (FF). 3rd Generation Forward Looking Infrared (3rd Gen FLIR) high performance thermal imaging technology will allow significantly improved ranges for acquisition of enemy forces. A major thrust will be to transition technologies to acquisition programs that meet required, advanced sensor capabilities of the Modular Force, FF, and FCS requirements documents. This will include the ability for sensors to accomplish Advanced Unmanned Aerial Vehicle (UAV) Payload missions, and Close Surveillance Support System (CS3) for 360 degree situational awareness for vehicles. CS3 will allow vehicle occupants to see outside the vehicle in day or night with improved vision. This will allow much improved maneuvering in urban/complex terrain, tracking of friendly soldiers and vehicles, and detection and engagement of dismounted and vehicular threats. Overwatch and other technologies provide for detecting, classifying, and locating weapons based on firing signatures (snipers/hostile fires). Other emerging concepts resulting from ongoing operations will be supported by this program, to include route reconnaissance for road hazards, battle damage assessment including decoy and camouflage detection, detection of threat soldiers carrying Rocket Propelled Grenades (RPGs), and identification of Improvised Explosive Devices (IED) and suicide bombers.

FY 2009 funding supports continuing UAV Advanced Payloads and Advanced Sensor Fusion efforts as well as emerging concepts for laser imaging, route reconnaissance, battle damage assessment, information on the firing of weapons (counter sniper/fires location and targeting), and detection of personnel with RPGs, IEDs, and suicide bombers.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Emerging Concepts - Explore a range of potential technologies for FCS and the Future Force that will enable route reconnaissance, battle damage assessment, and detection of threats.	480	480	
UAV Advanced Payloads - Technology to sense the presence of personnel and man-made objects to include under natural foliage. Determine feasibility of integrating current processing technology development into Persistent Surveillance capabilities in-theatre and the Extended Range/Multi-Purpose (ER/MP) Program. This includes hyperspectral and laser imaging (Buckeye) for three dimensional display. FY07 Completed phase 1 of 2 phase Hyperspectral Study. FY08/FY09 investigates integration of Buckeye on ER/MP.	756	575	
Close Surveillance Support System (CS3) - Perform concept development and demonstrations for an unimpeded 360 degree view of the immediate area around the vehicle from any crew position for situational awareness and threat detection. Completed efforts in FY07 included system design, vehicle integration assessment, and user demonstration at Fort Benning to support requirement definition for multiple platforms.			
3rd Gen FLIR - Completed Concept and Technology Development for 3rd Gen FLIR, the next generation of advanced primary reconnaissance imaging systems for the Modular and Future Force, to include Future Combat System (FCS). FY07 procured four (4) brassboard prototype B kits for 2QFY07 demonstration and field collections in FCS Common EO Sensor; transitioning to System Development and Demonstration (SDD) in PE 0604710A Project DL70.			
Overwatch - Transition OVERWATCH Advanced Concepts Technology Demonstration (ACTD) technology into current and future			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	0603774A - Night Vision Systems Advanced Development	131
systems applications. FY07 evaluated ACTD completion for potential SDD and completed certification and accreditation of Overwatch software, provided recommendation and working with RDECOM to characterize counter sniper current capabilities and with TRADOC to support future requirements.		
Advanced Sensor Fusion - develop and demonstrate a fused/blended sensor including but not limited to image intensification, day camera, infrared, and multi function laser. These applications are intended for Common Sensor Payload improvements for the ARH-70A, ER/MP, and FCS Class 4, among other platforms. FY08 investigates these capabilities with demonstrations in FY09.	1283	1453
Small Business Innovative Research / Small Business Technology Transfer Program		72
Total	2519	2580

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PE 0602709A/Night Vision and Electro-Optical Technology	34924	25647	26381	Continuing	Continuing
PE 0603710A/Night Vision Advanced Development	53910	39916	40595	Continuing	Continuing
PE 0604710A/Night Vision Devices Engineering Development	47317	44508	37892	Continuing	Continuing
K38300 LRAS3	158411	210766	178255		678356
G86100 Future Combat System	80932	154583	148028		1061363
BA0330 TUAV	72666	3	258307	Continuing	Continuing
B00302 Advanced TUAV Payloads	42135	141988	162602	Continuing	Continuing
W61900 IAV	248444	231651	197154	Continuing	Continuing
PE 654645 FCS (UGS)				Continuing	Continuing
K31300 DVE	21993			Continuing	Continuing
D15402 Truck Utility Heavy Variant 10000 LB	1397117	946734		Continuing	Continuing
D15900 Truck, Tractor, Line Haul M915A2	84059	9913	45685	Continuing	Continuing
G85100 Stryker Vehicle	959730			Continuing	Continuing
GA0700 M1 Abrams Tank (MOD)	784997	341569	253231	Continuing	Continuing
GA0730 System Enhancement Pgm Sep M1A2				Continuing	Continuing
G80716 Bradley Base Sustainment (M2A2)	92924			Continuing	Continuing
G80717 Bradley Base Sustainment (M2A3)	746542	171989	144813	Continuing	Continuing

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603774A - Night Vision Systems Advanced Development

PROJECT

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C. Acquisition Strategy The advances and technology improvements to UAV payloads, and advanced sensor fusion for Common Sensor Payload that will utilize various cost reimbursement development type contracts that were, and will continue to be, competitively awarded using best value source selection procedures.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603774A - Night Vision Systems Advanced Development							131		
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
UAV Advanced Payloads	T&M, MIPR	Various	1564	641	2Q	475	2Q			Cont.	Cont.	
3rd Gen FLIR	T&M, MIPR	NVESD, Various	5293								3985	
Close Surveillance Support System efforts	T&M	Various	4554								3763	
Emerging Concepts efforts	T&M	Various	2532	360	2Q	360	2Q			Cont.	Cont.	
ATR/ATC Activities	MIPR	Various	966								714	
Uncooled B-Kit Evolution/Development	C/CP, MIPR	ADC, Newington, VA; Various others	4101								4045	
UGS/CLENS	C/CP	TBD	366								183	
Mini SAR Demo	CPFF	Various	1346								673	
Data Comms Package on RAID	T&M	Raytheon	808								404	
Overwatch efforts	MIPR and C/CP	Various	1053								711	
Prior dem val efforts	Various	Various	38265								38265	
Advanced Sensor Fusion efforts	Various	TBD		1055	2-3Q	1258	2-3Q			Cont.	Cont.	
Subtotal:			60848	2056		2093				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
Matrix Support	MIPR	Various	2675	261	2Q	306	2Q			Cont.	Cont.	
Engineering Support	T&M	Various	1426								902	
Engineering Support	FFP, T&M	CSC, Falls Church, VA, CACI, MITRE	4093								4093	
Matrix Support	MIPR	CECOM, Fort Monmouth	2000								2000	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes				PE NUMBER AND TITLE 0603774A - Night Vision Systems Advanced Development						PROJECT 131		
Subtotal:				10194	261		306			Cont.	Cont.	

Remarks: Historical Engineering Support and Matrix Support at Fort Monmouth was for TSP program, executed by PM SW in this project.

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
Demos and evals, various programs	MIPR	Various	2676								2676	
TSP Flight demos and assessments	MIPR	APG, MD and EPG, Ft. Huachuca, AZ	1515								1515	
CS3 Demo	MIPR	Various	350								175	
ATR	MIPR	APG	20								10	
UGS/CLENS	MIPR	APG	60								30	
Data Comms Package on RAID Demo	MIPR	Huntsville, AL	130								65	
Uncooled B Kit Eval	MIPR	TBD									90	
3rd Gen FLIR	MIPR	APG	80								40	
UAV Advanced Payloads Eval	MIPR	YPG, AZ	180								180	
Transition Overwatch	MIPR	NVESD	20								20	
Subtotal:			5031								4801	

Remarks: Prior demos and evals were for various programs, including systems transitioned to PEO Soldier management.

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		PM-NV/RSTA, Ft. Belvoir, VA	1590	202	1-4Q	181	1-4Q			Cont.	Cont.	
Subtotal:			1590	202		181				Cont.	Cont.	

Project Total Cost:				77663	2519		2580			Cont.	Cont.	
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Schedule Profile (R4 Exhibit)																					May 2009																							
BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes												PE NUMBER AND TITLE 0603774A - Night Vision Systems Advanced Development												PROJECT 131																				
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) FOPEN MS B																					▲ 1																							
Route Reconnaissance efforts																																												
Laser Imaging Efforts (Buckeye)																																												
Advanced Sensor Fusion efforts																																												
(2) UAV Advanced Payloads Demo																																	▲ 2											
UAV Advanced Payloads efforts																																												

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603774A - Night Vision Systems Advanced Development						131	
<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>	
3rd Gen FLIR efforts									
FOPEN MS B					2Q				
Route Reconnaissance efforts		1Q - 4Q	1Q - 3Q						
Overwatch efforts									
CS3 Efforts									
Laser Imaging Efforts (Buckeye)	1Q - 4Q	1Q - 4Q							
Advanced Sensor Fusion efforts	2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
UAV Advanced Payloads Demo		2Q							
UAV Advanced Payloads efforts	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603779A - Environmental Quality Technology - Dem/Val			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	26474	15304	4770	Continuing	Continuing
035 NATIONAL DEFENSE CNTR FOR ENVIRO EXCELLENCE-NDCEE	4632	8798	4770	Continuing	Continuing
E17 ARMY ENVIRONMENTAL SOLUTIONS PROGRAM (CA)	2330				2330
E21 POLLUTION PREVENTION TECHNOLOGY DEM/VAL	1251	526			1777
E23 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) PILOT IN DOD	2330	398			2728
EN4 PLASMA ENERGY PYROLYSIS SYSTEM (PEPS)		797			797
EP1 ENVIRONMENTAL QUALITY TECH DEM/VAL (CA)	15931	4785			20716

A. Mission Description and Budget Item Justification: There is a broad application potential for environmental quality technology (EQT) to be applied to multiple Army weapon systems and installations. However, technology must be demonstrated and validated (total ownership cost and performance data identified) before potential users will consider exploiting it. Therefore, this program element includes projects focused on validating the general military utility or cost reduction potential of technology when applied to different types of infrastructure, military equipment or techniques. It may include validations and proof-of-principle demonstrations in field exercises to evaluate upgrades or provide new operational capabilities. The validation of technologies will be in as realistic an operating environment as possible to assess performance or cost reduction potential. EQT demonstration/validation is systemic; i.e., applies to a class of systems (e.g., tanks or aircraft) or to a Department of Army-wide, multiple site/installation problem (e.g., unexploded ordnance detection and discrimination). This program will address, and eventually resource, programs in each of the environmental quality technology pillars (restoration, conservation, compliance, and pollution prevention). Work must be endorsed by potential users and supported by a state-of-the-art assessment (i.e., "technology is heading for user to implement").

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
4 - Advanced Component Development and Prototypes	0603779A - Environmental Quality Technology - Dem/Val

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	18580	5355	4814
Current BES/President's Budget (FY 2010)	26474	15304	4770
Total Adjustments	7894	9949	-44
Congressional Program Reductions	-287	-51	
Congressional Rescissions			
Congressional Increases		10000	
Reprogrammings	8700		
SBIR/STTR Transfer	-519		
Adjustments to Budget Years			-44

Change Summary Explanation - Funding:

FY 2008 - There were 3 congressional interest projects reprogrammed to Program Element 0603779A: Hawaii Undersea Military Munitions Assessment, Biowaste to Bioenergy, and Vanadium Technology Program.

FY 2009 - There were 5 congressional interest projects (totalling \$6.000 million) added: Battlefield Asset Decontamination System (BARDS) (\$1.600 million), Plasma Energy Pryolysis System (PEPS) Clean Fuels (\$.800 million), Battlefield Plastic Biodiesel (\$1.600 million), Renewable Energy Testing Center (\$1.600 million), and the Demonstration/Evaluation Project at Travis Air Force Base (Note to develop a greenhouse gas inventory and footprint utilizing a web-based Environmental Management Information System (EMIS))(\$.400 million). In addition, there was a program increase (\$4.000) to support the National Defense Center for Environment and Energy (NDCEE) Program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603779A - Environmental Quality Technology - Dem/Val			PROJECT 035
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
035 NATIONAL DEFENSE CNTR FOR ENVIRO EXCELLENCE-NDCEE	4632	8798	4770	Continuing	Continuing

A. Mission Description and Budget Item Justification: The National Defense Center for Environmental Excellence (NDCEE) was established by Congress in 1990 with a directive to "serve as a national leadership organization to address high priority environmental problems for the Department of Defense (DoD), other government organizations, and the industrial community." The NDCEE Program is a national resource for developing and disseminating advanced environmental technologies. The NDCEE is used to demonstrate environmentally acceptable technology to industry; validate new technology prior to transferring that technology; and assist in the training of potential users as part of that technology transfer process. The NDCEE is a DoD resource for environmental quality management and technology validation. This program is managed by the Army on behalf of the Office of the Assistant Deputy Under Secretary of Defense for Environment (ADUSD-E). In May 2008, the program name was redesignated to the National Defense Center for Energy and Environment to ensure that the Center's mission recognizes and addresses the strategic interdependence of energy and environmental technology requirements within an overall sustainability framework in support of our installations, weapons systems and war fighters. This name change also directly supports the DoD's proactive implementation of Executive Order 13423, "Strengthening Federal Environmental, Energy and Transportation Management."

Our broadly encompassing and growing mobile, personal and stationary advanced energy technology requirements include infrastructure, alternative and synthetic fuels, surety, renewables, storage, distribution, advanced power, micro-grids, transportation, systems integration and others. Further, to train as we fight, validated energy and environmental technologies need to be available, and implemented at our power projection bases and training areas. The NDCEE will continue to research, demonstrate and transfer these technologies supporting our integrated Environment, Safety and Occupational Health (ESOH) and energy objectives with full consideration of the triple bottom line of mission, environment and community.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Management and operations of the NDCEE by the prime contractor.	2300	2300	2300
Industrial base integration, operation of the NDCEE environmental technology facility, and environmental information analysis.	500	500	500
Conduct demonstration/validation of environmentally acceptable technologies that enhance military readiness and reduce production, operating, and/or disposal costs.	1582	5277	1687
NDCEE Government program management during contract negotiations and execution and during project formulation, execution, and technology transfer.	250	475	283
Small Business Innovative Research/Small Business Technology Transfer Programs		246	
Total	4632	8798	4770

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

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	0603779A - Environmental Quality Technology - Dem/Val	035

C. Acquisition Strategy The NDCEE is a national asset focused on DoD applications that include technology transfer to appropriate DoD organizations. The NDCEE fosters an outreach program to describe its products and capabilities that include publication of results and participation in professional meetings, symposia, conferences, and appropriate coordination with industry. The management strategy for the NDCEE centers on a DoD Executive Advisory Board (EAB) chaired by the DoD NDCEE Executive Agent on behalf of the ADUSD (ESOH) and composed of senior DoD leadership to oversee NDCEE operations. The EAB is supported by an EAB Working Group (EABWG) that includes staff members from each of the offices represented on the EAB. The EABWG coordinates all NDCEE activities and reports back to the EAB Principals. The EABWG is, in turn, supported by a Technical Working Group (TWG) that addresses the details of NDCEE program execution. The contracting strategy of the NDCEE is based on using an NDCEE Contracting Officer's Representative to validate all the contractual portions of the NDCEE and by technical monitors (TM) to oversee the technical aspects of each contracted task. A prime contractor operates NDCEE test facility(s) to validate environmentally compatible technologies on a representative "shop floor". The NDCEE accounts for and conducts work for: (1) direct funded Army tasks; (2) reimbursable tasks from within DoD and from other Government agencies; and (3) Congressionally directed and funded tasks.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603779A - Environmental Quality Technology - Dem/Val							035		
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
Not applicable.								-78			-78	
Subtotal:								-78			-78	
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
Technical Data	C; CPFF	Concurrent Technologies Corporation (CTC), Johnstown, PA	12500	2800	2-3Q	2800	2-3Q	2800	2-3Q	Cont.	Cont.	Cont.
Subtotal:			12500	2800		2800		2800		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
Development Testing	C; CPFF	Concurrent Technologies Corp.	2466								2466	2466
Development Testing	C; CPFF	Concurrent Technologies Corp.	14690	1582	3Q	5523	3Q	1765	3Q	Cont.	Cont.	Cont.
Subtotal:			17156	1582		5523		1765		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

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603779A - Environmental Quality Technology - Dem/Val							035		
Program Management Support	Allotment	Office of the Assistant Sec Army (Installations and Environment)	3431	250	4Q	475	4Q	283	4Q	Cont.	Cont.	Cont.
Subtotal:			3431	250		475		283		Cont.	Cont.	Cont.
Project Total Cost:			33087	4632		8798		4770		Cont.	Cont.	Cont.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603779A - Environmental Quality Technology - Dem/Val			PROJECT E17
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
E17 ARMY ENVIRONMENTAL SOLUTIONS PROGRAM (CA)	2330				2330

A. Mission Description and Budget Item Justification: Addressing installation, environmental and renewable energy requirements associated with military operations (FY2004 National Defense Appropriations Conference Report). This is a new Congressional interest project.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Congressional Add - Western Hemisphere Information Exchange Program (WHIX)	2330		
Total	2330		

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

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603779A - Environmental Quality Technology - Dem/Val			PROJECT E21
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
E21 POLLUTION PREVENTION TECHNOLOGY DEM/VAL	1251	526			1777

A. Mission Description and Budget Item Justification: This project supports Advanced Component Development and Prototypes 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 demonstrated under 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. Together with project 0603804A, Logistics and Engineer Equipment - Adv Dev (K42), this project transitions advanced technologies developed under 0603728A, Environmental Quality Technology Demonstrations (025). The project tests and evaluates 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 demonstrating the capabilities of new materials and processes to fulfill the performance requirements outlined in Material Specifications, Depot Maintenance Work Requirements, Technical Manuals and other technical data. Test and evaluation activities are executed by Research, Development and Engineering Command (RDECOM) centers and laboratories in cooperation with the affected Life Cycle Management Commands, Program Executive Offices and Program Managers. Materials and processes are being demonstrated at ten different Army facilities in order to minimize the disruption of materiel maintenance operations at any one facility.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Qualify, validate and approve reformulated Chemical Agent Resistant Coating (CARC) systems and other non-CARC paints and surface coatings	751	273	
Qualify, validate and approve hazardous air pollutant (HAP) free solvents, thinners and cleaners	300	100	
Qualify, validate and approve chemical paint removers containing no methylene chloride or other HAPs	150	93	
Qualify, validate and approve reformulated sealants and adhesives for high-use applications	50	45	
Small Business Innovation Research/Small Business Technology Transfer		15	
Total	1251	526	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0603728A, Environmental Quality Technology Demonstrations (025)	3411	3610	3640		10661
0603804A, Logistics and Engineer Equipment - Adv Dev	5972	5190	2951	465	14578

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE				PROJECT
4 - Advanced Component Development and Prototypes	0603779A - Environmental Quality Technology - Dem/Val				E21
(K42)					
0605857A, Environmental Quality Technology Mgmt Support (06I)	340	272	275	67	954

Comment:

C. Acquisition Strategy The project transitions demonstrated technology directly into the Army supply system by having National Stock Numbers assigned/reassigned and immediately made available for procurement by the Defense Logistics Agency and the General Services Administration. As acquisition program managers approve the new materials and processes for use on their systems, technical writers are specifying them in the appropriate technical publications. The project is managed by the Director of the Environmental Acquisition and Logistics Sustainment Program at the Headquarters, U.S. Army RDECOM.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603779A - Environmental Quality Technology - Dem/Val			PROJECT E23
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
E23 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) PILOT IN DOD	2330	398			2728

A. Mission Description and Budget Item Justification: The Environmental Management System (EMS) Pilot in Department of Defense (DOD) is a new Congressional interest project. The project is to demonstrate and validate EMS internet-based software applications at Defense sites in order to better manage environmental information and reduce compliance burdens of installations.

Accomplishments/Planned Program:	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Demonstrated and validated EMS internet-based software applications at Department of Defense (DoD) installation sites.	2330	387	
Small Business Innovation Research/Small Business Technology Transfer		11	
Total	2330	398	

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

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603779A - Environmental Quality Technology - Dem/Val			PROJECT EN4
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
EN4 PLASMA ENERGY PYROLYSIS SYSTEM (PEPS)		797			797

A. Mission Description and Budget Item Justification: This project addresses the use of high temperature Plasma Energy Pyrolysis Systems (PEPS) gasification process, with the primary focus on converting opportunity feedstock(s) to high quality Synthesis Gas (syngas) that can be subsequently converted to usable fuels for the Army. The specific goal of the PEPS Clean Fuels Program is to build an operational unit to gather data to demonstrate the efficiency, environmental compliance, and cost competitiveness of the gasification process for fuel applications. The objective of this task - Phase 4, is to continue to perform additional Risk Reduction Testing needed to further demonstrate and validate the applicability of PEPS gasification technology to a range of applications requiring elevated pressures and alternate plasma torch gas compositions.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Perform risk reduction testing to demonstrate and validate the applicability of PEPS gasification technology.		774	
Small Business Innovative Research/Small Business Technology Transfer Program		23	
Total		797	

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

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603779A - Environmental Quality Technology - Dem/Val			PROJECT EP1
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
EP1 ENVIRONMENTAL QUALITY TECH DEM/VAL (CA)	15931	4785			20716

A. Mission Description and Budget Item Justification: Environmental Quality Technology Dem/Val Adds (CA) - Congressional directed Army Environmental quality technology projects that address critical requirements, reduce out-year costs, and support long-term sustainability. This includes compliance, conservation, restoration and installation pollution prevention technologies. There are 5 new congressional interest projects (totalling \$5.200 million) added: Battlefield Asset Decontamination System (BARDS) (\$1.600 million), Battlefield Plastic Biodiesel (\$1.600 million), Renewable Energy Testing Center (\$1.600 million), and the Demonstration/Evaluation Project at Travis Air Force Base (\$.400 million)

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
There are 5 new congressional interest projects (totalling \$5.200 million) added: Battlefield Asset Decontamination System (BARDS) (\$1.600 million), Battlefield Plastic Biodiesel (\$1.600 million), Renewable Energy Testing Center (\$1.600 million), and the Demonstration/Evaluation Project at Travis Air Force Base (\$.400 million)	15931	4651	
Small Business Innovative Research/Small Business Technology Transfer Programs		134	
Total	15931	4785	

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

C. Acquisition Strategy Not applicable for this item.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	309081	393054	180673	Continuing	Continuing
355	309081				309081
367		83642	19052	Continuing	Continuing
372		309412	161621	Continuing	Continuing

A. Mission Description and Budget Item Justification: The WIN-T program focus is to design, develop, produce and field the Future Modular Force transport network, while leveraging mature technologies that can enhance the Current Modular Force to operate in an emerging noncontiguous environment.

WIN-T Inc 3 develops the mature technologies which will be inserted into Inc 2.

The Defense Acquisition Executive (DAE), through the Nunn-McCurdy certification process, certified a restructured WIN-T program on June 5, 2007. The certification Acquisition Decision Memorandum (ADM) stated that the Army will restructure the WIN-T Major Defense Acquisition Program (MDAP) to absorb the former Joint Network Node (JNN) Network program. It further stated that the restructured program will consist of four Increments:

Increment 1: Networking at-the-Halt

Increment 1a: Extended Networking at-the-Halt; The former JNN program with Ka military satellite communications capability

Increment 1b: Enhanced Networking at-the-Halt; The former JNN Program with Net Centric Waveform and Colorless Core Capability

Increment 2: Initial Networking on-the-Move; Providing commercial and military band satellite communications to Division, Brigade, Battalion and Company

Increment 3: Full Networking on-the-Move; Full mobility to include Future Combat Systems (FCS) support

Increment 4: Protected Satellite Communications (SATCOM) on-the-Move Enhanced capability for protected SATCOM through tech insertions from High Capacity Communication Capability (HC3)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL
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<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	320068	414357	373347
Current BES/President's Budget (FY 2010)	309081	393054	180673
Total Adjustments	-10987	-21303	-192674
Congressional Program Reductions		-21303	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-2120		
SBIR/STTR Transfer	-8867		
Adjustments to Budget Years			-192674

Change Summary Explanation: Funding: FY10 - Funds realigned \$192.674 to higher priority requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL			PROJECT 355	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
355	WIN-TACTICAL - DEM/VAL	309081			309081

A. Mission Description and Budget Item Justification: The WIN-T program focus is to design, develop, produce and field the Future Modular Force transport network, while leveraging mature technologies that can enhance the Current Modular Force to operate in an emerging noncontiguous environment. WIN-T will be developed and fielded in Increments that will successively build upon one another.

The Defense Acquisition Executive (DAE), through the Nunn-McCurdy certification process, certified a restructured WIN-T program on June 5, 2007. The certification Acquisition Decision Memorandum (ADM) stated that the Army will restructure the WIN-T Major Defense Acquisition Program (MDAP) to absorb the former Joint Network Node (JNN) Network program. It further stated that the restructured program will consist of four Increments. This Program Element (PE) addresses two of the Increments:

Increment 2 capability supports limited collaboration, mission planning and on-the-move. It enables distribution of information via voice, data, and real-time video from ground-to-ground and ground-to-satellite communications.

Increment 3 will provide the Commander/user within the tactical area of responsibility a mobile infrastructure that passes relevant information effectively and efficiently for combined arms capabilities in all required terrain and environmental conditions. Increment 3 implements the Global Information Grid (GIG) NetCentric vision to include Information Assurance and Network Centric Enterprise Services, provides dynamic bandwidth, enables On-the-Move (OTM) capability and is a key enabler for Future Combat Systems (FCS).

WIN-T Inc 3 develops the mature technologies which will be inserted into Inc 2.

All future funding for Increments 2 and 3 RDT&E efforts have been transferred to PE # 0603782A, Project 367 for Increment 2 and PE # 0603782A, Project 372 for Increment 3.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Prepare technical assessment and research studies.	884		
Prepare/coordinate contractual and milestone documentation, perform program support and management efforts, and conduct Preliminary Design Review (PDR) and Critical Design Review (CDR) and test support for Engineering Development Test and Limited User Test.	7753		
Continues System Development and Demonstration (SDD). The Prime Contractor and major subcontractors provide final architecture, Modeling and Simulation (M&S), preliminary design and critical design, and prototypes to support tests and milestone efforts.	266555		
Conducted Inc 2 Field Test. Provide Test Support to include M&S and preparation for Inc 2 DT/LUT and Inc 3 DT.	13636		
Provide STT+ as Government Furnished Equipment to Prime Contractor for Inc 2 LUT.	2849		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL	355
Provide system engineering, technical support and platform integration support for Inc 2 and Inc 3 programs.	17404	
Total	309081	

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

C. Acquisition Strategy The Milestone Decision Authority (MDA) approved entrance as a Milestone (MS) B Program and the initial WIN-T Acquisition Strategy on July 28, 2003. Since MS B, the structure of the Army changed requiring the WIN-T architecture to change as well. Consequently, the FY07 President's Budget resulted in near term Procurement funding being removed from FY06 thru FY09 and Research Development Test & Evaluation (RDT&E) funding was increased to levels that exceeded the Acquisition Program Baseline (APB) threshold. Concurrently, the Army Training and Doctrine Command (TRADOC) received direction to initiate a Capability Development Document (CDD) versus a Capability Production Document (CPD). These factors combined led PM WIN-T to initiate and submit a Program Deviation Report (PDR) on October 7, 2005. The PDR identified a breach to two key milestones, the Critical Design Review (CDR) and the Milestone C Decision Review, as well as a potential RDT&E cost threshold breach due to a schedule extension and additional form, fit, and function requirements directed from FCS requirements allocation.

A change in the law, Title 10 United States Code 2433, required the program to refer back to the original APB to determine the cost growth for Program Acquisition Unit Cost (PAUC) and the Average Procurement Unit Cost (APUC). A Defense Acquisition Board in Process Review (DAB IPR) was held on September 21, 2006. On January 23, 2007 a second Program Deviation Report (PDR) was submitted to announce the breaches to PAUC and APUC.

The Defense Acquisition Executive (DAE), through the Nunn-McCurdy certification process, certified a restructured WIN-T program on June 5, 2007. The certification Acquisition Decision Memorandum (ADM) stated that the Army will restructure the WIN-T Major Defense Acquisition Program (MDAP) to absorb the former Joint Network Node (JNN) Network program. It further stated that the restructured program will consist of four Increments.

The Government attained approval on a Class Justification & Approval (J&A) based on one responsible source and issued a Sole Source Request for Proposal (RFP) for five years continuation of the RDT&E portion of the Phase 3 SDD contract on March 19, 2007. The Phase 3 SDD contract was awarded on June 29, 2007 to a combined contract team with General Dynamics as the prime contractor and Lockheed Martin the major subcontractor. Increment 2 SDD was implemented as a within scope change to the Phase 3 contract and incorporated by modification on 14 August 2007.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes			PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL								PROJECT 355	
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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
Phase 1 Pre Milestone B	CPFF/T&M	Lockheed Martin Integrated Systems & Solutions, Gaithersburg, MD	21185								21185	
Phase 1 Pre Milestone B	CPFF/T&M	General Dynamics C4 Systems, Taunton, MA	13306								13306	
Phase 2 SDD	CPFF/T&M	Lockheed Martin Integrated Systems & Solutions, Gaithersburg, MD	40770								40770	
Phase 2 SDD	CPFF/CPAF/T&M	General Dynamics C4 Systems Inc, Taunton, MA	339972								266784	
Phase 3 SDD	CPAF/T&M	General Dynamics C4 Systems Inc, Taunton, MA	24184	266555	1-4Q						290739	
Subtotal:			439417	266555							632784	

Remarks: All future funding transferred to PE # 0603782A, Project 367 for Increment 2 and PE # 0603782A, Project 372 for Increment 3

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
WIN-T Technical Assessment and Research Studies	Various		3743	884	1-4Q						4108	
Systems Engineering and Technical Support	Various		49761	17404	1-4Q						58989	
Subtotal:			53504	18288							63097	

Remarks: All future funding transferred to PE # 0603782A, Project 367 for Increment 2 and PE # 0603782A, Project 372 for Increment 3

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL	PROJECT 355
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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
Conducted Inc 2 Field Test. Provide Test Support to include M&S prep for Inc 2 DT/LUT & Inc 3 DT.	Various		21175	13636	1-4Q						34811	
Government Furnished Equipment for Inc 2 LUT	PWD			2849	2Q						2849	
Subtotal:			21175	16485							37660	

Remarks: All future funding transferred to PE # 0603782A, Project 367 for Increment 2 and PE # 0603782A, Project 372 for Increment 3

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
Documentation Preparation & PM Support	Various		14851	4853	1-4Q						17509	
Conducted Source Selection Evaluation Board and Conduct Should Cost Effort	Various		326								326	
Travel, licenses, facilities, etc.	Various		3391	1500	1-4Q						4562	
MITRE Support	PWD		7748	1400	1-4Q						8094	
Subtotal:			26316	7753							30491	

Remarks: All future funding transferred to PE # 0603782A, Project 367 for Increment 2 and PE # 0603782A, Project 372 for Increment 3

Project Total Cost:	540412	309081									764032	
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
**0603782A - WARFIGHTER INFORMATION
 NETWORK-TACTICAL - DEM/VAL**

PROJECT
355

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
Increment 2 Phase 3 SDD	Inc 2 SDD																															
(1) Inc 2 Preliminary Design Review	▲ Inc 2 PDR																															
Inc 2 Field Test	Field Test																															
(2) IPR (OIPT), (3) Increment 2 Critical Design Review	OIPT ▲ Inc 2 CDR																															
Increment 3 Phase 3 SDD	Inc 3 SDD																															
(4) Increment 3 Preliminary Design Review	▲ Inc 3 PDR																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL	PROJECT 355
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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>
Phase 2 SDD								
Increment 2 Phase 3 SDD	1Q - 4Q							
Inc 2 Preliminary Design Review	1Q							
Inc 2 Field Test	1Q							
IPR (OIPT)	2Q							
Increment 2 Critical Design Review	2Q							
Increment 3 Phase 3 SDD	1Q - 4Q							
Increment 3 Preliminary Design Review	4Q							

Scheduled events for FY2009 and out will be reflected on the reports for PE # 0603782A, Project 367 for Increment 2 and PE # 0603782A, Project 372 for Increment 3

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL			PROJECT 367	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
367	WIN-T INCREMENT 2 -INITIAL NETWORKING-ON-THE-MOVE	83642	19052	Continuing	Continuing

A. Mission Description and Budget Item Justification: Increment 2 capability supports limited collaboration, mission planning and on-the-move. It enables distribution of information via voice, data, and real-time video from ground-to-ground and ground-to satellite communications. Increment 2 capitalizes on commercial off-the-shelf/Government off-the-shelf (COTS)/(GOTS), mature technologies and adds mobility to the Brigade Combat Team (BCT) including Battalions and Companies. Increment 2 initially enables planning, monitoring, controlling and prioritizing (PMCP) the Div Headquarters (HQs) and/or the Bde network. It will disseminate critical information in less than five seconds and time sensitive information in less than eight seconds. Mobile communications for select users are enabled at 256 kbps for speeds up to 25 mph. It provides vehicular personnel force protection. It extends wide area/Global Information Grid (GIG) network connectivity to the lower tactical subnets at the company level. Network survivability is enhanced by automatically reconfiguring the network due to node(s) or link loss (es). Spectrum reuse is accomplished with the Highband Network Waveform (HNW) and Net Centric Waveform (NCW). The Quality of Service (QoS) capability enables message trafficking prioritization by level of importance to the warfighter. This Increment provides commercial and military band satellite communications to Div, Bde, Bn and Company (Co). WIN-T Inc 3 develops the mature technologies which will be inserted into Inc 2.

This program is not a new start, effort previously funded under PE# 0603782A, Project 355.

Funds in FY2010 support platform integration and government test support for Production Qualification Test-Contractor (PQT-C) and preparation for Initial Operational Test (IOT).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Increment 2 Engineering Change Proposal (ECP) provides the productization of configuration items, test support/prototypes for Development Test, New Equipment Training, and Limited User Test. The contractor provides final architecture, Modeling & Simulation (M&S), and support for milestone efforts.		37930	5026
Platform Integration of WIN-T Configuration Items		14408	1720
Technical Engineering Services and Research Studies		5200	1994
Conduct of Developmental Test and Limited User Test; includes Modeling and Simulation		13652	8900
Program Management Support		10109	1412
Small Business Innovative Research/Small Business Technology Transfer Programs		2343	
Total		83642	19052

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

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**May 2009**

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Advanced Component Development and Prototypes**0603782A - WARFIGHTER INFORMATION
NETWORK-TACTICAL - DEM/VAL****367**

C. Acquisition Strategy The Defense Acquisition Executive (DAE), through the Nunn-McCurdy certification process, certified a restructured WIN-T program on June 5, 2007. The certification Acquisition Decision Memorandum (ADM) stated that the Army will restructure the WIN-T Major Defense Acquisition Program (MDAP) to absorb the former Joint Network Node (JNN) Network program. It further stated that the restructured program will consist of four Increments:

Increment 1: Networking at-the-Halt
 Increment 1a: Extended Networking at-the-Halt; the former JNN program with Ka military satellite communications capability
 Increment 1b: Enhanced Networking at-the-Halt; the former JNN Program with Net Centric Waveform and Colorless Core Capability
 Increment 2: Initial Networking on-the-Move; Providing commercial and military band satellite communications to Division, Brigade, Battalion and Company
 Increment 3: Full Networking on-the-Move
 Full mobility to include Future Combat Systems (FCS) support
 Increment 4: Protected Satellite Communications (SATCOM) on-the-Move
 Enhanced capability for protected SATCOM through tech insertions from High Capacity Communication Capability (HC3)

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL							367		
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 2 ECP to the Inc 3 SDD	CPAF	General Dynamics C4 Systems Inc, Taunton, MA				37930	1-4Q	5026	1-4Q	Cont.	Cont.	
Platform Integration	Various	Various				14408	3Q	1720	1-4Q	Cont.	Cont.	
Subtotal:						52338		6746		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
Technical Engineering Services and Research Studies	T&M	General Dynamics C4 Systems Inc, Taunton, MA				5200	1-4Q	1994	1-4Q	Cont.	Cont.	
Subtotal:						5200		1994		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 Modeling & Simulation	Various	Various				13652	1-4Q	8900	1-4Q	Cont.	Cont.	
Subtotal:						13652		8900		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	
4 - Advanced Component Development and Prototypes			0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL							367	
Program Management Support	MIPR	Various				10109	1-4Q	1412	1-4Q	Cont.	Cont.
Small Business Innovative Research/Small Business Technology Transfer Programs	MIPR	Various				2343	1-4Q			Cont.	Cont.
Subtotal:						12452		1412		Cont.	Cont.
Project Total Cost:						83642		19052		Cont.	Cont.

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL

PROJECT
367

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
Phase 3 Increment 2 SDD	Inc 2 SDD																															
(1) Increment 2 Preliminary Design Review	▲ 1																															
(2) Increment 2 Critical Design Review	▲ 2																															
(3) Developmental Test				▲ 3																												
(4) New Equipment Training, (5) Limited User Test				▲ 4		▲ 5																										
(6) Milestone C, (7) Contract Award for Low Rate Initial Production				NET		MS C		▲ 7																								
Increment 2 Low Rate Initial Production									Inc 2 LRIP																							
(8) Initial Operational Test													▲ 8		FUE																	
(9) First Unit Equipped															▲ 9																	
Full Rate Production																	FRP															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL						367	
<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>	
Phase 3 Increment 2 SDD	1Q - 4Q	1Q - 3Q							
Increment 2 Preliminary Design Review	1Q								
Increment 2 Critical Design Review	2Q								
Developmental Test		1Q							
New Equipment Training		2Q							
Limited User Test		2Q							
Milestone C		4Q							
Contract Award for Low Rate Initial Production		4Q							
Increment 2 Low Rate Initial Production		4Q	1Q - 4Q	1Q - 4Q					
Initial Operational Test				2Q					
Full Rate Production Decision Review				3Q					
First Unit Equipped				4Q					
Full Rate Production				4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	

Prior years for scheduling and funding can be derived from the PE# 0603782A, Project 355

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL			PROJECT 372	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
372 WIN-T INCREMENT 3 - FULL NETWORKING ON THE MOVE		309412	161621	Continuing	Continuing

A. Mission Description and Budget Item Justification: Warfighter Information Network - Tactical (WIN-T) Inc 3 is the Army's communications system for reliable, secure, and seamless video, data, imagery, and voice services that enables decisive combat actions. It will be focused on moving information in a manner that supports commanders, staffs, functional units, and capabilities - based formations - all mobile, agile, lethal, sustainable, and deployable. It will be optimized for offensive and Joint operations so that the theater combatant commander will have the capability to perform multiple missions simultaneously. WIN-T Increment 3 will provide the Commander/user within the tactical area of responsibility a mobile infrastructure that passes relevant information effectively and efficiently for combined arms capabilities in all required terrain and environmental conditions. WIN-T is implementing the Global Information Grid (GIG) NetCentric Vision including Information Assurance and Network Centric Enterprise Services. In addition, WIN-T is a key component of the tactical GIG and enabler for Future Combat Systems (FCS). WIN-T provides dynamic bandwidth and enabling formations On-The-Move (OTM). WIN-T Inc 3 develops the mature technologies which will be inserted into Inc 2. Inc 3 introduces the aerial tier to complete the 3 tier objective architecture.

This program is not a new start, previously funded under PE # 0603782A, Project 355.

Funds in FY2010 continue the Inc 3 System Development and Demonstration effort to include software development engineering builds, continued development of Inc 3 mature technologies that will be inserted into Inc 2, development of an aerial tier, as well as continue to provide the objective transmission subsystem; JC4ISR radio and associated antennas.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Increment 3 System Development and Demonstration. The contractor continues development, Modeling and Simulation (M&S), hardware and software development for Inc 2 inserts and an aerial tier.		267870	131451
Technical Engineering Services and Research Studies		4500	2279
Support for Engineering Development Test and Limited User Test; includes M&S		2005	2094
Program Management Support		26464	25797
Small Business Innovative Research/Small Business Technology Transfer Programs		8573	
Total		309412	161621

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

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**May 2009**

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

**0603782A - WARFIGHTER INFORMATION
NETWORK-TACTICAL - DEM/VAL**

PROJECT

372

C. Acquisition Strategy The Defense Acquisition Executive (DAE), through the Nunn-McCurdy certification process, certified a restructured WIN-T program on June 5, 2007. The certification Acquisition Decision Memorandum (ADM) stated that the Army will restructure the WIN-T Major Defense Acquisition Program (MDAP) to absorb the former Joint Network Node (JNN) Network program. It further stated that the restructured program will consist of four Increments:

Increment 1: Networking at-the-Halt

Increment 1a: Extended Networking at-the-Halt; the former JNN program with Ka military satellite communications capability

Increment 1b: Enhanced Networking at-the-Halt; the former JNN Program with Net Centric Waveform and Colorless Core Capability

Increment 2: Initial Networking on-the-Move; Providing commercial and military band satellite communications to Division, Brigade, Battalion and Company

Increment 3: Full Networking on-the-Move

Full mobility to include Future Combat Systems (FCS) support

Increment 4: Protected Satellite Communications (SATCOM) on-the-Move

Enhanced capability for protected SATCOM through tech insertions from High Capacity Communication Capability (HC3)

In accordance with the June 5, 2007 Acquisition Decision Memorandum (ADM), Future Combat Systems program requirements must be locked and Inc 3 must return to the DAE for Acquisition Program Baseline (APB) approval. Program baseline approval is anticipated in April 09. If the program is not baselined, a 50% withhold is applied. Since the certification in June 07, Inc 3 has awarded contract modification to continue with the SDD efforts and held an in-process review.

The National Defense Authorization Act (NDAA) restricted the obligation of fifty percent (50%) of the Inc 3 FY09 development funds authorized until 15 days after congressional defense committees received certification from USD ATL that:

Inc 3 has an approved APB

Completion of an Independent Cost Estimate (ICE) by CAIG

Completion of the Technology Readiness Assessment by DDRE

A Stop Work on the Inc 3 program will occur in early June 09 if the statutory requirements have not been completed and funding released. As of mid-April 09 all 3 documents have been completed and the APB is in staffing for signatures. Program baselining is anticipated in April 09 with funding release anticipated in May 09.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL							372		
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 3 System Development and Demonstration	CPAF	General Dynamics C4 Systems Inc, Taunton, MA				267870	1-4Q	131451	1-4Q	Cont.	Cont.	
Subtotal:						267870		131451		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
Technical Engineering Services and Research Studies	T&M	General Dynamics C4 Systems Inc, Taunton, MA				4500	1-4Q	2279	1-4Q	Cont.	Cont.	
Subtotal:						4500		2279		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
Testing and Modeling & Simulation	Various	Various				2005	1-4Q	2094	1-4Q	Cont.	Cont.	
Subtotal:						2005		2094		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 Support	MIPR	Various				26464	1-4Q	25797	1-4Q	Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes			PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL						PROJECT 372		
Small Business Innovative Research/Small Business Technology Transfer Programs	MIPR	Various				8573	1-4Q		1-4Q	Cont.	Cont.
Subtotal:						35037		25797		Cont.	Cont.
Project Total Cost:						309412		161621		Cont.	Cont.

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL

PROJECT
372

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
Phase 3 Increment 3 System Development & Demonstration	Inc 3 SDD																															
(1) Increment 3 System Preliminary Design Review	PDR ▲ ₁																															
(2) Critical Design Review																																
Engineering Development Test	EDT																															
New Equipment Training, Limited User Test																													NET			
(3) Production Readiness Review	LUT																															
(4) Milestone C																													PRR ▲ ₃			
Low Rate Initial Production	MS C ▲ ₄																															
																													LRIP			

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603782A - WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL	PROJECT 372
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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>
Phase 3 Increment 3 System Development & Demonstration	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 3Q	
Increment 3 System Preliminary Design Review	4Q							
Critical Design Review					1Q			
Engineering Development Test						4Q	1Q	
New Equipment Training							1Q	
Limited User Test							1Q	
Production Readiness Review							1Q	
Milestone C							3Q	
Low Rate Initial Production							3Q - 4Q	1Q - 4Q

Prior years for scheduling and funding can be derived from the PE # 0603782A, Project 355

This draft schedule is an estimate based on the CAIG ICE and pending President Budget (PB) decision. The schedule is subject to changed based on finalizing baseline documentation.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603790A - NATO Research and Development			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
691 NATO RSCH & DEVEL	4791	5025	5048	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States and our cooperative partners, including the North Atlantic Treaty Organization (NATO), U.S. major non-NATO allies and Friendly Foreign countries. Through technology sharing and joint equipment development these projects help reduce U.S. acquisition costs and leverage important technologies for the Army Transformation and the development of the Future Combat system. Cooperative efforts also improve multinational force compatibility with potential coalition partners through the development and use of similar equipment and improved interfaces. The program focuses specifically on international cooperative technology demonstration, validation, and interoperability of Army weapon and command, control, communications and information (C3I) systems, including the NATO Defense Against Terrorism initiatives. Projects are implemented through international agreements with foreign partners that define scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. Funds are used to pay for only the U.S. work share that occurs in the United States at U.S. Government and U.S. contractors facilities.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603790A - NATO Research and Development		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	4927	5041	5131
Current BES/President's Budget (FY 2010)	4791	5025	5048
Total Adjustments	-136	-16	-83
Congressional Program Reductions		-16	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-136		
Adjustments to Budget Years			-83

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603790A - NATO Research and Development			PROJECT 691	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
691 NATO RSCH & DEVEL	4791	5025	5048	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States and our cooperative partners, including the North Atlantic Treaty Organization (NATO), U.S. major non-NATO allies and Friendly Foreign countries. Through technology sharing and joint equipment development these projects help reduce U.S. acquisition costs and leverage important technologies for the Army Transformation and the development of the Future Combat system. Cooperative efforts also improve multinational force compatibility with potential coalition partners through the development and use of similar equipment and improved interfaces. The program focuses specifically on international cooperative technology demonstration, validation, and interoperability of Army weapon and command, control, communications and information (C3I) systems, including the NATO Defense Against Terrorism initiatives. Projects are implemented through international agreements with foreign partners that define scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. Funds are used to pay for only the U.S. work share that occurs in the United States at U.S. Government and U.S. contractors facilities.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Scientific and Technology Enterprise Management (STEM)/International Online (IOL) Development and Implementation NATO/International Cooperative R&D (AR 70-41) and International Acquisition (AR 70-1, AR 70-3)	810	815	825
Multilateral Interoperability Program (MIP) (Partners: Germany, France, United Kingdom, Canada, Italy): Continued integration work from the Command and Control Systems Interoperability Program (C2SIP) into an Advanced Concept Technology Demonstration (ACTD) to achieve NATO levels four (messaging) and five (database) interoperability and also extend the effort into a sustainable program to incorporate lessons learned into national systems (e.g. AFATDS, FADC2).	650	665	686
Low Level Air Defense Interoperability (LLAPI) (Partners: Major NATO Allies): The objective of this program is to successfully demonstrate Command and Control (C2) interoperability among the participant nations' Short Range Air Defense (shared) assets for automated air picture exchange.	205	212	220
Multi-National Network Enabled Capabilities (MNNEC) related Command, Control, Communications, Computers, Intelligence Surveillance and Reconnaissance (C4ISR)(Potential Partners: United Kingdom, France, Italy, Germany and major NATO Allies) MNNEC would focus on developing a single solutions standard avoiding development of multiple unique solutions and leverage existing interoperability standards developed by NATO as well as other international forums such as the Five Power Net Centric PA. A single solution standard will include common doctrine, technical and procedural specifications to make better use of existing information, shared data, leverage national operating picture capabilities and enable the development of interoperability of data, databases, applications, security domains and national networks architectures. The MNNEC is more than interoperability of information systems; it is the complete networking of information systems with sensors and shooters focusing on building Net-Centric interoperability among coalition tactical land components operating in a Joint Environment, focused at the Brigade and Below level, but not excluding using the services provided at higher echelons. The MNNEC has a future force focus, endeavoring to define migration strategies for Net-Centric capabilities in the 2010-2025 timeframe with part of the work to determine the time-phased implementations of a Multi-National Network Enabled	512	520	535

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
4 - Advanced Component Development and Prototypes	0603790A - NATO Research and Development	691		
Capability. The end results would be an integration of national C2/C4ISR systems into an NCES environment to include the NATO Network Enabled Capabilities (NNEC) and the 5 Powers Net Centric Project Agreement.				
Combat Identification (Partners: UK, Germany, France and Italy): Combat ID will pursue the extension of tasks required for implementing the associated NATO Standardization Agreement (STANAG 4579), allied participation in Coalition Combat ID Advanced Concept Technology Demonstrator (ACTD), will pursue the NATO Staff Requirement and a STANAG for the Dismounted Soldier ID.	100	100	50	
Senior National Representatives (Army) (SNR-(A)) Projects (Partners: France, Germany, United Kingdom and Italy): Supports harmonization of programs at various levels: exchanging information, identifying knowledge gaps and conducting feasibility studies to further promote cooperative development; standardizing, fielding and roadmapping various processes; distributing the workload among the different nations. Technology Demonstrations hosted by the U.S. reps to Land Group 6, NATO Army Armaments Group (NAAG), will provide and opportunity to observe and demonstrate the current and future capability of participating NATO nations with a view to assisting future operational and materiel interoperability. Army support of NAAG studies, analysis and technology demonstrations.	1002	843	917	
Technology Research and Development Projects (TRDP) (Partners: United Kingdom, Germany, France, Canada, Australia, Netherlands, Korea, Norway): The scope of this MOU encompasses R&D collaboration on basic, exploratory and advanced Land Warfare Concepts and Technologies that are focused on Future Combat System enabling technologies, the maturation of which may lead to the development of technologically superior conventional weapon systems.	907	950	965	
Joint Tactical Radio System (JTRS) (Partners: Japan, Sweden, UK): The participants in these programs will develop and implement Software-enabled radios as replacements to current radio systems. The projects shall be focused on maintaining interoperability as the countries pursue their own separate software radio programs. The project agreements (PAs) will include a joint development of software radio specifications, separate development and testing of software waveforms, and joint interoperability testing using the system assets developed as part of the agreements.	287	300	300	
Artillery Command and Control Interoperability (ASCA) (Partners: France, Germany, Italy, UK): The Participants in this program will develop an automated software interface between their national field artillery command and control systems. The nations will be able to receive and provide mutual fire support (i.e. cannon and rocket fire) in combined operations more rapidly and with minimal errors.	318	344	350	
Force Protection Projects (FPP) (Partners: United Kingdom, France, Germany, Italy, Sweden, Canada): Force Protection Projects will include R&D collaboration on technologies such as Counter Rocket and Mortar (C-RAM) and Counter Improvised Explosive Devices (C-IED). Programs include Military Operations in Urban Terrain (MOUT) and a variety of Defense Against Terrorism (DAT) initiatives such as Defense Against Mortar Attacks (DAMA) and Joint Precision Air Drop System (JPADS).		135	200	
Small Business Innovative Research/Small Business Technology Transfer Program		141		
Total	4791	5025	5048	

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

C. Acquisition Strategy All projects are test or technical demonstrations to feed into potential new requirements in support of Army Transformation to the Future Force or as product improvements to the Current Force.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603790A - NATO Research and Development							691		
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
Multilateral Interoperability Program (MIP)	CPFF	C3S, CSC Fort Washington, PA	1376	165	1-2Q	165	1Q	186	1Q	Cont.	Cont.	
STEM-IOL	CPFF	LSS/GDIT, Fairfax, VA	3440	550	2Q	545	2Q	595	2Q	Cont.	Cont.	
Low Level Air Defense Interoperability (LLAPI)	MIPR	AMCOM, Redstone Ars, AL	825	120	2Q	117	2-3Q	120	2-3Q	Cont.	Cont.	
Shared Tactical Ground Picture (STGP)/Single Integrated Ground Picture (SIGP)	MIPR	CECOM, Ft. Monmouth, VA	1107							Cont.	Cont.	
Combat Identification	MIPR	CECOM, Ft. Monmouth, VA	867	25	2Q	50	2Q	25	2Q	Cont.	Cont.	
Multi-National Network Enabled Capabilities (MNNEC) related to C4ISR	MIPR	CECOM, Ft. Monmouth, VA	1797	345	1-2Q	452	1-2Q	455	1-2Q	Cont.	Cont.	
Senior National Representatives (Army) (SNR[A])	TBD	ARDEC, Dover, NJ	5794	734	2Q	616	2-3Q	607	4Q	Cont.	Cont.	
TRDP	CPFF	Batelle/LMI, McClean, VA	1163	310	1Q	305	1Q	332	1-2Q	Cont.	Cont.	
Artillery Command and Control Interoperability (ASCA)	MIPR	CECOM, Ft. Monmouth, NJ	1156	215	2Q	217	1Q	220	1-2Q	Cont.	Cont.	
Joint Tactical Radio System (JTRS)	MIPR	PM JTRS, San Diego, CA	503	121	1Q	118	1Q	108	1Q	Cont.	Cont.	
Force Protection Projects (FPP)	MIPR	RDECOM, Ft. Belvoir, VA				100	1-2Q	125	1-2Q		357	
Subtotal:			18028	2585		2685		2773		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

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603790A - NATO Research and Development							691		
MIP	MIPR	CECOM Ft. Monmouth, NJ	663	190	1Q	195	1Q	200	1Q	Cont.	Cont.	
STEM/IOL	MIPR	RDECOM, Ft. Belvoir, VA	793	125	1Q	125	2Q	130	2Q	Cont.	Cont.	
Low Level Air Defense Interoperability (LLAPI)	MIPR	AMCOM, Redstone Ars, AL	432	45	1Q	48	1Q	49	1Q	Cont.	Cont.	
Shared Tactical Ground Picture (STGP)/Single Integrated Ground Picture (SIGP)	MIPR	CECOM, Ft. Monmouth, VA	246							Cont.	Cont.	
Combat Identification	MIPR	CECOM Ft. Monmouth, NJ	539	25	1Q	25	1Q			Cont.	Cont.	
Multi-National Network Enabled Capabilities (MNNEC) related to C4ISR	MIPR	CECOM Ft. Monmouth, NJ	567	87	1-3Q	68		80	1-3Q	Cont.	Cont.	
SNR(A)	MIPR	ARL, APG, MD	1303	45	1Q	190	1Q	145	1Q	Cont.	Cont.	
TRDP	MIPR	RDECOM, Fort Belvoir, VA	1163	310	1Q	315	1-3Q	333	1-3Q	Cont.	Cont.	
Joint Tactical Radio System (JTRS)	MIPR	PM JTRS, San Diego, CA	170	100	1Q	115	1Q	117	1Q	Cont.	Cont.	
Artillery Command and Control Interoperability (ASCA)	MIPR	CECOM Ft. Monmouth, NJ	277	58	1Q	75	1Q	83	1Q	Cont.	Cont.	
Force Protection Projects (FPP)	MIPR	RDECOM, Ft. Belvoir, VA				10	2Q	22	2Q			62
Small Business							1-2Q					141
Subtotal:			6153	985		1166		1159		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
MIP	MIPR	CECOM Ft Monmouth, NJ	662	150	1Q	155	1Q	160	1Q	Cont.	Cont.	
STEM/IOL	MIPR	RDECOM, Ft. Belvoir,	530	85	1Q	90	1Q	100	1Q	Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603790A - NATO Research and Development							691		
		VA										
Low Level Air Defense Interoperability (LLAPI)	MIPR	AMCOM, Redstone Ars, AL	176	15	2Q	17	1Q	19	1Q	Cont.	Cont.	
Shared Tactical Ground Picture (STGP)/Single Integrated Ground Picture (SIGP)	MIPR	AMSAA, Aberdeen Proving Ground, NJ	134							Cont.	Cont.	
Combat Identification	MIPR	CECOM Ft Monmouth, NJ	509	25	2Q		1Q			Cont.	Cont.	
Multi-National Network Enabled Capabilities (MNNEC) related to C4ISR	MIPR	CECOM Ft Monmouth, NJ	443	55	2Q					Cont.	Cont.	
SNR(A)	MIPR	AMSAA, APG, MD	824	125	1-2Q	125	1Q	120	1Q	Cont.	Cont.	
TRDP	MIPR	TBD										
ASCA	MIPR	CECOM Ft Monmouth, NJ	174	35	2Q	40	1Q	40	1Q	Cont.	Cont.	
Joint Tactical Radio System (JTRS)	MIPR	CECOM Ft Monmouth, NJ	60	33	2Q	67	1Q	75	1Q	Cont.	Cont.	
Force Protection Projects (FPP)	MIPR	RDECOM, Ft. Belvoir, VA				12	2-3Q	28	2-3Q			95
Subtotal:			3512	523		506		542		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
MIP	MIPR	PEO C3S, Ft. Monmouth, NJ	501	145	1Q	150	1Q	140	1Q	Cont.	Cont.	
STEM/IOL	MIPR	RDECOM, Ft. Belvoir, VA	258	50	1Q	55	1Q			Cont.	Cont.	
Low Level Air Defense Interoperability (LLAPI)	MIPR	AMCOM, Redstone, Ars, AL	290	25	1Q	30	1Q	32	1Q	Cont.	Cont.	
Shared Tactical GroundPicture (STGP)/Single Integrated Ground	MIPR	CECOM, Ft. Monmouth, VA	72							Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT	
4 - Advanced Component Development and Prototypes			0603790A - NATO Research and Development							691	
Picture (SIGP)											
Combat Identification	MIPR	CECOM, Ft. Monmouth, NJ	447	25	1Q	25	1Q	25	1Q	Cont.	Cont.
Multi-National Network Enabled Capabilities (MNNEC) related to C4ISR	MIPR	CECOM, Ft. Monmouth, NJ	317	25	1Q					Cont.	Cont.
SNR(A)	MIPR	ARL, APG, MD	431	60	1Q	53	1Q	45	1Q	Cont.	Cont.
TRDP	MIPR	REDCOM, Fort Belvoir, VA	1096	325	1Q	330	1Q	300	1-2Q	Cont.	Cont.
Artillery Command and Control Interoperability (ASCA)	MIPR	CECOM, Ft. Monmouth, NJ	84	10	1Q	12	1Q	7	1Q	Cont.	Cont.
JTRS	MIPR	PM JTRS, San Diego, CA	65	33	1Q					Cont.	Cont.
Force Protection Projects (FPP)	MIPR	RDECOM, Ft. Belvoir, VA				13	2-3Q	25	2-3Q		71
Subtotal:			3561	698		668		574		Cont.	Cont.
Project Total Cost:			31254	4791		5025		5048		Cont.	Cont.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603801A - Aviation - Adv Dev			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	8876	9822	8537	Continuing	Continuing
B32 ADV MAINT CONCEPTS/EQ	5010	9822	8537	Continuing	Continuing
B47 VECTORED THRUST DUCTED PROPELLER (VTDP)	3866				3866

A. Mission Description and Budget Item Justification: This PE provides advanced development aviation support of tactical programs associated with air mobility, advanced maintenance concepts and equipment, and Aircrew Integrated Systems (ACIS). This program demonstrates the feasibility and maturity of new technology and gains understanding in order to evaluate utility of this technology to expedite delivery of new capabilities for Army Aviation rotary wing assets. Additionally, the Aviation Ground Support Equipment (AGSE) assets enhance the functionality of current and future aircraft by improving the effectiveness of maintenance and servicing operations through validating new maintenance concepts to improve man and machine interfaces, improve aircraft maintenance processes, reduce Operation and Support (O&S) cost and insert diagnostics technologies to replace obsolete and unsupportable equipment.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603801A - Aviation - Adv Dev		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	6440	7455	8676
Current BES/President's Budget (FY 2010)	8876	9822	8537
Total Adjustments	2436	2367	-139
Congressional Program Reductions		-33	
Congressional Rescissions			
Congressional Increases		2400	
Reprogrammings	2616		
SBIR/STTR Transfer	-180		
Adjustments to Budget Years			-139

Change Summary Explanation: Funding - FY 2009: \$2.400 million is for New High Temperature Domestic Sourced PES Foam Fabrication/Certification for DoD Aerospace Applications and will be moved to RDECOM's Program Element Number 0603003A, Title is Advanced Aviation Technology for proper execution.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev			PROJECT B32	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
B32 ADV MAINT CONCEPTS/EQ	5010	9822	8537	Continuing	Continuing

A. Mission Description and Budget Item Justification: FY 2010 budget request funds Aviation Advanced Development. This program element demonstrates the feasibility and maturity of new technology and gains understanding in order to evaluate utility of this technology to expedite delivery of new capabilities for Army Aviation rotary wing assets. Additionally, the Aviation Ground Support Equipment (AGSE) assets enhance the functionality of current and future aircraft by improving the effectiveness of maintenance and servicing operations through validating new maintenance concepts to improve man and machine interfaces, improve aircraft maintenance processes, reduce Operation and Support (O&S) cost and insert diagnostics technologies to replace obsolete and unsupportable equipment. This program provides for development of rapid battle repair procedures, tools development to speed the return of aircraft to a full mission status and development of new equipment for aerial recovery of damaged aircraft. Included in this program are projects such as: diagnostics/prognostic monitoring systems, Battle Damage Assessment and Repair (BDAR) Block II procedures and tools, Flexible Engine Diagnostic System (FEDS), Unit Maintenance Aerial Recovery Kit (UMARK), Aviation Light Utility Mobile Maintenance Cart (ALUMMC), Shop Equipment Contact Maintenance (SECM), Aviation - Sets, Kits, Outfits and Tools (A-SKOT) redesign, development of the modular Aviation Ground Power Unit (AGPU), Hand Held Fire Extinguisher (HHFE), and development support for tools needed to provide maintenance support to modernized/future force aircraft.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Hand Held Fire Extinguisher (HHFE)	800	1040	1270
Battle Damage Assessment and Repair System (BDAR) Block II	30	300	800
Standard Aircraft Towing System (SATS)	917	500	
Flexible Engine Diagnostics (FEDS)	1655	1542	3079
Shop Equipment Contact Maintenance (SECM) Modernization	418	729	594
Aviation Ground Power Unit (AGPU)		513	467
Aviation Light Utility Mobile Maintenance Cart (ALUMMC)			224
Unit Maintenance Aerial Recovery Kit (UMARK)	290	921	604
Aviation - Sets, Kits, Outfits and Tools (A-SKOT)		1026	668
New High Temperature Domestic Sources Foam Fabrication/Certification for DOD Aerospace Applications		2325	
Management Support Services	355	303	475
Technical Engineering Services	368	112	72
RDTE Project Test Support	177	236	284
Small Business Innovative Research (SBIR)/ Small Business Technology Transfer Programs (STTR)		275	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)	May 2009
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BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev	PROJECT B32
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Total	5010	9822	8537
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<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Aircraft Procurement, Army(APA) SSN AZ3100	85041	108576	111386	Continuing	Continuing

Comment:

C. Acquisition Strategy This project is an aggregate of advanced maintenance concepts-related projects. While the detailed acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through Government test (developmental and operational). Program documentation for milestone decision is prepared, as appropriate, concurrently with the development effort.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603801A - Aviation - Adv Dev							B32		
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
HHFE	MIPR	AFRL, Tyndall AFB, FL/AEC, Aberdeen Proving Ground, MD	345	800	3-4Q	1040	1Q	1270	2-3Q	Cont.	Cont.	Cont.
BDAR BLOCK II	MIPR	AATD, AMRDEC, Redstone Arsenal, AL		30	1-2Q	300	3Q	800	2-3Q		1130	
SATS	MIPR	AMCOM, Redstone Arsenal, AL/AATD, Ft. Eustis, VA	1279	917	4Q	500	2Q				2696	
FEDS	Various	AMRDEC, Redstone Arsenal AL/RTTC, Redstone Arsenal, AL	182	1655	3-4Q	1542	2-3Q	3079	2-3Q	Cont.	Cont.	Cont.
SECM	Various	TACOM, Detroit, MI/A TEC, Alexandria, VA/ARDEC, Picatinny NJ	3235	418	4Q	729	2-3Q	594	2-3Q		4976	
ALUMMC	Various	Various						224	2-4Q	Cont.	Cont.	Cont.
AGPU	Various	UAH, Huntsville, AL/TBD	10236			513	3Q	467	2-3Q	Cont.	Cont.	Cont.
UMARK	MIPR	AMRDEC, Redstone Arsenal, AL/UAH, Huntsville, AL	873	290	2-4Q	921	1-2Q	604	2-3Q	Cont.	Cont.	Cont.
A-SKOT	Various	RDECOM, Ft. Monmouth NJ/AMRDEC, Redstone Arsenal, AL/BELZON, Huntsville, AL/AATD, Ft. Eustis, VA/	1040			1026	2-3Q	668	2-3Q	Cont.	Cont.	Cont.
New High Temperature Domestic Sources Foam Fabrication/Certification for DOD Aerospace Applications	TBD	TBD				2325	3-4Q				2325	
Subtotal:			17190	4110		8896		7706		Cont.	Cont.	Cont.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603801A - Aviation - Adv Dev	PROJECT B32
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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
Technical Engineering Services	MIPR	AATD, Ft. Eustis, VA	5608	368	2Q	112	1-3Q	72	1-3Q	Cont.	Cont.	Cont.
Subtotal:			5608	368		112		72		Cont.	Cont.	Cont.

Remarks: None

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
RDT&E Project Test Support	MIPR	AEC, Aberdeen Proving Ground, MD	335	177	2Q	236	1Q	284	2Q	Cont.	Cont.	Cont.
Subtotal:			335	177		236		284		Cont.	Cont.	Cont.

Remarks: None

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 Support Services	C/FP/ Level of Effort and InHouse	AGSE, Redstone Arsenal, AL/Science Applications Intl Corp, San Diego, CA	2194	355	1Q	303	1-4Q	475	1-4Q	Cont.	Cont.	Cont.
SBIR/STTR reductions						275					275	
Subtotal:			2194	355		578		475		Cont.	Cont.	Cont.

Remarks: None

Project Total Cost:	25327	5010		9822		8537				Cont.	Cont.	Cont.
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
4 - Advanced Component Development and Prototypes		0603801A - Aviation - Adv Dev																B32														
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
Hand Held Fire Extinguisher	HHFE																															
Battle Damage Assessment & Repair Block II	BDAR Block II																															
Standard Aircraft Towing System	SATS																															
Flexible Engine Diagnostic System	FEDS Next Generation																															
Shop Equipment Contact Maintenance	SECM																															
Aviation Ground Power Unit	AGPU																															
Aviation Light Utility Mobile Maintenance Cart (ALUMMC)	ALUMMC																															
Unit Maintenance Aerial Recovery Kit	UMARK																															
Aviation - Sets, Kits, Outfits and Tools	A-SKOT																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603801A - Aviation - Adv Dev						B32	
<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>	
Hand Held Fire Extinguisher	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Battle Damage Assessment & Repair Block II	4Q	1Q - 4Q	1Q - 4Q						
Standard Aircraft Towing System	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Flexible Engine Diagnostic System	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Shop Equipment Contact Maintenance	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Aviation Ground Power Unit	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Aviation Light Utility Mobile Maintenance Cart (ALUMMC)			2Q - 4Q						
Unit Maintenance Aerial Recovery Kit	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Aviation - Sets, Kits, Outfits and Tools		3Q - 4Q	1Q - 4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603804A - Logistics and Engineer Equipment - Adv Dev			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	133007	43995	56373	Continuing	Continuing
526 MARINE ORIEN LOG EQ AD	2975	3068	3033	Continuing	Continuing
G11 ADV ELEC ENERGY CON AD	3067	3346	2636	Continuing	Continuing
G14 MATERIALS HANDLING EQUIPMENT - AD	259	210			469
K39 Field Sustainment Support AD	11923	9759	12394	Continuing	Continuing
K41 WATER AND PETROLEUM DISTRIBUTION - AD	2375	437	3224	Continuing	Continuing
K42 MATERIEL SUSTAINMENT SUPPORT AD	5974	5190	2951	Continuing	Continuing
L04 JOINT LIGHT TACTICAL VEHICLE (JLTV) - AD	106434	21985	32135	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element supports advanced component development and prototypes of new and improved technologies for combat support and combat service support equipment essential to sustaining combat operations. Advancements in watercraft, bridging, electric power generators and batteries, potable water, material-handling, environmental control, shelter systems, cargo aerial delivery, field service systems, mortuary affairs equipment and petroleum equipment are necessary to improve safety and increase the tactical mobility, operational capability, lethality and survivability on the digital battlefield and to provide for greater sustainment while reducing the logistics support burden.

Increase from FY08 to FY09 reflect USD(AT&L) direction to move Joint Light Tactical Vehicle from MS B to MS A. This reflects adjustments in the 6.5 and 6.4 funding.

Increase from FY 2009 to FY 2010 reflects additional funds to support the Field Sustainment Support for Advanced Low Velocity Air drop System (ALVADS).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	37993	44141	52426
Current BES/President's Budget (FY 2010)	133007	43995	56373
Total Adjustments	95014	-146	3947
Congressional Program Reductions		-146	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	96073		
SBIR/STTR Transfer	-1059		
Adjustments to Budget Years			3947

Change Summary Explanation: Funding - FY 2008: Funds reprogrammed to support multi-contractor prototyping for JLTV. FY 2010: Increase supports JLTV and Field Sustainment Advanced Low Velocity Airdrop System (ALVADS).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT 526	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
526 MARINE ORIEN LOG EQ AD	2975	3068	3033	Continuing	Continuing

A. Mission Description and Budget Item Justification: FY10 funding supports project advanced component development and prototype equipment for the Army's Logistics-Over-The-Shore (LOTS) missions. The primary mission of Army Watercraft Systems is inherently tied to the required capability to move tonnage/cargo from major sea going vessels to the shore in support of LOTS/Joint Logistic over the Shore (JLOTS) and various watercraft missions. The Army utilizes a combination of Modular Causeway Systems (MCS), Barge Derricks (BD), Barges, Landing Crafts (Landing Crafts Utility (LCUs), Logistic Support Vessels (LSVs), Landing Crafts Mechanized (LCM-8s) and Tug Boats to offload deep draft vessels. The time phased mix of numbers and types of vessels outlined are essential in maintaining a given level of capability to support JLOTS operations. This capability is only as strong as the weakest link and takes the full combination of all assets to accomplish. Efforts to extend the service life of LSVs & LCUs will also be made as well as conducting business case analyses such as one for Performance Based Logistics.

FY10 Funding for the Joint Enable Theater Access-Sea Ports of Debarkation (JETA-SPOD) Advanced Concept Technology Demonstration (ACTD) will be used to support the Vessel-to-Shore Bridging (VSB) component of the program. This includes funding for VSB core developmental requirements and Operational Testing/Military Utility Assessment (MUA) and follow-on research and development funding to support the transition of VSB to an acquisition program. This funding will provide R&D of the full scale operational prototype in addition to a broader and more robust MUA designed to adequately test and assess the VSB for military utility under the lead of the USPACOM ACTD Operational Manager (OM). Performance risk will be mitigated by ensuring the technology receives optimum test and evaluation to meet the warfighting operational requirements to include an extended user evaluation. Funding will also allow the development of an additional 50-60 foot section that will result in expanded technical development, testing, and utility assessment for the multiple operational uses and employment methods (eg. Army/Service Watercraft, Joint High Speed Vessel (JHSV), dry/wet gap crossings, and aerial delivery). Funding provided for the Habor Master Command & Control Center production representative systems development (FY08).

VSB will optimize the throughput capabilities of the JHSV, current Army/USMC watercraft, and bridging requirements across extended mudflats/tidal estuaries by providing a more rapid and increased flow of combat power and sustainment through multiple austere theater access points. VSB is transported on and rapidly employed by these vessels to provide the Joint and Combined force commanders a means to mitigate threat anti-access activities and increases flexibility to conduct operational maneuver from strategic distances. The ACTD complements the JHSV program by optimizing throughput and warfighting operational capabilities not currently available in support of Lines of Communication (LOC) in the theater of operations.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08-FY10: JETA-SPOD	2391	2273	2162
FY08-FY10: Program Support.	584	405	371
FY09-FY10 Watercraft market surveys and business analysis		304	500
Small Business Innovative Research/Small Business Technology Transfer Program		86	
Total	2975	3068	3033

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT 526	
<u>B. Other Program Funding Summary</u>					
	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
MA4500, Modification of In-Service Equipment (OPA3)	93130	45606	609834		748570

Comment: Other program funding. MA4500, Modification on In-Service Equipment (OPA3) includes funding for modifications to systems other than watercraft.

C. Acquisition Strategy Not applicable for this item.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							526		
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
TSV - composite prototype hull design	MIPR	Naval Underwater Warfare Center, Newport, R.I.	4211								4211	
Watercraft market surveys/business analysis	MIPR	Volpe, DOT	100	384		304		500			1788	
HCCC Design	MIPR	PEOC3T									10649	
JETA-SPOD-Vessel to Shore Bridging (VSB)	MIPR	ERDC, Vicksburg, MS	3600	2391		2273		2162		Cont.	Cont.	
Subtotal:			7911	2775		2577		2662		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
TSV/Matrix Support	MIPR	TACOM CBU, Warren, MI	4366							Cont.	4366	
TSV - composite prototype hull design	MIPR	CASCOM, Ft. Lee, VA	5240							Cont.	5240	
TSV/Matrix Support	MIPR	TARDEC, Warren, MI/ICI	170								170	
TSV/In-house	MIPR	PM Force Projection, Warren, MI	2190							Cont.	2190	
TSV-Demil	MIPR	TACOM, PSID, Warren, MI	424							Cont.	Cont.	
JETA-SPOD-VSB	MIPR	TACOM, PSID, Warren, MI								Cont.	Cont.	
Subtotal:			12390							Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev	PROJECT 526
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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
TSV	MIPR	DTC/ATEC, MD	1071							Cont.	1071	
TSV	MIPR	PM WIN-T	1500								1500	
HCCC	MIPR	USAFTCFE, Ft. Eustis, VA								Cont.	Cont.	
Subtotal:			2571							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 Support	MIPR	PM Force Projection, TACOM, Warren, MI	1392	200		405		371			2368	
JETA-SPOD-VSB	MIPR	PM Force Projection, TACOM, Warren, MI								Cont.	Cont.	
SBIR/STTR	MIPR	PM Force Projection, TACOM, Warren, MI				86				Cont.	Cont.	
Subtotal:			1392	200		491		371		Cont.	Cont.	

Project Total Cost:	24264	2975		3068		3033		Cont.	Cont.
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																														
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev	526																														
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
Reconfig & testing demonstration hardware from an LSV to a JHSV application																																
Developing force protection capabilities for LSV & LCU																																
Developing a common operating picture capability(e.g. GCCS-M)																																
Designing & testing new power plant interfaces.																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603804A - Logistics and Engineer Equipment - Adv Dev						526	
<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>	
Reconfig & testing demonstration hardware from an LSV to a JHSV application	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Developing force protection capabilities for LSV & LCU	4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Developing a common operating picture capability(e.g. GCCS-M)	4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Designing & testing new power plant interfaces.	4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT G11	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
G11 ADV ELEC ENERGY CON AD	3067	3346	2636	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The Mobile Electric Power (MEP) program was established by the Department of Defense to develop modernized, standard families of mobile electric power sources for all Services throughout the Department of Defense. This Project Office derives concept and technology developments that will improve the performance, mobility, readiness and survivability of the next generation of tactical power sources in support of all Services. It supports initiatives that are essential to the development and fielding of modernized Mobile Electric Power (MEP) sources from Watts to Megawatts level that comply with environmental statutes and provide noise and signature-suppressed, energy efficiency, lightweight, deployable and reliable equipment. FY09 will fund test and evaluation technologies for Small Tactical Electric Power (STEP) and initiate market survey and begin evaluation of components for Large Advanced Mobile Power Sources (LAMPS).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08: Evaluation and testing of various technologies related to Tactical Electric Power across the Army power spectrum aimed at technology gaps to meet Army User requirements. These efforts support the Small Tactical Power (STEP) program, the Advanced Medium Mobile Power Sources (AMMPS) program and the Large Advanced Mobile Power Sources (LAMPS) program.	3067		
FY09: Evaluation and testing of various technologies related to Tactical Electric Power across the Army power spectrum aimed at technology gaps to meet Army User requirements. These efforts support the Small Tactical Electric Power (STEP) program and the Large Advanced Mobile Power Sources (LAMPS) program.		3256	
FY10: Evaluation and testing of various technologies related to Tactical Electric Power across the Army spectrum aimed at technology gaps to meet Army user requirement. These efforts support the STEP program and the LAMPS program.			2636
Small Business Innovative Research/Small Business Technology Transfer Programs		90	
Total	3067	3346	2636

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDT&E:PE0604804A, Logistics and Engineer Equipment - Eng Dev 194	11439	6348	1390	Continuing	Continuing
OPA 3, Generators and Associated Eq. MA9800	241798	254809	208277	Continuing	Continuing

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603804A - Logistics and Engineer Equipment - Adv Dev

PROJECT

G11

C. Acquisition Strategy Complete advanced development and transition to system development and demonstration phase (Milestone B) and subsequent transition to production (Milestone C).

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							G11		
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
STEP Components	MIPR	CERDEC -APG	1721	193	2Q	315	1Q	215	1Q	Cont.	Cont.	
AMMPS Components	MIPR	CERDEC APG	3264	279	2Q	384	1Q	165	1Q	Cont.	Cont.	
LAMPS Components	MIPR	CERDEC -APG		120	2Q	280	1Q	345	1Q	Cont.	Cont.	
Subtotal:			4985	592		979		725		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
STEP Components	MIPR	CERDEC-APG	1651	347	2Q	495	1Q	316	1Q	Cont.	Cont.	
AMMPS Components	MIPR	CERDEC-APG	942	504	2Q	462	1Q	288	1Q	Cont.	Cont.	
LAMPS Components	MIPR	CERDEC-APG		220	2Q	495	1Q	528	1Q	Cont.	Cont.	
Subtotal:			2593	1071		1452		1132		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
STEP Components	MIPR	CERDEC-APG	789	421	2Q	210	2Q	210	2Q	Cont.	Cont.	
AMMPS Components	MIPR	CERDEC-APG	300	543	2Q	200	2Q	100	2Q	Cont.	Cont.	
LAMPS Components	MIPR	CERDEC-APG		257	2Q	209	2Q	209	2Q	Cont.	Cont.	
Subtotal:			1089	1221		619		519		Cont.	Cont.	
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

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							G11		
	Type				Date		Date		Date		Contract	
STEP Components	In-house	PM MEP, Ft Belvoir VA	459	60	1-4Q	97	1-4Q	120	1-4Q	Cont.	Cont.	
AMMPS Components	In-House	PM MEP, Ft Belvoir VA	427	60	1-4Q	97	1-4Q	120	1-4Q	Cont.	Cont.	
LAMP Components				63	1-4Q	102	1-4Q	20	1-4Q	Cont.	Cont.	
Subtotal:			886	183		296		260		Cont.	Cont.	
Project Total Cost:			9553	3067		3346		2636		Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																		
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev	G11																																		
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				
STEP Program																																				
Assess Technologies to Meet Gaps																																				
Test Technologies to Meet Gaps																																				
Develop Proof of Principle Prototype (Commercial Components)																																				
LAMPS Program																																				
Assess Technologies to Meet Gaps																																				
Test Technologies to Meet Gaps																																				
Develop Proof of Principle Prototype (Commercial Components)																																				
(1) Complete Proof of Principle Prototype													▲ 1																							
(2) Complete Test and Evaluation																	▲ 2																			
AMMPS Program																																				
Assess Technologies to Meet Gaps																																				
Test Technologies to Meet Gaps																																				

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603804A - Logistics and Engineer Equipment - Adv Dev						G11	
<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>	
STEP Program	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Assess Technologies to Meet Gaps	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Test Technologies to Meet Gaps	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Develop Proof of Principle Prototype (Commercial Components)			1Q - 4Q						
LAMPS Program	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Assess Technologies to Meet Gaps	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Test Technologies to Meet Gaps	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Develop Proof of Principle Prototype (Commercial Components)		1Q - 4Q	1Q - 3Q						
Complete Proof of Principle Prototype			3Q						
Complete Test and Evaluation			4Q						
AMMPS Program	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Assess Technologies to Meet Gaps	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Test Technologies to Meet Gaps	1Q - 4Q	1Q - 4Q	1Q - 4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT G14
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
G14 MATERIALS HANDLING EQUIPMENT - AD	259	210			469

A. Mission Description and Budget Item Justification: This project supports Advanced Component Development and Prototypes of Material Handling Equipment (MHE) and stays abreast of current needs and available technologies to be integrated into military MHE. This program develops selected technologies and transitions to procurement a series of MHE items. Categories of MHE include warehouse forklifts, cranes and tow tractors, rough terrain forklifts, container handlers and cranes as well as ancillary equipment.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Complete engine obsolescence effort/investigation for the All Terrain Lifting Army System.	19		
Conduct Engine Feasibility Studies and program support for ATLAS.	67		
Rough Terrain Container Handler Crew Protection Kit Development.	173	204	
Small Business Innovative Research/Small Business Technology Transfer Programs		6	
Total	259	210	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604804A, Logistics and Engineer Equipment, Engineering Development (H14)	134	452	501		1087

Comment:

C. Acquisition Strategy RDTE - Engineering efforts include: The completion of an engine obsolescence effort/investigation for the All Terrain Lifting Army System (ATLAS) as the system transitions from Tier II to Tier III powertrains; Conduct and complete engine feasibility studies and program support for ATLAS to ensure compatibility and testing of new engine into the existing engine compartment; The development of the Rough Terrain Container Handler Crew Protection Kit.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT K39
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
K39 Field Sustainment Support AD	11923	9759	12394	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports development of critical soldier support and sustainment systems including shelter systems (rigid and soft wall), cargo aerial delivery, field service systems, mortuary affairs equipment, heaters and other combat service support equipment. These systems will fill identified theater distribution and services capability gaps, improve unit sustainability, and increase combat effectiveness. This project also supports Advanced Component Development and Prototyping of Critical Distribution Capabilities to include cargo aerial delivery systems; which provide improved safety and accuracy while increasing survivability of aircraft, personnel, and equipment. The project supports the development of tactical heater systems that support mobile Joint Service command and control, medical, and maintenance platforms. This project develops critical enablers that support the Quartermaster (QM) Force Transformation Strategy and The Army's Modular Capabilities by maintaining readiness through fielding and integrating new equipment. This project also ensures Army Expeditionary Forces are capable of rapid deployment through aerial delivery initiatives and reduces sustainment requirements, related Combat Support/Combat Service Support (CS/CSS) demands in lift, combat zone footprint, and costs for logistical support.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY 08/09 Execute Low Cost Aerial Delivery System (LCADS) P3I efforts to include Type Classification of the Low Cost Low Altitude (LCLA) capability and transition to sustainment. Execute Low Cost Aerial Delivery System (LCADS) P3I efforts to include evaluating LCADS Hi-V and Low-V parachutes as options for expanded 5-10K pound, high altitude Improved Container Delivery System (CDS) capability. FY10: Continue execution of LCADS P3I effort to expand LCADS/LCLA capability based upon theater feedback and CASCOC guidance.	676	757	941
FY08: Procure Joint Precision Airdrop System (JPADS) 10K DV test assets, spares and test support. Obtain Milestone A for JPADS 30K, continue prototype testing and shelve technology based on CASCOC guidance. FY09/10: Complete JPADS 10K design validation and Developmental Tests (DT).	6614	4271	2000
FY 10: Execute JPADS 2K pre-planned product improvement efforts.			1500
FY 08: Obtain Milestone A for Advanced Low Velocity Airdrop System (ALVADS), Advanced Cargo Parachute Release System (ACPRS) and conduct advanced component flight tests of prototypes. FY09: Obtain Milestone B for ACPRS and award competitive development contract. FY10: Conduct ACPRS DV and down-select to single contractor.	2112	2827	2200
FY 10: Obtain MS B for ALVADS-L and award contracts and begin fabrication for DV testing.			3000
FY 08/09: Execute Enhanced Containerized Delivery System (ECDS) P3I efforts focused on expanding recovery parachute options to include G-11 recovery parachutes and a standard rigging configuration for C-130 and C-17 aircraft.	1205	687	
FY 08/09: Evaluated design improvements to Mobile Integrated Remains Collection System (MIRCS) to facilitate alternative platform and reduce cost. Designed and tested improvements to mitigate electromagnetic interference. Assisted in generating/refining Mortuary Affairs requirements.	490		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev	K39		
FY 08: Award Advanced Component development contract for the Space Heater Convective, 120,000 British Thermal Unit Heating (BTUH) (SHC 120K). FY09: Complete Advanced Development of the SHC 120K and transition to Developmental Testing (DT) and Operational Testing (OT). FY 10: Complete Advanced Development of the SHC 120K, complete Developmental Testing (DT) and Operational Testing (OT), and obtain Milestone C.	826	943	800	
FY 10: Conduct Milestone B and award contract for development of prototypes and related documentation for Next Generation Human Remains Transfer Case.			800	
FY 10: Conduct Milestone B and initiate competitive contract action for development of the Joint Modular Intermodal Distribution System (JMIDS) Joint Modular Intermodal Container System (JMICS). Award developmental contract and complete JMICS design.			1153	
Small Business Innovative Research/Small Business Technology Transfer Program		274		
Total	11923	9759	12394	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA 3,M77700 Mobile Integrated Remains Collection System	23	41	36	Continuing	Continuing
OPA 3, MA7806 Precision Airdrop	300	700	501	Continuing	Continuing

Comment:

C. Acquisition Strategy Accelerate Joint Precision Aerial Delivery System (JPADS) product improvements to transition to Production.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							K39		
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
Soldier Support Equipment	In-House	PM Force Sustainment Sys (FSS), Natick	6254	956	1-4Q	2933	1-4Q			Cont.	Cont.	
Soldier Support Equipment	In-House	NSC, Natick	1310	1036	1-4Q	835	1-4Q			Cont.	Cont.	
Soldier Support Equipment	Contracts	Various	5192	4822	1-4Q	770	1-4Q			Cont.	Cont.	
LCADS P31 Effort	In-House/Contracts	Various				300	1-4Q	400	1-4Q	Cont.	Cont.	
JPADS 2K and 10K product improvements	In-House/Contracts	Various				500	1-4Q	3321	1-4Q	Cont.	Cont.	
ALVADS/ACPRS Development	Contracts	Various				1300	3-4Q	4340	1-4Q	Cont.	Cont.	
RRDAS Development	In-House/Contracts	Various								Cont.	Cont.	
Next Generation Human Remains Transfer Case Development	In-House/Contracts	Various						760	1-4Q	Cont.	Cont.	
JMIDS Development	Contracts	Various						1097	1-4Q	Cont.	Cont.	
Improved Environmental Control Unit (IECU)	In-House	CECOM, Ft Belvoir	664							Cont.	Cont.	
Subtotal:			13420	6814		6638		9918		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
Improved Environmental Control Unit (IECU)	In-house	CECOM, Ft Belvoir	500								500	
Subtotal:			500								500	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							K39		
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
Soldier Support Equipment	MIPR	DTC, MD and ATC, MD	856	457	1-4Q	371	1-4Q			Cont.	Cont.	
Soldier Support Equipment	MIPR	Yuma Proving Ground (YPG), AZ, AEC	7824	4082	1-4Q	1876	1-4Q			Cont.	Cont.	
ACPRS Developmental Testing (DT)	MIPR	YPG, AZ						559	4Q	Cont.	Cont.	
LCADS P3I	MIPR	DTC,AZ,OTC,NC				400	1-4Q	541	1-4Q		1823	
SHC 120K DT and Operational Testing (OT)	MIPR	ATC, MD						760	1-4Q	Cont.	Cont.	
Human Remains Transfer Case DT	MIPR	ATC, MD								Cont.	Cont.	
JMICS DT and OT	MIPR	ATC, MD								Cont.	Cont.	
IECU	MIPR	Various	643							Cont.	Cont.	
Subtotal:			9323	4539		2647		1860		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
Project Management Support	In-House	PM Force Sustainment Sys (FSS), Natick	589	570	1-4Q	200	1-4Q	616	1-4Q	Cont.	Cont.	
Project Management Support	In-House	PM MEP Ft Belvoir	557							Cont.	Cont.	
SBIT/STTR						274					274	
Subtotal:			1146	570		474		616		Cont.	Cont.	
Project Total Cost:			24389	11923		9759		12394		Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																														
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev	K39																														
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) MS A for JPADS 30 K	▲ 1																															
(2) MS C for IECU 60K	▲ 2																															
Conduct DV on JPADS 2K	████████████████████																															
Conduct DV on JPADS 10k.	████████████████████																															
(3) Obtain Milestone B for SHC 120K					▲ 3																											
(4) Award SDD contract for SHC 120K					▲ 4																											
Conduct DT and OT for SHC 120K					████████████████████																											
(5) Obtain Milestone C for SHC 120K													▲ 5																			
(6) Obtain Milestone B on ALVADS-Light													▲ 6																			
(7) Milestone B on ACPRS									▲ 7																							
Execute LCADS P3I effort (LCLA/ICDS)	████████████████████				████████████████████				████████████████████				████████████████████				████████████████████				████████████████████				████████████████████							
Execute ECDS P3I efforts	████████████████████				████████████████████				████████████████████				████████████████████				████████████████████				████████████████████				████████████████████							
(8) Obtain Milestone B on Helicopter External/Internal Cargo Delivery																	▲ 8															

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT																			
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev																K39																			
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				
Conduct DT/OT on Helicopter External/Internal Cargo Delivery																																				
Execute FP P3I efforts to incorporate Zero-Base Camp capabilities																																				
(9) Conduct Milestone B on Mobile Integrated Shop Shelter System																					▲ 9															
Conduct DT/OT on Mobile Integrated Shop Shelter System																																				
(10) Milestone A for ACPRS																																				
(11) Conduct MS B on JMIDS Platform																																				
(12) Conduct MS C on JMIDS Platform																																				
(13) Conduct MS B on RRDAS																																				
Conduct DV on RRDAS																																				
(14) Conduct MS A for ALVADS (H)																																				
(15) Conduct MS B for ALVADS (H)																																				
Conduct DV on ALVADS (H)																																				
(16) Conduct Milestone B for Next Generation Human Remains Transfer Case																																				

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																		
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev	K39																																		
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				
Conduct Developmental Testing for Next Generation Human Remains Transfer Case																																				
(17) Conduct Milestone B for JMIDS JMICS.																																				
Conduct DT and OT on JMICS																																				
Complete DT for JPADS 10K																																				
Execute JPADS P3I efforts																																				
Complete DV for ALVADS (L)																																				
Complete DV for ACPRS																																				
Conduct DT for ACPRS																																				
Execute LCADS P3I efforts Low-V/Hi-V)																																				

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603804A - Logistics and Engineer Equipment - Adv Dev						K39	
<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>	
MS A for JPADS 30 K	2Q								
MS C for IECU 60K	2Q								
Conduct DV on JPADS 2K	1Q - 4Q	1Q - 4Q	1Q - 2Q						
Conduct DV on JPADS 10k.	2Q - 4Q	1Q - 4Q							
Obtain Milestone B for SHC 120K	4Q								
Award SDD contract for SHC 120K	4Q								
Conduct DT and OT for SHC 120K		2Q - 4Q	1Q - 3Q						
Obtain Milestone C for SHC 120K			4Q						
Obtain Milestone B on ALVADS-Light			3Q						
Milestone B on ACPRS		3Q							
Execute LCADS P3I effort (LCLA/ICDS)	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Execute ECDS P3I efforts	1Q - 4Q	1Q - 4Q							
Obtain Milestone B on Helicopter External/Internal Cargo Delivery					2Q				
Conduct DT/OT on Helicopter External/Internal Cargo Delivery							1Q - 4Q		
Execute FP P3I efforts to incorporate Zero-Base Camp capabilities					1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Conduct Milestone B on Mobile Integrated Shop Shelter System						1Q			
Conduct DT/OT on Mobile Integrated Shop Shelter System						4Q	1Q - 3Q		
Milestone A for ACPRS	2Q								
Conduct MS B on JMIDS Platform					1Q				
Conduct MS C on JMIDS Platform								3Q	
Conduct MS B on RRDAS				3Q					

Conduct DV on RRDAS				4Q	1Q - 4Q			
Conduct MS A for ALVADS (H)						2Q		
Conduct MS B for ALVADS (H)							3Q	
Conduct DV on ALVADS (H)								1Q - 4Q
Conduct Milestone B for Next Generation Human Remains Transfer Case			2Q					
Conduct Developmental Testing for Next Generation Human Remains Transfer Case				2Q - 3Q				
Conduct Milestone B for JMIDS JMICS.			1Q					
Conduct DT and OT on JMICS				1Q - 3Q				
Complete DT for JPADS 10K			2Q - 4Q					
Execute JPADS P3I efforts			1Q - 4Q	1Q - 4Q				
Complete DV for ALVADS (L)			3Q - 4Q	1Q - 3Q				
Complete DV for ACPRS			1Q - 3Q					
Conduct DT for ACPRS			4Q	1Q				
Execute LCADS P3I efforts Low-V/Hi-V)	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT K41
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
K41 WATER AND PETROLEUM DISTRIBUTION - AD	2375	437	3224	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project develops and demonstrates the potential of prototype equipment and technologies to satisfy petroleum storage, distribution, and quality surveillance system requirements. The Concept and Technology Development program supports the development and enhancement of rapidly deployable Petroleum and Water equipment. The mission includes developing onboard fuels and lubrication quality analysis systems; achieving greater capabilities in the removal of Nuclear, Biological, Chemical (NBC) and other contaminants from water sources; reducing the logistics foot print; developing water reutilization systems to reduce the requirement for transport of water into the theatre; and material and systems to decrease the logistics foot print and employment time for the transfer of liquid logistics in the theatre. The Army fights with clean fuel and drinking water. This vital equipment enables the Army to achieve its transformation vision by providing the Army with the means to be highly mobile and self-sustaining in very hostile theaters of operations. Future Force operations demand that combat systems be rapidly deployable to the theater, rapidly emplaced upon arrival, and rapidly relocated to support a fast moving non-linear battlefield.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08-FY10: Continues improvements for the Hippo, Lightweight Water Purifier (LWP) and Tactical Water Purification System (TWPS). In FY08 investigate potential leaching of organics and metals into water storage systems and their health effects, identify life cycle cost savings in consumables and higher reliable components to improve methods to measure service life of filtration membranes, determine upper performance limits of TWPS and LWP. In FY10 conduct a market investigation for devices to automatically dose and control chlorine levels in water tankers and evaluate potential candidates for performance and suitability for military environment. Evaluate improved RO elements and media for removal of arsenic from water.	1313		2000
FY08-FY10: Continues Fuel Systems improvements for Family of Fuel System Supply Points (FSSPs). Conduct market investigations and identify design standardization requirements for common pump for both fuel and water distribution systems, conduct market research for automatic tank gauging (ATG) systems and flow volume metering devices, conduct evaluation of methods to extend operational life of collapsible fuel storage tanks and investigate technical and military suitability of portable berms to contain fuel spills. In FY08, procure and test candidate common pumps for downselection and continue market research of ATG and metering devices. In FY09, evaluate performance and military usefulness of commercial ATG and metering systems and environmental testing. In FY10 complete evaluations and begin preparing new performance based descriptions for ATG, metering devices and portable berms.	1062	426	379
FY10: Initiate effort to develop a mobile Water Packaging System. Conduct market surveys, prepare program documentation and develop Request for Proposal.			495
FY10: Develop in-line water monitoring equipment and improved hand-held water monitors for use on the TWPS, LWP and ROWPUs.			350
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR).		11	
Total	2375	437	3224

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT K41	
<u>B. Other Program Funding Summary</u>		FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE, 0604804.L41, Logistics and Engineer Equipment - Engineering Development		5167	5839	2503	Continuing	Continuing
OPA 3, R05600, Water Purification Systems		51216	51013	10190	Continuing	Continuing
OPA 3, MA6000, Distribution Systems, Petroleum & Water		102491	65964	142573	Continuing	Continuing

Comment: C. Acquisition Strategy: Develop engineering prototypes or select Non-Developmental Item based on market surveys and proposals from industry. Competitive; sole source contract.

C. Acquisition Strategy Develop engineering prototypes or select Non-Developmental Item based on market surveys and proposals from industry. Competitive; sole source contract.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							K41		
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
Water Purification Components Improvements	MIPR	NFESC, Port Hueneme, CA	301	200	1Q			250	1Q	Cont.	Cont.	Cont.
Water Purification Components Improvements	Purchase Orders	TBD	408	206	1-4Q			400	1Q	Cont.	Cont.	Cont.
Water Purification Components Improvements	MIPR	TARDEC, Warren, MI	458					500	1Q	Cont.	Cont.	Cont.
Water Purification Components Improvements	C-CPFF	MTC, Dayton, OH	150							Cont.	Cont.	Cont.
Water Quality Monitoring	MIPR	TARDEC, Warren, MI						100	1Q	Cont.	Cont.	Cont.
Bulk Water Treatment System	MIPR	TARDEC, Warren, MI								Cont.	Cont.	Cont.
Bulk Water Treatment System	MIPR	NFESC, Port Hueneme, CA								Cont.	Cont.	Cont.
Packaged Water System	MIPR	TARDEC, Warren, MI						150	1Q	Cont.	Cont.	Cont.
Packaged Water System	MIPR	NFESC, Port Hueneme, CA						195	2Q	Cont.	Cont.	Cont.
Advanced Petroleum Test Kit	MIPR	TARDEC, Warren, MI	829							Cont.	Cont.	Cont.
Advanced Petroleum Test Kit	Purchase Order	Micron Optical Incorporated, Portsmouth, VA	25							Cont.	Cont.	Cont.
Advanced Petroleum Test Kit	MIPR	NAV AIR, Patuxent River, MD	84							Cont.	Cont.	Cont.
Petroleum Quality Analysis System Enhanced	MIPR	TARDEC, Warren, MI	155							Cont.	Cont.	Cont.
Petroleum Quality Analysis System Enhanced	MIPR	Rock Island Arsenal, Rock Island, IL	877							Cont.	Cont.	Cont.
Fuel Systems Components Improvements	In-House	TARDEC, Warren, MI	301	150	1Q	200	1Q	165	1Q	Cont.	Cont.	Cont.
Fuel Systems Components Improvements	TBD	TBD	150	674	2Q	147	2Q	214	1Q	Cont.	Cont.	Cont.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							K41		
Bulk Fuel Distribution	MIPR	TARDEC, Warren, MI								Cont.	Cont.	Cont.
Future Fuel Storage System	MIPR	TARDEC, Warren, MI								Cont.	Cont.	Cont.
Subtotal:			3738	1230			347		1974	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
Water Purification Components Improvements	In-House	TARDEC, Warren, MI	753	100	1Q			200	1Q	Cont.	Cont.	Cont.
Water Quality Monitoring	In-House	TARDEC, Warren, MI						150	1Q	Cont.	Cont.	Cont.
Bulk Water Treatment System	In-House	TARDEC, Warren, MI								Cont.	Cont.	Cont.
Packaged Water System	In-House	TARDEC, Warren, MI						150	1Q	Cont.	Cont.	Cont.
Advanced Petroleum Test Kit (PTK)	In-House	TARDEC, Warren, MI	110							Cont.	Cont.	Cont.
Fuel Systems Components Improvements	In-House	TARDEC, Warren, MI	50	50	1Q					Cont.	Cont.	Cont.
Bulk Fuel Distribution System	In-House	TARDEC, Warren, MI								Cont.	Cont.	Cont.
Future Fuel Storage System	In-House	TARDEC, Warren, MI								Cont.	Cont.	Cont.
Subtotal:			913	150				500		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
Water Purification Components Improvements	In-House	TARDEC, Warren, MI	639	250	1Q			200	1Q	Cont.	Cont.	Cont.
Water Purification Components Improvements	MIPR	NFESC, Port Hueneme, CA	305	257	1Q			250	1Q	Cont.	Cont.	Cont.
Water Purification Components Improvements	MIPR	Aberdeen Proving Ground, Aberdeen, MD		368	2Q			200	1Q	Cont.	Cont.	Cont.
Water Quality Monitoring	In-House	TARDEC, Warren, MI						100	1Q	Cont.	Cont.	Cont.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							K41		
Water Quality Monitoring	MIPR	Aberdeen Proving Ground, Aberdeen, MD								Cont.	Cont.	Cont.
Advanced Petroleum Test Kit (PTK)	In-House	TARDEC, Warren, MI	562							Cont.	Cont.	Cont.
Fuel Systems Components Improvements	In-House	TARDEC, Warren, MI	100	120	1Q					Cont.	Cont.	Cont.
Fuel Systems Components Improvements	MIPR	Yuma Proving Ground, Yuma, AZ	209			90	2Q			Cont.	Cont.	Cont.
Unit Water Pod (Camel)	MIPR	Yuma Proving Ground, Yuma, AZ	2049							Cont.	Cont.	Cont.
Bulk Fuel Distribution System	TBD	TBD								Cont.	Cont.	Cont.
Future Fuel Storage System	TBD	TBD								Cont.	Cont.	Cont.
Subtotal:			3864	995		90		750		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
Subtotal:												
Project Total Cost:			8515	2375		437		3224		Cont.	Cont.	Cont.

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev																K41															
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
P3I - for Hardware for the LWP/TWPS/HIPPO	Evaluate commercially available water purification to LWP/TWPS																															
Develop Petroleum Test Kit (PTK) Technical Requirements, Design, and Test																																
					Develop PTK																											
P3I- for Family of Fuel System Supply Points (FSSPs)	Investigate/Integrate new technology																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev					PROJECT K41	
<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 - for Hardware for the LWP/TWPS/HIPPO	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Develop Petroleum Test Kit (PTK) Technical Requirements, Design, and Test	1Q - 4Q	1Q - 4Q						
P3I- for Family of Fuel System Supply Points (FSSPs)	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT K42	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
K42 MATERIEL SUSTAINMENT SUPPORT AD	5974	5190	2951	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This project supports Advanced Component Development and Prototypes 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 demonstrated under 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. Together with project 0603779A, Environmental Quality Technology Dem/Val (E21), this project transitions advanced technologies developed under 0603728A, Environmental Quality Technology Demonstrations (025). The project tests and evaluates 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 demonstrating the capabilities of new materials and processes to fulfill the performance requirements outlined in Material Specifications, Depot Maintenance Work Requirements, Technical Manuals and other technical data. Test and evaluation activities are executed by Research, Development and Engineering Command (RDECOM) centers and laboratories in cooperation with the affected Life Cycle Management Commands, Program Executive Offices and Program Managers. Materials are being demonstrated at ten different Army facilities in order to minimize the disruption of materiel maintenance operations at any one facility.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Qualify, validate and approve reformulated Chemical Agent Resistant Coating (CARC) systems and other non-CARC paints and surface coatings	2665	3307	1430
Qualify, validate and approve hazardous air pollutant (HAP) free solvents, thinners and cleaners	1349	323	280
Qualify, validate and approve chemical paint strippers containing no methylene chloride or other HAPs	1699	670	676
Qualify, validate and approve reformulated sealants and adhesives for high-use applications	261	744	565
Small Business Innovation Research/Small Business Technology Transfer		146	
Total	5974	5190	2951

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0603728A, Environmental Quality Technology Demonstrations (025)	3411	3610	3640		10661
0603779A, Environmental Quality Technology Dem/Val (E21)	1251	526			1777

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE				PROJECT
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev				K42
0605857A, Environmental Quality Technology Mgmt Support (06I)	340	272	275	67	954

Comment:

C. Acquisition Strategy The project transitions demonstrated technology directly into the Army supply system by having National Stock Numbers assigned/reassigned and immediately made available for procurement by the Defense Logistics Agency and the General Services Administration. As acquisition managers approve the new materials and processes for use on their systems, technical writers are specifying them in the appropriate technical publications. The project is managed by the Director of the Environmental Acquisition and Logistics Sustainment Program at the Headquarters, U.S. Army Research Development and Engineering Command (RDECOM).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603804A - Logistics and Engineer Equipment - Adv Dev			PROJECT L04	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
L04 JOINT LIGHT TACTICAL VEHICLE (JLTV) - AD	106434	21985	32135	Continuing	Continuing	

A. Mission Description and Budget Item Justification: Joint Light Tactical Vehicle (JLTV): FY08 and future funding supports the development and testing of the JLTV Family of Vehicles (FoV), which is being developed as a joint systems between the Army and Marine Corps. The JLTV goal is a FoVs with companion trailers capable of performing multiple mission roles that will be designed to provide protected, sustained, networked mobility for personnel and payloads across the full Range of Military Operations (ROMO). JLTV objectives include increased protection and performance over the current fleet; minimizing ownership costs by maximizing commonality, fuel efficiency and other means; and maintaining effective competition throughout the lifecycle. The JLTV FoV includes ten (10) sub-configurations (and companion trailers) in three payload categories. Commonality of components, maintenance procedures, training, etc., between vehicles and trailers is expected to be inherent in FoV solutions within and across Payload Categories to minimize FoV total ownership cost. Unique service requirements have been minimized.

During FY 10, major budget activities will support completion of ballistic hull testing, vehicle performance testing, user evaluations, reliability testing and prototype live fire evaluations. The Defense Acquisition Executive's mandate is that the JLTV FoV undergo a robust Technology Development Phase, with multiple competitive prototypes in order to assure requirements achievability, verified by demonstration of those systems. Additional budget activities will support MS B preparation.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
JLTV Program Management	3980	4126	4590
JLTV Variant Prototype Contract Design, Development and Fabrication	99537	12824	14045
JLTV Developmental Test and Evaluation	2917	4419	13500
Small Business Innovative Research/Small Business Technology Transfer Programs		616	
Total	106434	21985	32135

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Marine Corps Ground Combat/Support Systems, JLTV RDTE 0603635M	39969	43878	58851		455485

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603804A - Logistics and Engineer Equipment - Adv Dev

PROJECT

L04

C. Acquisition Strategy The JLTV Acquisition Strategy for the Technology Demonstration (TD) phase, FY08-11, is to competitively award multiple contracts. During this phase, the contractors will be required to design the JLTV Family of Vehicles (FoV) to the Critical Design Review level and fabricate and test selected prototypes and trailers for payload Categories A, B, and C. The fabricated prototypes will undergo developmental testing, as well as limited user assessments, in a relevant environment at Government test facilities. The goal is to ensure the family of prototypes is mature in terms of supporting technologies and full system integration for MS B approval and entry into Engineering & Manufacturing Development phase.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev							L04		
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
JLTV Technology Demonstration	C/Cshare	BAE Systems Santa Clara, CA		30998	4Q						30998	
JLTV Technology Deomonstration	C/Cshare	General Tactical Vehicles Sterling Heights, MI		35567	4Q						35567	
JLTV Technology Demonstration	C/CPFF	Lockheed Martin Owego, NY		26447	4Q						26447	
JLTV Systems Engineering Design & Development / GFE				1124	1-4Q	3885	1-4Q	4845	1-4Q		9854	
JLTV Program Management	In-house	TACOM, Warren, MI		3980	1-4Q	4126	1-4Q	4590	1-4Q		12696	
SBIR/STTR						616					616	
Subtotal:				98116		8627		9435			116178	
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
JLTV Variant Prototype Design	MIPR/PO	TACOM Warren, MI		1962	1-4Q	1900	1-4Q	2600	1-4Q		6462	
JLTV Variant Prototype Design	MIPR/PO	TARDEC Warren, MI		3010	1-4Q	4000	1-4Q	3600	1-4Q		10610	
JLTV Variant Prototype Design	MIPR/PO	Defense Technical Information Center, Ft. Belvoir, VA		1305	1-4Q	1539	1-4Q	1600	1-4Q		4444	
JLTV Variant Prototype Design	MIPR/PO	Other Government Agencies		1269	1-4Q	1500	1-4Q	1400	1-4Q		5569	
Subtotal:				7546		8939		9200			27085	
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	
4 - Advanced Component Development and Prototypes			0603804A - Logistics and Engineer Equipment - Adv Dev								L04	
	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
JLTV Developmental Test and Evaluation	MIPR	APG, MD		474	2-4Q	3148	1-4Q	9500	1-4Q		13122	
JLTV Developmental Test and Evaluation Support Costs	Contract	Various				1271	1-4Q	1500	1-4Q		2771	
JLTV Developmental Test and Evaluation	MIPR	YPG, AZ		298	2-4Q			2500	1-4Q		2798	
Subtotal:				772		4419		13500			18691	
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:												
Project Total Cost:				106434		21985		32135			161954	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT																			
4 - Advanced Component Development and Prototypes	0603804A - Logistics and Engineer Equipment - Adv Dev																L04																			
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) MS A (Technology Development)	▲ ₁ MS A																																			
(2) Contract Awards	TD Award ▲ ₂																																			
GAO Contractor Protest					■																															
Prototype Development Design / Fabrication					■																															
JLTV Developmental Test and Evaluation / Reports									■																											
(3) CDD Joint Req Oversight Com																					▲ ₃															
Source Selection Process																					■															
(4) MS B (Eng & Man Dvlpmnt)																					▲ ₄ MS B															
(5) Contract Award																					▲ ₅															
Design and Fabrication													■																							
Test and Validation																	■																			
(6) CPD Joint Req Oversight Com																									▲ ₆											
(7) MS C (Production & Deployment)																													▲ ₇ MS C							
Low Rate Initial Production (LRIP)																					■															
(8) Full-Rate Production Decision Review																																	▲ ₈			

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603804A - Logistics and Engineer Equipment - Adv Dev						L04	
<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>	
MS A (Technology Development)	1Q								
Contract Awards		1Q							
GAO Contractor Protest		1Q - 2Q							
Prototype Development Design / Fabrication		2Q - 4Q	1Q - 3Q						
JLTV Developmental Test and Evaluation / Reports		4Q	1Q - 4Q	1Q - 3Q					
CDD Joint Req Oversight Com				3Q					
Source Selection Process				3Q - 4Q					
MS B (Eng & Man Dvlpmnt)				4Q					
Contract Award				4Q					
Design and Fabrication				4Q	1Q - 4Q				
Test and Validation					2Q - 4Q	1Q - 3Q			
CPD Joint Req Oversight Com						3Q			
MS C (Production & Deployment)						4Q			
Low Rate Initial Production (LRIP)							1Q - 4Q	1Q - 4Q	
Full-Rate Production Decision Review									

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603805A - Combat Service Support Control System Evaluation and Analysis			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
091 CBT SVC SPT CONTRL SYS	14389	17729	9868	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Battle Command Sustainment Support System (BCS3) is the logistics Command and Control (C2) solution for U.S. land forces. BCS3 provides commanders the capability to execute end-to-end distribution and deployment management and brings better situational awareness resulting in better decision-making capability to warfighters. It enables warfighters to target, access, scale and tailor critical logistics information in near-real time. BCS3 provides more effective means to gather and integrate asset and in-transit information to manage distribution and deployment missions. BCS3 combines distribution management to include commodity and convoy tracking, and deployment management into a logistics Common Operating Picture (COP) for one mission-focused visual display.

BCS3 has been adopted and integrated into Joint and strategic logistics command and control processes. BCS3 is the only near-term end-to-end logistics COP solution for the Joint commander. BCS3 will maintain its core capabilities and continue to advance in development while integrating into the Joint command and control architecture. This continued development will enable decision superiority via advanced collaborative information sharing achieved through interoperability.

BCS3 has immediate, high pay-off benefit to warfighters and additional future growth in its capabilities. BCS3 is a force multiplier, a precision tool for logistics planning and execution that provides warfighters with the necessary tools to succeed.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Advanced Component Development and Prototypes	0603805A - Combat Service Support Control System Evaluation and Analysis		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	14959	17788	10028
Current BES/President's Budget (FY 2010)	14389	17729	9868
Total Adjustments	-570	-59	-160
Congressional Program Deductions		-59	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-184		
SBIR/STTR Transfer	-386		
Adjustments to Budget Years			-160

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603805A - Combat Service Support Control System Evaluation and Analysis			PROJECT 091	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
091 CBT SVC SPT CONTRL SYS	14389	17729	9868	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Battle Command Sustainment Support System (BCS3) is the logistics Command and Control (C2) solution for U.S. land forces. BCS3 provides commanders the capability to execute end-to-end distribution and deployment management and brings better situational awareness resulting in better decision-making capability to warfighters. It enables warfighters to target, access, scale and tailor critical logistics information in near-real time. BCS3 provides more effective means to gather and integrate asset and in-transit information to manage distribution and deployment missions. BCS3 combines distribution management to include commodity and convoy tracking, and deployment management into a logistics Common Operating Picture (COP) for one mission-focused visual display.

BCS3 has been adopted and integrated into Joint and strategic logistics command and control processes. BCS3 is the only near-term end-to-end logistics COP solution for the Joint commander. BCS3 will maintain its core capabilities and continue to advance in development while integrating into the Joint command and control architecture. This continued development will enable decision superiority via advanced collaborative information sharing achieved through interoperability.

BCS3 has immediate, high pay-off benefit to warfighters and additional future growth in its capabilities. BCS3 is a force multiplier, a precision tool for logistics planning and execution that provides warfighters with the necessary tools to succeed.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Program Office Management	202	317	395
TRADOC Capabilities Manager (TCM) Functionality	6923	7030	3613
Battle Command (BC) Migration	5236	7299	4332
Systems Engineering and Test	2028	2620	1528
Small Business Innovative Research/Small Business Technology Transfer Programs.		463	
Total	14389	17729	9868

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Procurement, OPA 2 (W34600)	33209	36720	34539	Continuing	Continuing

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603805A - Combat Service Support Control System Evaluation and Analysis

PROJECT

091

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	
4 - Advanced Component Development and Prototypes			0603805A - Combat Service Support Control System Evaluation and Analysis								091	
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	SS/TM	Northrop Grumman, Carson, CA	136812	12159	1-4Q	14792	1-4Q			Cont.	163763	168482
Software Development	TM/CPAF	TBD					1-4Q	7945			7945	
Software Development	SS/TM	Tapestry Solutions, San Diego, CA	13262								13262	13262
Training Development	C/TM	Lockheed Martin, Tinton Falls, NJ	13514								13514	13514
ABCS SE&I Effort	MIPR	PEO C3T, Ft. Monmouth, NJ	7686								7686	7686
GFE	MIPR	Various	3601								3601	3601
Subtotal:			174875	12159		14792		7945		Cont.	209771	206545
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
Technical Support	TM	L3, Ft. Lee, VA	8321	354	1-4Q	361	1-4Q	368		Cont.	Cont.	9404
CECOM, Matrix	MIPR	Ft. Monmouth, NJ & Ft. Belvoir, VA	5154								5154	5154
Acquisition Support	TM	LMI, McLean, VA	1075								1075	1075
Subtotal:			14550	354		361		368		Cont.	Cont.	15633
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	
4 - Advanced Component Development and Prototypes			0603805A - Combat Service Support Control System Evaluation and Analysis								091	
Systems Engineering and Test	SS/TM	Northrop Grumman, Carson, CA		1674	1-4Q	2259	1-4Q	1160	1-4Q		5093	5479
GOVT	MIPR	VARIOUS	5575								5575	5575
Dev. Testing & Eval.	MIPR	EPG, VARIOUS	1028								1028	1028
Oper. Testing	MIPR	ATEC, VARIOUS	2633							Cont.	2633	2633
Subtotal:			9236	1674		2259		1160		Cont.	14329	14715

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	Ft. Belvoir, VA	27647	202	1-4Q	317	1-4Q	395		Cont.	Cont.	31561
Subtotal:			27647	202		317		395		Cont.	Cont.	31561

Project Total Cost:			226308	14389		17729		9868		Cont.	Cont.	268454
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603805A - Combat Service Support Control System Evaluation and Analysis

PROJECT
091

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
TRADOC Capabilities Manager (TCM) Functionality	█				█				█																							
Battle Command (BC) Migration	█				█				█																							
Systems Engineering and Test	█				█				█																							
Capability Set 09-10 Development	█				█				█																							
Capability Set 11-12 Development	█				█				█																							
Capability Set 13-14 Development	█				█				█																							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603805A - Combat Service Support Control System Evaluation and Analysis	PROJECT 091
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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>
TRADOC Capabilities Manager (TCM) Functionality	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Battle Command (BC) Migration	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Systems Engineering and Test	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Capability Set 09-10 Development	1Q - 4Q	1Q - 2Q						
Capability Set 11-12 Development	3Q - 4Q	1Q - 4Q	1Q - 3Q					
Capability Set 13-14 Development			3Q - 4Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603807A - Medical Systems - Adv Dev			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	25207	30207	31275	Continuing	Continuing
808 DOD DRUG & VACC AD	4413	5649	6865	Continuing	Continuing
811 MIL HIV VAC&DRUG DEV	145	149	1468	Continuing	Continuing
836 Field Medical Systems Advanced Development	3160	13671	22942	Continuing	Continuing
837 SOLDIER SYS PROT-AD	1837	6751		Continuing	Continuing
A01 COMBAT SUPPORT HOSPITAL - MOBILE SURGICAL UNIT	5796				
CS4 MEDICAL SYSTEMS ADV DEV INITIATIVES (CA)	6376	3987			10363
MD4 FUTURE MEDICAL SHELTER	1932				1932
MD8 ELECTROSOMOTIC PAIN THERAPY SYSTEM (CA)	1548				1548

A. Mission Description and Budget Item Justification: This program element (PE) funds development of medical materiel at the start of an official program of record, within the early system integration portion of the System Development and Demonstration phase of the acquisition life cycle using 6.4 funding. Program efforts support transition of promising Science and Technology candidate medical technologies (drugs, vaccines, medical devices, diagnostics, and mechanisms for detection and control of disease carrying insects) to larger scale testing in humans for safety and effectiveness. Programs are aligned to meet Future Force (F2) requirements stressed within concept documents and organizational structures. The PE provides funding for Food and Drug Administration (FDA) regulated human clinical trials to gain additional information about safety and effectiveness on the path to licensure for use in humans. The major enablers supported by this PE are:

Combat Casualty Care devices and biologics (products derived from living organisms), with two major focuses: 1) enhance forward care at the first responder level while reducing the footprint of medical organizations for greater mobility and easier sustainment, and 2) provide enhanced post-evacuation care and rehabilitation. The F2 concept places Soldiers into a more austere environment with lengthened evacuation times (both arrival and transit). Supporting medics and first responders require greater lifesaving and extended stabilization capability to save lives.

Soldier Performance Enhancers in the form of drugs and diagnostics will allow commanders to manage a Soldier's mental and physical performance. Performance enhancers will increase Soldier capabilities and reduce casualties resulting from high operational tempo, extreme environmental exposure, and loss of cognitive ability.

Infectious disease efforts include testing candidate vaccines and preventive and therapeutic drugs to reduce the risk of service members contracting debilitating or fatal diseases, and/or to shorten recovery time. Technologies for identifying disease threats and mechanisms for controlling disease-carrying insects will reduce risk of exposure. Disease and non-battle injuries (DNBI) are the largest contributors to the combat support hospital footprint, and significant reductions of the medical footprint in theater can be achieved by

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Advanced Component Development and Prototypes

0603807A - Medical Systems - Adv Dev

reducing the number of DNBI affected Soldiers.

Military Human Immunodeficiency Virus (HIV) Vaccine and Drug Development funds militarily relevant HIV medical countermeasures. These include component development of candidate vaccines for large-scale field testing.

This program is managed by U.S. Army Medical Materiel Development Activity (USAMMDA) and U.S. Army Medical Materiel Agency (USAMMA) of the US Army Medical Research and Materiel Command.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
4 - Advanced Component Development and Prototypes	0603807A - Medical Systems - Adv Dev

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	29689	26308	24537
Current BES/President's Budget (FY 2010)	25207	30207	31275
Total Adjustments	-4482	3899	6738
Congressional Program Reductions	-190	-101	
Congressional Rescissions			
Congressional Increases		4000	
Reprogrammings	-3541		
SBIR/STTR Transfer	-751		
Adjustments to Budget Years			6738

Change Summary Explanation: Funding:
 In FY08, the congressional add of \$1.2 Million for Pneumothorax Detection Device was reprogrammed from PE 0603807 to PE 0603002. The balance was reprogrammed to higher priority program.
 Increases of \$4 million in FY 09 due to Congressional adds:
 In FY09 project Leishmania Skin Test \$.8 Million
 In FY09 project Garment-Based Physiological Monitoring System \$1.6 Million
 In FY09 project Wireless Medical Monitoring System (WiMed) \$1.6 Million
 In FY10 funding increase due to POM Plus up to re-baseline funding.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev			PROJECT 808	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
808 DOD DRUG & VACC AD	4413	5649	6865	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds development of candidate medical countermeasures for infectious diseases of military relevance. These efforts are in: vaccines, drugs, diagnostic kits/devices, and insect control measures. These funds support human clinical efficacy (capacity to produce a desired size of an effect under ideal or optimal conditions) trials of the drug/vaccine in larger groups that are designed to assess how well the drug/vaccine works, and to continue safety assessments in a larger group of volunteers. Funding supports both technical evaluations and human clinical testing to assure the safety and effectiveness of medical diagnostic kits and devices. This work, which is performed in military laboratories or civilian pharmaceutical firms, is directed toward the prevention of disease, early diagnosis, and speeding recovery once diagnosed. All clinical trials are conducted in accordance with U.S. Food and Drug Administration (FDA) regulations, a mandatory obligation for all military products placed into the hands of medical providers or service members. Product development priorities are determined based upon four major factors: (1) the extent and threat of the disease within the Combatant Commands theater of operations, (2) the clinical severity of the disease, (3) the technical maturity of the proposed solution, and (4) the affordability of the solution (development and production).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Reviews, evaluations, and human clinical trials of malarial/anti-malarial vaccines, drugs, diagnostics and insect repellents: In FY08, for the anti-malarial drug, Tafenoquine (for treatment and post-exposure of Plasmodium vivax malaria), completed the Integrated Safety Output document and prepared a report on the expanded safety trial. For Artesunate (anti-malarial drug), continued human efficacy trials and conducted a Critical Design Review (CDR) and reduced efforts to monitoring progress of industry partner) as they have the lead for preparing the FDA licensure package for Artesunate. Completed the analysis for Combined Camouflage Face Paint/Insect Repellent (CCFP) new stick formulations evaluated in a field efficacy trial and reported on compatibility of the CCFP with insect repellent formulation against textile materials and equipment items and transition to project 849. In FY09, for Tafenoquine, begin development/validation of new laboratory assay to determine levels of antibodies from malaria infection using blood samples from a mefloquine (current FDA-approved malaria drug) challenge clinical study (supported by project 849) and will evaluate potential sites for future human safety/efficacy trial, and conduct a Critical Design Review (CDR). The Artesunate drug will transition from project 810 and a Critical Design Review (CDR) will be conducted. In FY10, for Tafenoquine, will down-select to best site for human safety/efficacy trial and will continue laboratory assay development/validation to understand the human body's immune responses when infected with malaria parasites and as tool for determining future clinical trial enrollment size, and will transition the entire Tafenoquine program to project 849. Will monitor progress of a new military topical insect repellent candidate in project 810 to determine its suitability for entry into advanced development. For the Infectious Disease Diagnostic (Multiple candidates), conduct market	1932	1875	1921
research of selected developmental and commercial diagnostic platforms for select infectious diseases of military interest to determine suitability for entry into advanced development.			
Trials, evaluations, and reviews for grouped infectious disease (Dengue [a severe debilitating disease caused by a virus and transmitted by a mosquito] and Leishmania [a skin-based disease caused by a parasite and transmitted by sand flies]) vaccines and drugs: In FY08, the Dengue Tetravalent Vaccine (DTV), monitored progress of the expanded safety/efficacy trial in Puerto Rico and continued	2481	3661	4944

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Advanced Component Development and Prototypes	0603807A - Medical Systems - Adv Dev	808	
<p>enrollment/follow-up in the Thailand human safety trials. The Paromomycin/Gentamicin Topical Antileishmanial Cream, began enrollment in the pivotal safety/efficacy trial in Tunisia and continued stability testing of the cream. For Pentostam (intravenous drug treatment of skin lesions caused by the Leishmania parasite), monitored industry partner's progress in preparing the FDA licensure package. The Congressional-interest Leishmania Skin Test (LST), finalized the clinical report for the human clinical trial for safety and effectiveness, submitted a human clinical trial safety study (in the United States) protocol for human use review, and continue stability studies of the product. In FY09, The DTV vaccine will continue FDA required vaccine potency and stability testing of the product and all other DTV activities are transitioned to project 849. The Topical Antileishmanial Cream, open a human treatment protocol in the U.S., the industry partner will continue stability testing and produce new clinical drug lots, and project 849 supports the overseas human trials activities of this topical cream. The LST, will complete follow-up and perform data analysis for the expanded human safety/dose ranging/sensitization trial in the U.S. and conduct a Critical Design Review (CDR). The Pentostam drug transitions to project 849. In FY10, DTV vaccine will continue FDA required vaccine potency and stability testing and all other DTV activities are transitioned to project 849. For the Topical Antileishmanial Cream, will continue a human treatment protocol in the U.S., the industry</p>			
<p>partner will continue stability testing and produce new clinical drug lots, and project 849 supports the overseas human clinical trials activities of this topical cream. For LST, will complete the final report for the expanded human safety/dose ranging/sensitization trial in the U.S., and conduct pre-trial activities for a large scale (>200 subjects) human safety/efficacy trial in a Leishmania endemic region.</p>			
Small Business Innovative Research/Small Business Technology Transfer Programs.		113	
Total		4413	5649
			6865

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

C. Acquisition Strategy Test and evaluate in-house and commercially developed products in extensive government-managed clinical trials to gather data required for FDA licensure and Environmental Protection Agency registration.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603807A - Medical Systems - Adv Dev							808		
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
No product/contract costs greater than \$1M individually			5952	545		1412		1750		Cont.	Cont.	Cont.
Subtotal:			5952	545		1412		1750		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
No product/contract costs greater than \$1M individually			1401	182		1130		1289		Cont.	Cont.	Cont.
Subtotal:			1401	182		1130		1289		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
No product/contract costs greater than \$1M individually			33699	2757		2090		2574		Cont.	Cont.	Cont.
Subtotal:			33699	2757		2090		2574		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
No product/contract costs greater than \$1M individually			7197	929		1017		1252		Cont.	Cont.	
Subtotal:			7197	929		1017		1252		Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev						PROJECT 808			
Project Total Cost:	48249	4413		5649		6865		Cont.	Cont.	Cont.

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
4 - Advanced Component Development and Prototypes		0603807A - Medical Systems - Adv Dev																808														
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
Anti-Malarial, Tafenoquine (CDR)	Critical Design Review				▲ ₀																											
Antimalarial, Artesunate (CDR)	Critical Design Review				▲ ₀																											
Leishmania Skin Test (CDR)	Critical Design Review				▲ ₀																											
New Standard Military Topical Insect Repellant (MS-B)													MS-B ▲ ₀																			

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev					PROJECT 808		
<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>	
Anti-Malarial, Tafenoquine (CDR)		1Q							
Antimalarial, Artesunate (CDR)	4Q								
Leishmania Skin Test (CDR)		2Q							
New Standard Military Topical Insect Repellant (MS-B)				2Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev			PROJECT 811	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
811 MIL HIV VAC&DRUG DEV	145	149	1468	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This project funds development of militarily relevant human immunodeficiency virus (HIV) medical countermeasures. It provides for the planning and conduct of human clinical trials in a group of healthy volunteers to assess the drug/vaccine for safety, tolerability, how the drug/vaccine is distributed, metabolized, and excreted from the body, and to investigate the appropriate dose for therapeutic use. Development efforts are focused on militarily unique needs effecting manning, mobilization, and deployment.

The major contractor is Henry M. Jackson Foundation for the Advancement of Military Medicine, Rockville, MD. Research efforts are coordinated with the National Institutes of Health.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
In FY10, will evaluate and down-select potential commercial drug/vaccine candidates for preliminary human trials and conduct Design Readiness Review (DRR).	145	145	1468
Small Business Innovative Research/Small Business Technology Transfer Programs		4	
Total	145	149	1468

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

C. Acquisition Strategy Test and evaluate commercially developed drug/vaccine candidates in government-managed trials.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603807A - Medical Systems - Adv Dev							811		
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
Product Development	Cooperative Agreement	Henry M. Jackson Foundation, Rockville, MD	5139					347		Cont.	Cont.	
Subtotal:			5139					347		Cont.	Cont.	
Remarks: 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
No product/contract costs greater than \$1M individually			868	145		149		202			1961	
Subtotal:			868	145		149		202			1961	
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
Test and Evaluation	Government Laboratory	U.S. Component AFRIMS, Bangkok, APO, AP 96546-5000	11495					705			13307	
Subtotal:			11495					705			13307	
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
No product/contract costs greater than \$1M individually.			250					214			464	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603807A - Medical Systems - Adv Dev						811	
Subtotal:		250				214		464	
Remarks: Not Applicable									
Project Total Cost:		17752	145		149	1468	Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603807A - Medical Systems - Adv Dev

PROJECT
811

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									
HIV Vaccine Design Readiness Review (DRR)									0																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev					PROJECT 811	
<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>
HIV Vaccine Design Readiness Review (DRR)			4Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev			PROJECT 836	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
836 Field Medical Systems Advanced Development	3160	13671	22942	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds development of medical products for enhanced combat casualty care and follow-on care, including rehabilitation. This project funds human clinical trials to test the safety and effectiveness of biologics (products derived from living organisms) and devices necessary to meet medical requirements. When available, commercially-off-the-shelf (COTS) medical products are also tested and evaluated for transition to system development and demonstration. Consideration is also given to reducing the medical logistics footprint through smaller weight, volume, and equipment independence from supporting materials. All clinical trials are conducted in accordance with U.S. Food and Drug Administration (FDA) regulations.

In FY10 Project 837 Soldier Sys Prot-AD will be consolidated into this Project, 836.

Major contractors/intra-governmental agencies include: IGR Enterprises, Inc.; Army Medical Department Board Test Center; SeQual Technologies, Inc.; Ultrasonic Diagnostics, Inc.; HemCon Medical Technologies, Inc.; Hemerus Medical, LLC.; Fast Track Drugs & Biologics, LLC; Clinical Research Management, and Walter Reed Army Institute of Research (WRAIR) and Institute of Surgical Research (ISR) for user evaluation.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
(1) Ceramic Oxygen Generator (COG): In FY08, completed development of new prototype to satisfy form and fit requirements. In FY09, transition to project 832 for Systems Development and Demonstration.(2) Rotary Valve Pressure Swing Adsorption Oxygen Generator (RVPSAOG): In FY08 conducted technical testing of Omni II and fully transitioned to project 832 for Systems Development and Demonstration. (3) Future Medical Shelter System (FMSS): In FY08, developed engineering development models. In FY09, down-select to one system. In FY10, procure one system for the Force Provider Early Entry Combat Support Hospital (CSH). (4) Future Combat System (FCS): In FY09, prepare for performance design review (PDR), and provide support to PM-Future Combat Systems Brigade Combat Team regarding Medical Mission package, treatment table, shelter, and patient movement items for form, fit, and function. In FY10 will support PM-FCS with building first prototypes for testing.(5) Ultrasonic Brain Imager (UBI): In FY08, finished technical testing and evaluation of prototype resolution and capabilities. In FY09, begin clinical user assessments, based on a down-select. In FY10, transition to project 832 for Systems Development and Demonstration(6) Freeze-dried Plasma Program (hemorrhage treatment candidate): In FY08 began pre-clinical trial activities for a safety/efficacy human clinical trial with new lots of freeze-dried plasma. In FY09, transition to project 832 for Systems Development and Demonstration. (7) Red Blood Cell Extended Life (RBCXL) program (hemorrhage treatment candidate - a new blood collection and storage system that extends the shelf-life of red blood cells from 6 to 8 weeks): In FY08, was supported by Department of Defense Technology Transition Initiative (TTI) Program that matured the blood collection and storage system to a	3160	13341	22942
viable candidate for transition to advanced development. In FY09 transition to project 832.(8) Platelet Derived Hemostatic Agent (PDHA) (use of cryopreserved platelets for control of severe bleeding): In FY08 monitored the establishment of a stable manufacturing procedure for frozen platelets (supported by project 840) that allowed for future refinement of a good manufacturing process to meet FDA			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Advanced Component Development and Prototypes	0603807A - Medical Systems - Adv Dev	836	
requirements and to provide for future clinical evaluations. In FY09, begin a feasibility clinical evaluation and conduct good manufacturing practices validation studies of the product. In FY10, will complete data analysis of feasibility clinical evaluation and prepare final report, will begin a safety/efficacy clinical study, and will establish good manufacturing practices' process at military blood centers for human studies support, and transition to project 832 for Systems Development and Demonstration.(9) Intranasal Ketamine (low dose pain management via nasal spray): In FY09, will conduct a Pain Management Meeting with Combat Developer (representing Military requirements) and medical caregivers across roles of care to determine which pain management options are best for deployed hospitals, during medical evacuation, and at far forward treatment facilities in austere environments. In FY10, will conduct human trial to assess intranasal ketamine drug effects on a subject's judgment. (10) Antiplatelet Gum: In FY10 will transition from project 840 and will conduct small human safety and dose escalation study in health adults. (11) Environmental Sentinel Biomonitor (ESB). In FY10, transition increment 1 from project 837 and increment 2 from technology			
development project FH4, initiate development of increment 2 ESB system for use in conjunction with field water facilities.			
Small Business Innovative Research/Small Business Technology Transfer Programs		330	
Total	3160	13671	22942

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

C. Acquisition Strategy Develop in-house or industrial prototypes in government-managed programs to meet military and regulatory requirements for production and fielding.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603807A - Medical Systems - Adv Dev							836		
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
Clinical Research Management		Hinckley, OH									1133	
Allied Technologies & Consulting LLC		Frederick, MD				1785		1580			5365	
Aquila Alaska Corporation		Wasilla, AK				1200					1200	
SeQual Technologies		San Diego, CA				1100					1100	
No other contract exceeds \$1M			15169	87				5449			20705	
Subtotal:			15169	87		4085		7029			29503	
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
No product/contract costs greater than \$1M individually						2734		4343			13527	
Subtotal:						2734		4343			13527	
Remarks: No product/contract costs greater than \$1M individually.												
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
No product/contract costs greater than \$M individually.						5058		8033			22352	
Subtotal:						5058		8033			22352	
Remarks: No product/contract costs greater than \$1M individually.												
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

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE						PROJECT		
4 - Advanced Component Development and Prototypes			0603807A - Medical Systems - Adv Dev						836		
	Type				Date		Date		Date		Contract
No product/contract costs greater than \$M individually.			28754	3073		1794		3537			37158
Subtotal:			28754	3073		1794		3537			37158
Project Total Cost:			43923	3160		13671		22942			102540

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603807A - Medical Systems - Adv Dev

PROJECT
836

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
Future Combat Systems (CDR)																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev					PROJECT 836	
<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>
Future Combat Systems (CDR)		4Q						

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev			PROJECT 837	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
837 SOLDIER SYS PROT-AD	1837	6751		Continuing	Continuing	

A. Mission Description and Budget Item Justification: This project funds development of preventive medicine materiel, including devices and medicines, in order to provide protection, sustainment, and enhancement of the physical and psychological capabilities of Soldiers across the Army's full spectrum operations. Focus is on the reduction of personnel losses due to preventable disease and non-battle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures.

In FY10, Project 837 will be consolidated into Project 836 Combat Medical Matl AD.

Major contractors are Pacific Technologies, Inc, Redwood, WA, and Agave Biosystems Inc, Austin, TX.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Coliform Analyzer: In 4Q FY08, conducted user tests and evaluations and milestone B for transition to System Development and Demonstration. In FY09, conduct technical testing and user evaluation and transition to project 834 for System Development and Demonstration. Environmental Sentinel Biomonitor (ESB): In 2Q FY09, conduct Milestone B (for increment 1 ESB system). In FY10, project 837 is consolidated into project 836.	1837	6562	
Small Business Innovative Research/Small Business Technology Transfer Programs		189	
Total	1837	6751	

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

C. Acquisition Strategy Test and evaluate materiel in-house and commercially developed preventative medicine materiel to meet FDA and EPA regulatory requirements.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603807A - Medical Systems - Adv Dev							837		
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
No product/contract costs greater than \$1M individually			3661	863		3228				Cont.	Cont.	
Subtotal:			3661	863		3228				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
No product/contract costs greater than \$1M individually			247	57		205				Cont.	Cont.	
Subtotal:			247	57		205				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
No product/contract costs greater than \$1M individually		Research and development; stability and potency testing	1276	309		1205				Cont.	Cont.	
Subtotal:			1276	309		1205				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
No product/contract costs greater than \$1M individually			2472	608		2113				Cont.	Cont.	



ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT		
4 - Advanced Component Development and Prototypes	0603807A - Medical Systems - Adv Dev						837		
Subtotal:	2472	608		2113			Cont.	Cont.	
Project Total Cost:	7656	1837		6751			Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603807A - Medical Systems - Adv Dev																837															
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
Coliform Analyzer (MS-B)	MS B 																															
Environmental Sentinel Biomonitor (2nd QTR FY 09)					MS B 																											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev					PROJECT 837	
<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>
Coliform Analyzer (MS-B)	3Q							
Environmental Sentinel Biomonitor (2nd QTR FY 09)		2Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev			PROJECT CS4
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
CS4 MEDICAL SYSTEMS ADV DEV INITIATIVES (CA)	6376	3987			10363

A. Mission Description and Budget Item Justification: Not applicable for this item.

<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 Program	6376	112	
Congressional special interest in Medical systems initiatives		3875	
Total	6376	3987	

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

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev			PROJECT MD4
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
MD4 FUTURE MEDICAL SHELTER	1932				1932

A. Mission Description and Budget Item Justification: Not applicable for this item.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
New Accomplishment	1932		
Total	1932		

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		
4 - Advanced Component Development and Prototypes			0603807A - Medical Systems - Adv Dev								MD4		
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	
New R3 Line				1932							1932		
Subtotal:				1932							1932		
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	
New R3 Line													
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:													
Project Total Cost:				1932							1932		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603807A - Medical Systems - Adv Dev			PROJECT MD8
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
MD8 ELECTROSOMOTIC PAIN THERAPY SYSTEM (CA)	1548				1548

A. Mission Description and Budget Item Justification: Not applicable for this item.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Congressional Special Interest	1548		
Total	1548		

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	
4 - Advanced Component Development and Prototypes			0603807A - Medical Systems - Adv Dev								MD8	
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
New R3 Line				1548							1548	
Subtotal:				1548							1548	
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:												
Project Total Cost:				1548							1548	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603827A - Soldier Systems - Advanced Development			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	26181	41616	71832	Continuing	Continuing
S49 GROUND SOLDIER SYSTEM (GSS)		25420	56993	Continuing	Continuing
S51 AIRCREW INTEGRATED SYS AD	2577	1	138	Continuing	Continuing
S53 CLOTHING AND EQUIPMENT	13619	6549	7047	Continuing	Continuing
S54 SMALL ARMS IMPROVEMENT	3483	4266	5054	Continuing	Continuing
S55 Counter-Defilade Target Engagement	6502	5380	2600		14482

A. Mission Description and Budget Item Justification: This Program Element (PE) for Advanced Component Development and Prototypes manages the soldier as a system in order to increase combat effectiveness, test and deliver tangible products that save soldier's lives, and improve soldier's quality of life. It evaluates, develops, and tests emerging technologies and critical soldier support systems to reduce technology risk.

Project S49 funding (Ground Soldier System) integrates multiple components and leverages emerging technologies to provide overmatching operational capabilities to ground combat Soldiers.

Project S51 funding (Aircrew Integrated Systems) supports component development and prototyping of critical soldier support systems and other combat service support equipment that will improve unit sustainability and combat effectiveness.

Project S52 funding (Soldier Support Equipment) supports component development and prototyping of critical soldier support systems and other combat service support equipment that will improve unit sustainability and combat effectiveness.

Project S53 funding (Clothing and Equipment) supports development of state-of-the-art technology to improve tactical and non-tactical clothing and individual equipment to enhance the lethality, survivability, and mobility of the individual Soldier.

Project S54 funding (Small Arms Improvement) provides funds to develop, demonstrate and evaluate emerging technology for integration of systems, subcomponents and prototypes designed to enhance lethality, target acquisition, fire control, training effectiveness and reliability for current and future small arms weapon systems and ammunition.

Project S55 funding (Counter-Defilade Target Engagement) provides funds to develop, demonstrate and evaluate technology for integration of systems and subcomponents to enhance hit probability to defeat defilade and point area targets at the squad level.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
4 - Advanced Component Development and Prototypes	0603827A - Soldier Systems - Advanced Development

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	20090	36558	32798
Current BES/President's Budget (FY 2010)	26181	41616	71832
Total Adjustments	6091	5058	39034
Congressional Program Reductions		-142	
Congressional Rescissions			
Congressional Increases		5200	
Reprogrammings	6643		
SBIR/STTR Transfer	-552		
Adjustments to Budget Years			39034

Change Summary Explanation:
 FY 2008: Congressional add reprogrammed from OMA for proper execution, Advanced Combat Helmet, \$4 million; \$2.8 millions reprogrammed to support the Counter-Defilade Target Engagement program.
 FY 2009: Congressional Adds: \$2.8 million for Acid Alkaline Direct Methanol Fuel Technology, \$1 million for Individual Airburst Weapon System, \$4.4 million for High Explosive Air Burst (HEAB) 25mm Ammunition (to be reprogrammed to PEO AMMO) and -\$3 million for Unjustified Program Growth
 FY 2010: increase in support of the Ground Soldier System program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603827A - Soldier Systems - Advanced Development			PROJECT \$49	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S49 GROUND SOLDIER SYSTEM (GSS)		25420	56993	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Ground Soldier System (GSS) is an integrated dismounted Soldier situational awareness (SA) system for use during combat operations. The system provides unparalleled situational awareness and understanding to the dismounted Soldier allowing for faster and more accurate decisions in the tactical fight. This translates into Soldiers being at the right place, at the right time, with the right equipment making them more effective and more lethal in the execution of their combat mission. The Increment I of the GSS program will focus on the development of the SA system, improved navigation, and reduced fratricide through the visualization of friendly forces, with an integrated Ground Soldier Ensemble (GSE). Increment II will integrate Unified Battle Command and additional capabilities.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY09-FY10: Developmental engineering, competitive prototyping with three contractors, manufacturing, and systems engineering, assessment, competitive contractor testing (with three contractors) and program management support for Ground Soldier Ensemble (GSE)		23354	40765
FY09-FY11: Governmental Test and Evaluation Activities.		1442	16228
FY09: Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/SBTR)		624	
Total		25420	56993

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA 3, R8050000, Ground Soldier System			1809	Continuing	Continuing

Comment:

C. Acquisition Strategy The GSE acquisition concept, which supports Office of the Secretary of Defense (OSD) guidance on competition and prototyping, will take the GSE program from MS A through a Technology Development (TD) Phase to a MS C in a manner which will allow the maximum affordable competition. MS A Decision occurred February 19, 2009, enabling multiple contracts (up to three) to be awarded for the TD Phase. TD Phase will consist of two parts: Part 1 - prototyping, Part 2 - integration/refinement. During Part 1 of TD, three contractors will design, fabricate, integrate Government Furnished Property and test their systems during contractor and government testing to prove compliance with performance requirements. During Part 2 of TD, the contractors' systems will undergo formal ATEC Developmental Testing (DT) to demonstrate the ability to achieve technical requirements and a Limited User Test (LUT) to demonstrate the ability to achieve operational requirements. Technology maturity and programmatic risk will be assessed at the end of the TD phase. Depending on these results, GSE will proceed directly to MS C or to MS B if the technology/integration requires further maturation.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Advanced Component Development and Prototypes

0603827A - Soldier Systems - Advanced Development

S49

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603827A - Soldier Systems - Advanced Development							S49		
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
Develop, Integrate and Prototype GSE	CPFF	General Dynamics C4 Systems, Inc, Scottsdale, AZ				5997	3Q	6379	1-4Q		12376	
Develop, Integrate and Prototype GSE	CPFF	Raytheon Company, McKinney, TX				6479	3Q	6772	1-4Q		13251	
Develop, Integrate and Prototype GSE	CPFF	Rockwell Collins, Inc, Cedar Rapids, IA				6345	3Q	6792	1-4Q		13137	
Subtotal:						18821		19943			38764	
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 Ground Soldier support	OGA, MIPR	Various				1746	3Q	10417	1-4Q		12163	
Subtotal:						1746		10417			12163	
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
Various Testing Organizations	OGA, MIPR	ATEC, TTC/YPG/DTC/EPT/A RL-SLAD, etc.				1442	1-4Q	16228	1-4Q		17670	
Subtotal:						1442		16228			17670	
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		
4 - Advanced Component Development and Prototypes			0603827A - Soldier Systems - Advanced Development							S49		
	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
PM Soldier Warrior oversight and integration of GSS program	In-House/Task Order	PM Soldier Warrior, Ft. Belvoir, VA				2787	1-4Q	10405	1-4Q		13192	
SBIR/SBTRR						624	1Q				624	
Subtotal:						3411		10405			13816	
Project Total Cost:						25420		56993			82413	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603827A - Soldier Systems - Advanced Development

PROJECT
S49

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) Milestone A Decision Increment I					▲ ₁ Milestone A Increment I																											
Prototyping/Refinement Increment I													Prototyping/Refinement Increment I																			
Developmental Test (DT) Increment I																	DT Increment I															
Limited User Test (LUT) Increment I																	LUT Increment I															
(2) Milestone C Decision Increment I																	▲ ₂ Milestone C Increment I															
Low Rate Initial Production (LRIP) Increment I													LRIP Increment I																			
Independent Operational Test and Evaluation (IOTE) Increment I																	IOTE Increment I															
(3) Full Rate Production (FRP) Increment I																	FRP Increment I				▲ ₃											
Development Increment II																					Development Increment II											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603827A - Soldier Systems - Advanced Development						S49	
<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>	
Milestone A Decision Increment I		2Q							
Prototyping/Refinement Increment I		3Q - 4Q	1Q - 4Q						
Developmental Test (DT) Increment I			3Q						
Limited User Test (LUT) Increment I			4Q						
Milestone C Decision Increment I				2Q					
Low Rate Initial Production (LRIP) Increment I				2Q - 4Q	1Q - 2Q				
Independent Operational Test and Evaluation (IOTE) Increment I				4Q	1Q - 2Q				
Full Rate Production (FRP) Increment I					2Q				
Development Increment II					3Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603827A - Soldier Systems - Advanced Development			PROJECT S51	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
S51 AIRCREW INTEGRATED SYS AD	2577	1	138	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This project supports advanced component development and prototyping of critical soldier support systems with improved aviator safety, survivability, and human performance that amplify the warfighting effectiveness, and facilitates full-spectrum dominance of the Army aircraft including the AH-64 Apache/Longbow, CH-47 Chinook, UH/HH-60 Blackhawk, and Light Utility Helicopter. These programs include Air Soldier System and equipment which are unique and necessary for the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield. The Air Warrior and Air Soldier programs provide the aircrew with a system approach to noise protection, three-dimensional audio and external audio capability, crash and post-crash survivability, concealment and environmental protection, ballistic protection, night vision and heads-up display, directed energy eye protection and flame/heat protection. Improvements integrating new technologies into the Air Warrior system will continue to enhance and maximize aircrew mission performance, comfort, aircrew station interface, safety, and survivability. These funds also resource improved laser protection against emerging new threat systems and product improvement of existing helmets to improve performance and increased commonality. Maximum advantage will be taken of simulation to reduce program technical risk through early user evaluation and to reduce program design and test cost and schedules. Air Warrior and Air Soldier System Advanced Development were completed with FY 2008 RDTE Project S51 funding, except for a small amount of PM Administration costs resourced in RDTE Project S51 Advanced Development funding during FY 2009 through FY 2010 to enhance the transition of these programs from Advanced Development to Engineering Development.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Concept exploration of pilot situational awareness and cognitive decision aiding tools completed during FY 2008.	884		
Explore technology to upgrade environmental control and waste management systems completed during FY 2008.	434		
Concept exploration of helmet technologies and helmet mounted devices completed during FY 2008.	1093		
Continue advanced component development of Air Warrior and Air Soldier technology improvements and advanced development effort transition to engineering development.	166	1	138
Total	2577	1	138

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE, A PE 0604601A PROJ S61-EMD	10422	14638	10513	Continuing	Continuing
Aircraft Procurement, Army SSN AZ3110 - ACIS	54222	48149	77525	Continuing	Continuing

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603827A - Soldier Systems - Advanced Development

PROJECT

S51

C. Acquisition Strategy Technologies developed under the Air Soldier System program integrate capabilities including a fully compliant Modular Integrated Helmet and Display System (MIHDS), Chemical, Biological (CB) waste disposal system and upgrades to Air Warrior block 2 components as emerging technologies become available. The MIHDS helmet will provide a day heads up display, nuclear flash protection, external audio, don in flight CB protection and Agile laser eye protection. This development effort was accomplished through a combination of contractor and governmental agencies managed within the Air Warrior Product Manager's Office and this Advanced Development effort was completed during FY 2008. Continued effort in FY 2009 and beyond provides for continued Air Warrior Product Manager's Office analysis and evaluation of emerging aircrew safety, survivability, and human performance improvement technologies for possible application to Army aviator requirements. These programs are planned to transition into Engineering Development as the Advanced Development effort is completed.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603827A - Soldier Systems - Advanced Development			PROJECT S53	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S53 CLOTHING AND EQUIPMENT	13619	6549	7047	Continuing	Continuing

A. Mission Description and Budget Item Justification: Funding supports the project development and state-of-the-art technology to improve tactical and non-tactical clothing and individual equipment to enhance the survivability, mobility, comfort, and sustainment of the individual Soldier. The current database position reflects a \$3 million Congressional reduction in this project. The reduction should have been taken in project S49.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Individual Soldier Ballistic Protection: (FY08-09) Initiated efforts to integrate (mold) new fiber technologies into the Advanced Combat Helmet (ACH) to enhance protection against high speed ballistic blunt trauma and non-ballistic impact (crash) protection. Initiated efforts to leverage and incorporate laser eye protection technology advancements into ballistic goggles and spectacles and assessed capability improvements. Continued product improvement of Interceptor Body Armor (IBA) in support of fielding and executed incremental capability improvements related to technology maturity and operational feedback. Leverage advanced ballistic materials to increase Soldier survivability while decreasing weight, cube and cost. Integrate and enhance the capabilities of Soldier Personal Protective Equipment (PPE) capabilities (head, face, eyes, torso, extremity and feet) capabilities providing head-to-toe protection from current and emerging ballistic/blast threats. Conduct test and evaluation of prototype ballistic ensembles. Develop commonality at the component and subsystem levels to provide a modular layered/integrated ballistic protection system and conduct Soldier Protection Demonstration (VII) of plate carrier systems. (FY10-11) Test and evaluate modular, tailorable hard and soft armor solutions for Combat Vehicle Crewman (CVC). Develop Army standards for concealable body armor. Continue to evaluate and improve Soldier PPE including extremity protection from emerging ballistic/blast threats. Conduct extensive ballistic, compression, impact, accelerated aging, delamination, ceramic, backing composite, integrity and durability testing on next generation helmet systems. Establish testing protocol to build the correlation between testing and trauma on all protective items. Continue to assess helmet sensor accelerometer technologies to improve accuracy (transfer function) and reliability of data capture, storage and distribution.	8405	2857	3890
Soldier Uniforms and Clothing: (FY08-09) Conduct system integration and formal developmental Testing/Operational Testing (DT/OT) of preproduction and production representative systems leveraging advancements in materials, nanotechnology, fabrication techniques, moisture management, fire resistance, antimicrobial treatments, insect protection, extreme environmental protection and advancements in chemical/biological protection to increase the capabilities and durability of tactical and non-tactical clothing such as the Fire Resistant Environmental Ensemble (FREE) and Army Combat Shirt (ACS) and all Fire Resistant (FR) uniforms. Prove out commonality across as broad a spectrum of users as possible to provide a modular integrated uniform/clothing system from skin out and head-to-toe. (FY10-11) Investigate new technologies and fabrics relevant to FR, FREE improvements, Army Combat Pants, and FR Fuel Handlers Coveralls (FHC). Investigate new technologies to improve soldier survivability and mobility and dye and print technologies to improve uniform camouflage in visible to Short-Wave Infrared (SWIR) range. Research new material technologies and the combining of technologies for Generation (GEN) IV Extended Cold Weather Clothing System (ECWCS). Investigate a variety of combat boot improvements. Complete final mountain combat boot evaluation.	1160	1047	1978
Individual Equipment: (FY08-09) Conduct system integration and formal DT/OT of preproduction and production representative systems	3415	2180	979

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT	
4 - Advanced Component Development and Prototypes	0603827A - Soldier Systems - Advanced Development			S53	
utilizing advancements in technology for load bearing equipment, hydration technologies including water filtration and NBC hydration, and other mission essential and/or mission specific equipment for Soldiers. Prove out as much commonality as feasible across a broad spectrum of user and mission scenarios. Purchase prototypes and conduct user assessment to advance the technology for navigational aid. (FY10-11) Army Test and Evaluation Command (ATEC) evaluation of water purification (Block III) - refill in a field environment. Conduct Limited User Evaluation (LUE) on improved Soldier Knee & Elbow Protection System (SKEPS). Investigate new technologies and concepts for improved Modular Sleep System (MSS).					
Soldier Cooling: (FY08-09) Evaluated advanced lightweight, low powered cooling systems for use with Nuclear, Biological, Chemical (NBC) and ballistic protection ensembles. Conduct trade-off analyses and system integration providing Soldiers enhanced ability to conduct missions for longer periods of time in extreme conditions/environments. (FY10-11) Continue to enhance systems by streamlining design for comfort, decreasing weight, and power management.					
Small Business Innovative Research/Small Business Technology Transfer Programs					
Total					
			639	200	200
				265	
			13619	6549	7047

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE, 0604601A.S60, Clothing and Equipment	12463	13809	9753	Continuing	Continuing
OMA, 121017, Central Funding and Fielding	118231	95576	88872	Continuing	Continuing

Comment:

C. Acquisition Strategy Programs will pursue normal transition to Engineering and Manufacturing Development (EMD) and production. This Project will continue to exercise competitively awarded contracts using best value source selection procedures.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603827A - Soldier Systems - Advanced Development							S53		
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
Various	MIPRS	Natick Soldier Center, Natick, MA	5173	2203	1-2Q	1558	1-2Q	1518	1-2Q	Cont.	Cont.	
Various	Contracts	Various	7442	4190	1-3Q	2516	1-3Q	3029	1-3Q	Cont.	Cont.	
Subtotal:			12615	6393		4074		4547		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
Misc Support Costs	MIPR	Various	2957	1341	1-2Q	750	1-2Q	750	1-3Q	Cont.	Cont.	
Subtotal:			2957	1341		750		750		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
Various	MIPRS	Various	2090	1000	1-4Q	1025	1-4Q	1050	1-4Q	Cont.	Cont.	
Subtotal:			2090	1000		1025		1050		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
In-House Support		PM Ft Belvoir, VA	2410	4885	1-4Q	700	1-4Q	700	1-4Q	Cont.	Cont.	
Subtotal:			2410	4885		700		700		Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Advanced Component Development and Prototypes

0603827A - Soldier Systems - Advanced Development

S53

Project Total Cost:

20072

13619

6549

7047

Cont.

Cont.

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603827A - Soldier Systems - Advanced Development																S53															
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
BALLISTIC																																
Integrate advanced materials & components - Spiral I into EMD	[Redacted]																															
(1) Transition Spiral I to EMD																																
Integrate advanced materials & components - Spiral II into EMD	[Redacted]																															
(2) Transition Spiral II to EMD																																
Integrate advanced materials & components - Spiral III into EMD	[Redacted]																															
Integrate hard and soft armor technology enhancements																																
(3) Transition Spiral III to EMD																																
Evaluate non-ceramic systems	[Redacted]																															
Evaluate IOTV soft armor systems	[Redacted]																															
Advanced Eyewear Laser Protection	[Redacted]																															
(4) Transition Advanced Laser Protection to EMD																																
Develop/test 7.62 Helmet Prototype Dev Models	[Redacted]																															
Fabricate/test 7.62 Helmet Engineering Dev Models	[Redacted]																															

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																		
4 - Advanced Component Development and Prototypes	0603827A - Soldier Systems - Advanced Development	S53																																		
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				
(5) Transition 7.62 to EMD									▲ 5																											
Evaluate/test enhanced non-ballistic impact protection																	■																			
(6) Transition improved non-ballistic impact protection to EMD																					▲ 6															
Dev Fully Integrated Head Protection Sys Mat & Components & Spiral I into EMD																					■															
(7) Transition Spiral I to EMD																													▲ 7							
Dev Fully Integrated Head Protection Sys Mat & Components & Spiral II into EMD																													■							
(8) Transition Spiral II to EMD																																	▲ 8			
Develop and Test NDTE Software Upgrades and Transition to EMD - Spiral I																	■																			
(9) Transition Spiral I to EMD																									▲ 9											
Develop and Test NDTE Software Upgrades and Transition to EMD - Spiral II																									■											
(10) Transition Spiral II to EMD																													▲ 10							
Develop and Test NDTE Software Upgrades and Transition to EMD - Spiral III																					■															
(11) Transition Spiral III to EMD																									▲ 11											

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603827A - Soldier Systems - Advanced Development																S53															
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
Evaluate/test NDTE Prototype Dev Model	█																															
(12) Transitioned NDTE to EMD					▲ ₁₂																											
UNIFORM CLOTHING																																
Fire Resistant Environmental Ensemble (FREE) User Eval	█																															
Fire Resistant Clothing Upgrades					█				█				█				█															
Fire Resistant Cloth Upgrades - Next Generation																	█				█											
ICVC Fabric Upgrades					█				█				█				█															
JSLIST Upgrade																					█				█							
Army Combat Pants (ACP) Prototype Evaluation																																
Spiral I	█																															
Spiral II					█																											
Spiral III									█																							
Army Combat Pants Upgrade									█				█				█				█											
Pulse & Respiration Shirt Prototype																	█				█											
Army Combat Shirt Improvements Evaluation																																

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603827A - Soldier Systems - Advanced Development																S53															
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
Spiral I																																
Spiral II																																
Army Mountaineering Boot User Evaluation																																
ACB Improvements																																
GEN IV ECWCS Material Concept																																
INDIVIDUAL EQUIPMENT																																
Soldier Knee & Elbow Protection System (SKEPS)																																
(13) Filtration trans to EMD																																
NBC Hydration Development and Testing																																
ATEC Evaluation - Block III Water Purification and Refill in Field																																
JC3/Chemical Gloves/Hydration Development																																
NAVIGATIONAL AID																																
Advanced Research for Nav Aid Development																																
SOLDIER COOLING																																
Soldier Cooling Evaluation																																

Develop/fabricate Prototype Development Models
0603827A (S53)
CLOTHING AND EQUIPMENT

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT																																														
4 - Advanced Component Development and Prototypes		0603827A - Soldier Systems - Advanced Development																S53																																														
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																																
Test/Evaluate Prototype Development Models																																																																
(14) Transition Soldier Cooling to EMD																																																																
Integrate/spiral in New Soldier Cooling Technologies																																																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603827A - Soldier Systems - Advanced Development						S53	
<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>	
BALLISTIC									
Integrate advanced materials & components - Spiral I into EMD	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 2Q					
Transition Spiral I to EMD				2Q					
Integrate advanced materials & components - Spiral II into EMD				3Q - 4Q	1Q - 4Q	1Q - 2Q			
Transition Spiral II to EMD						2Q			
Integrate advanced materials & components - Spiral III into EMD						3Q - 4Q	1Q - 4Q	1Q - 2Q	
Integrate hard and soft armor technology enhancements									
Transition Spiral III to EMD								2Q	
Evaluate non-ceramic systems		1Q - 4Q	1Q - 4Q	1Q - 4Q					
Evaluate IOTV soft armor systems	1Q - 4Q	1Q - 2Q							
Advanced Eyewear Laser Protection	1Q - 4Q	1Q							
Transition Advanced Laser Protection to EMD		1Q							
Develop/test 7.62 Helmet Prototype Dev Models	1Q - 4Q								
Fabricate/test 7.62 Helmet Engineering Dev Models		1Q - 4Q							
Transition 7.62 to EMD			1Q						
Evaluate/test enhanced non-ballistic impact protection			1Q - 4Q	1Q					
Transition improved non-ballistic impact protection to EMD				1Q					
Dev Fully Integrated Head Protection Sys Mat & Components & Spiral I into EMD				1Q - 4Q	1Q - 4Q	1Q - 2Q			
Transition Spiral I to EMD						2Q			

Dev Fully Integrated Head Protection Sys Mat & Components & Spiral II into EMD						3Q - 4Q	1Q - 4Q	1Q - 2Q
Transition Spiral II to EMD								2Q
Develop and Test NDTE Software Upgrades and Transition to EMD - Spiral I				1Q - 4Q	1Q - 2Q			
Transition Spiral I to EMD					2Q			
Develop and Test NDTE Software Upgrades and Transition to EMD - Spiral II					3Q - 4Q	1Q - 4Q		
Transition Spiral II to EMD						4Q		
Develop and Test NDTE Software Upgrades and Transition to EMD - Spiral III							1Q - 4Q	1Q - 2Q
Transition Spiral III to EMD								2Q
Evaluate/test NDTE Prototype Dev Model	2Q - 4Q	1Q						
Transitioned NDTE to EMD		1Q						
UNIFORM CLOTHING	1Q - 4Q	1Q - 4Q						
Fire Resistant Environmental Ensemble (FREE) User Eval	1Q - 2Q							
Fire Resistant Clothing Upgrades		1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
Fire Resistant Cloth Upgrades - Next Generation						2Q - 4Q	1Q - 4Q	
ICVC Fabric Upgrades		2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
JSLIST Upgrade							1Q - 4Q	
Army Combat Pants (ACP) Prototype Evaluation								
Spiral I	2Q - 3Q							
Spiral II		1Q - 4Q						
Spiral III			1Q - 3Q					
Army Combat Pants Upgrade			2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
Pulse & Respiration Shirt Prototype					3Q - 4Q	1Q - 4Q		
Army Combat Shirt Improvements Evaluation								
Spiral I	2Q - 4Q	1Q - 2Q						
Spiral II		1Q - 4Q	4Q					
Army Mountaineering Boot User Evaluation	2Q - 3Q							
ACB Improvements			2Q - 4Q	1Q - 3Q				

GEN IV ECWCS Material Concept			2Q - 4Q	1Q - 4Q				
INDIVIDUAL EQUIPMENT								
Soldier Knee & Elbow Protection System (SKEPS)			2Q - 4Q	1Q - 3Q				
Filtration trans to EMD	2Q							
NBC Hydration Development and Testing		1Q - 4Q	1Q - 2Q					
ATEC Evaluation - Block III Water Purification and Refill in Field			2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
JC3/Chemical Gloves/Hydration Development						2Q - 4Q	1Q - 3Q	
NAVIGATIONAL AID								
Advanced Research for Nav Aid Development		1Q - 4Q						
SOLDIER COOLING								
Soldier Cooling Evaluation	1Q - 2Q							
Develop/fabricate Prototype Development Models		1Q - 3Q						
Test/Evaluate Prototype Development Models		3Q - 4Q						
Transition Soldier Cooling to EMD			1Q					
Integrate/spiral in New Soldier Cooling Technologies			2Q - 4Q	1Q - 4Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603827A - Soldier Systems - Advanced Development			PROJECT S54	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S54 SMALL ARMS IMPROVEMENT	3483	4266	5054	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Small Arms Improvement program provides funds to study, develop, demonstrate and evaluate emerging technology for integration of systems, subcomponents and prototypes with weapons/ammunition. Small arms include weapons/ammunition ranging up to 40 millimeter. Current and future efforts focus on improvements designed to enhance lethality, target acquisition, fire control, training effectiveness and reliability of weapons/ammunition. Focus areas include studying, developing, demonstrating and evaluating light weight materials, obscurants, reconnaissance, observation, lethal and non-lethal ammunition, and electronics. Benefits include improvements to weapons, fire control equipment, optics, training devices, component mounts, weapon mounts, and ammunition.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Ammunition			
- Design, Development and Engineering	737	350	303
- Prototype Fabrication	1271		600
Testing and Evaluation	570	341	1050
Demonstration			100
Fire Control			
Market Research		20	
- Design, Development	260	160	1475
- Prototype Fabrication	275	220	1166
- Testing and Evaluation	195	250	360
- Demonstration	175	94	
Congressional add for Acid Alkaline Direct Methanol Fuel technology incorrectly placed in project S54, will be moved to 0604827A/S65 for proper execution.			
Small Business Innovative Research/Small Business Technology Transfer Programs.			
Total	3483	4266	5054

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE S63, Program Element 0604601A - Infantry Support Weapons	6801	4830	24504	Continuing	Continuing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603827A - Soldier Systems - Advanced Development

PROJECT

S54

Comment: Congressional increase of \$2.7 million incorrectly placed on S54.

C. Acquisition Strategy Primary strategy is to study, develop, demonstrate and evaluate emerging technologies that will ultimately lead to enhancing/improving the small arms inventory.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603827A - Soldier Systems - Advanced Development							S54		
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
Hardware Development	TBD	Various	2379	1358		530		1633			5900	
Subtotal:			2379	1358		530		1633			5900	
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	MIPR	Various	425	1299		3136		1656			6516	
Subtotal:			425	1299		3136		1656			6516	
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
Developmental Testing	MIPR	Various	1099	626		420		1365			3510	
Subtotal:			1099	626		420		1365			3510	
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	PM SW	325	200		180		400			1105	
Subtotal:			325	200		180		400			1105	
Project Total Cost:			4228	3483		4266		5054			17031	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT																							
4 - Advanced Component Development and Prototypes	0603827A - Soldier Systems - Advanced Development																S54																							
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								
SMALL ARMS WEAPONS ENHANCEMENTS																																								
Weapons Upgrades																																								
AMMUNITION																																								
Micro Mechanical Safe & Arm																																								
Close in Improved Lethality Cartridge																	SDD																							
Small Arms Deployable Sensors Network																	SDD																							
Ammo Upgrades																	SDD																							
COMBAT OPTICS																																								
Optics Upgrades																																								
FIRE CONTROL																																								
Improved GLM Fire Control																																								
Integrated Fire Control Small Arms																	SDD																							
Fire Control Upgrades																	SDD																							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603827A - Soldier Systems - Advanced Development						S54	
<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>	
SMALL ARMS WEAPONS ENHANCEMENTS									
Weapons Upgrades					1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
AMMUNITION	1Q - 4Q								
Micro Mechanical Safe & Arm	1Q - 4Q	1Q - 4Q							
Close in Improved Lethality Cartridge	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Small Arms Deployable Sensors Network			1Q - 4Q						
Ammo Upgrades	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
COMBAT OPTICS									
Optics Upgrades					1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
FIRE CONTROL									
Improved GLM Fire Control	1Q - 4Q	1Q - 4Q							
Integrated Fire Control Small Arms			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q			
Fire Control Upgrades	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603827A - Soldier Systems - Advanced Development			PROJECT S55
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S55 Counter-Defilade Target Engagement	6502	5380	2600		14482

A. Mission Description and Budget Item Justification: The XM25, Individual Airburst Weapon System (IAWS) delivers a 25mm programmable high explosive airburst (HEAB) round to explode near or directly on target to significantly increase hit probability to defeat defilade and point area targets out to approximately 600 meters. The IAWS includes an integrated, multifunctional, all environment, full-solution target acquisition/fire control system. Independent analysis expects a 600% increase to down range effectiveness. The technology provides the Soldier a leap-ahead capability to defeat defilade targets while significantly reducing collateral damage without the use of a mortar, artillery, or air-to-surface weapon systems. The IAWS has been identified by the U.S. Army Infantry Center's (USAIC) Joint Capabilities Integration and Development System (JCIDS) analysis as the number one materiel approach to mitigate the Counter Defilade Target Engagement (CDTE) gap (accurate and lethal engagement of defilade at squad level).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Design, Develop and Fabricate	5682	967	2000
Engineering Evaluation and Training Development	820		600
Congressional add for High Explosive Air Burst (HEAB) 25mm Ammunition incorrectly placed in Project S55		4263	
Small Business Innovative Research/Small Business Technology Transfer Programs		150	
Total	6502	5380	2600

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE: PE 0604601A, Project S62			21865		21865
RDTE: PE 0603607A, Project 627	6000				6000

Comment: Milestone A accomplished May 2008. Congressional increase of \$4.38 million incorrectly placed in PE 0603827A S55 FY2009 funding line difference came out and went into the Small Business Innovative Research/Small Business Technology Transfer Programs line.

C. Acquisition Strategy The XM25 IAWS will achieve Milestone B in 2Q FY2010, transitioning to Engineering and Manufacturing Development (EMD) phase. The EMD phase will complete development of the XM25 IAWS and verify training solution for the Milestone C approval in FY 2012. Research and Development acquisition strategy is to use sole source contracting with ATK, Plymouth, MN.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603827A - Soldier Systems - Advanced Development							S55		
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, Develop & Fabricate	Sole Source Cost Plus Fixed Fee	ATK, Minneapolis, MN		6502	2Q	5380	2Q	2600	2Q		14482	
Subtotal:				6502		5380		2600			14482	
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:												
Project Total Cost:				6502		5380		2600			14482	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE
0603827A - Soldier Systems - Advanced Development

PROJECT
S55

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) MS B									▲ 1																															
Design Develop & Fabricate																																								
Development Tests & Evaluation																																								
(2) MS C/Type Classification- Low Rate Initial Production																					▲ 2																			
Production Qualification Test (POT)																																								
Operational Test & Evaluation (OT&E)																																								
Low Rate Initial Production (LRIP)																																								
(3) Type Classification - Standard																													▲ 3											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
4 - Advanced Component Development and Prototypes		0603827A - Soldier Systems - Advanced Development						S55	
<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>	
MS B			2Q						
Design Develop & Fabricate			3Q - 4Q	1Q - 2Q					
Development Tests & Evaluation				3Q - 4Q	1Q - 2Q				
MS C/Type Classification- Low Rate Initial Production					3Q				
Production Qualification Test (PQT)					3Q - 4Q				
Operational Test & Evaluation (OT&E)					4Q	1Q - 2Q			
Low Rate Initial Production (LRIP)					3Q - 4Q	1Q - 4Q	1Q		
Type Classification - Standard							2Q		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
4 - Advanced Component Development and Prototypes		0603850A - Integrated Broadcast Service			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
472	35846	11201	1476	Continuing	Continuing
INTEGRATED BROADCAST SERVICE (MIP)					

A. Mission Description and Budget Item Justification: The Joint Tactical Terminal (JTT) Product Management Office (PMO) supports all Joint services and Special Operations Command (SOCOM). The Integrated Broadcast Service (IBS) is the worldwide Department of Defense (DoD) standard network for transmitting tactical and strategic intelligence and targeting data to all echelons of Joint Service operational users. The JTT PMO's role is to consolidate and replace existing IBS terminal functionality and capability with a common family of Integrated Broadcast Service-Modules (CIBS-M) - both hardware and software - and to expedite execution of the IBS Technical Transition Plan (TTP). The JTT family of systems currently consists of the JTT-Senior, JTT-Briefcase, JTT-IBS and CIBS-M IBS broadcast receiver/transceiver devices. The TTP is a comprehensive refresh effort of the entire IBS network focused on rearchitecting the broadcast from its current multi-broadcast, multi-data format structure, to a single broadcast (Common Interactive Broadcast - CIB) and single data format (Common Message Format - CMF). The JTT/CIBS-M family of systems is a critical component of the TTP as these systems are the only IBS receiver/transceiver devices in the DoD being modernized to support both the new consolidated broadcast architecture and the National Security Agencies (NSA) crypto modernization mandate. The JTT family of system upgrades is imperative/essential to execute the over-the-air broadcast portion of the TTP in the near term to avoid a complete cessation of IBS data flow via the existing over-the-air IBS broadcast networks. The JTT/CIBS-M family of modules will be the official IBS producer, ensuring continued IBS interoperability to a variety of tactical receivers across DoD and the services throughout the TTP implementation period and beyond. This program funds the design, development, test and evaluation of JTT/CIBS-M hardware and software modules, as well as implementing performance enhancements to the family of JTT equipment. This is necessary to ensure crypto modernization compliance and to facilitate migration to a rearchitected CIB and CMF-based IBS broadcast structure. Funds also support JTT/CIBS-M training, equipping and supporting the Warfighter with improved Joint Readiness and Interoperability.

FY10/11 Funds support the development of the Common Interactive Broadcast (CIB) waveform for migration to the IBS Worldwide standard DoD Network and NSA Certification.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
4 - Advanced Component Development and Prototypes	0603850A - Integrated Broadcast Service

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	38213	11238	1500
Current BES/President's Budget (FY 2010)	35846	11201	1476
Total Adjustments	-2367	-37	-24
Congressional Program Reductions		-37	-24
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-2367		
SBIR/STTR Transfer			
Adjustments to Budget Years			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes		PE NUMBER AND TITLE 0603850A - Integrated Broadcast Service			PROJECT 472	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
472 INTEGRATED BROADCAST SERVICE (MIP)	35846	11201	1476	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The Joint Tactical Terminal (JTT) Product Management Office (PMO) supports all Joint services and Special Operations Command (SOCOM). The Integrated Broadcast Service (IBS) is the worldwide Department of Defense (DoD) standard network for transmitting tactical and strategic intelligence and targeting data to all echelons of Joint Service operational users. The JTT PMO's role is to consolidate and replace existing IBS terminal functionality and capability with a common family of Integrated Broadcast Service-Modules (CIBS-M) - both hardware and software - and to expedite execution of the IBS Technical Transition Plan (TTP). The JTT family of systems currently consists of the JTT-Senior, JTT-Briefcase, JTT-IBS and CIBS-M IBS broadcast receiver/transceiver devices. The TTP is a comprehensive refresh effort of the entire IBS network focused on rearchitecting the broadcast from its current multi-broadcast, multi-data format structure, to a single broadcast (Common Interactive Broadcast - CIB) and single data format (Common Message Format - CMF). The JTT/CIBS-M family of systems is a critical component of the TTP as these systems are the only IBS receiver/transceiver devices in the DoD being modernized to support both the new consolidated broadcast architecture and the National Security Agencies (NSA) crypto modernization mandate. The JTT family of system upgrades is imperative/essential to execute the over-the-air broadcast portion of the TTP in the near term to avoid a complete cessation of IBS data flow via the existing over-the-air IBS broadcast networks. The JTT/CIBS-M family of modules will be the official IBS producer, ensuring continued IBS interoperability to a variety of tactical receivers across DoD and the services throughout the TTP implementation period and beyond. This program funds the design, development, test and evaluation of JTT/CIBS-M hardware and software modules, as well as implementing performance enhancements to the family of JTT equipment. This is necessary to ensure crypto modernization compliance and to facilitate migration to a rearchitected CIB and CMF-based IBS broadcast structure. Funds also support JTT/CIBS-M training, equipping and supporting the Warfighter with improved Joint Readiness and Interoperability.

FY10 Funds support the development of the Common Interactive Broadcast (CIB) waveform for migration to the IBS Worldwide standard DoD Network and NSA Certification.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Common Cryptographic Equipment Application	1400		
JTT Senior Technology Refresh		5000	
NSA Certification	450	640	476
JTT IBS CIB Development and Integration	9356	5561	1000
JTT Senior Upgrade Redesign (JTT Sr)	24640		
Total	35846	11201	1476

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
V29600 Other Procurement, Army - JTT/CIBS-M (Tiara),	7480	11343	4939		23762

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

4 - Advanced Component Development and Prototypes

PE NUMBER AND TITLE

0603850A - Integrated Broadcast Service

PROJECT

472

Comment:

C. Acquisition Strategy As the broadcast networks continue to evolve and modify their formats and protocols, the JTT program will support IBS and various existing and future radios and host systems migrating to the CIB/CMF and continue the legacy broadcasts. Funds support the integration, of the Common Interactive Broadcast (CIB) waveform for migration to the IBS Worldwide standard Department of Defense (DoD) Network. Development for JTT-Senior upgrade kit (COMSEC and Single Board Computer (SBC)).

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
4 - Advanced Component Development and Prototypes			0603850A - Integrated Broadcast Service							472		
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
JTT-Senior Upgrade Kit Redesign	CP/FF	Raytheon, Largo, FL		24640	4Q						24640	26000
Common Interactive Broadcast Integration JTT-IBS	CP/FF	DRS, Dayton, OH		9356	1Q	5561	2-3Q	1000	1-2Q		16913	12451
Common Cryptographic Equipment Application	T&M	Raytheon, Largo, FL		1400	1Q						1400	3000
JTT Senior Technology Refresh	MIPR	Raytheon, Largo, FL				5000	2-3Q				5000	8000
NSA Certification	MIPR			450	1-2Q	640	1-2Q	476	1-2Q		1566	2500
Subtotal:				35846		11201		1476			49519	51951
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:												

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes	PE NUMBER AND TITLE 0603850A - Integrated Broadcast Service						PROJECT 472		
Project Total Cost:		35846		11201		1476		49519	51951

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
4 - Advanced Component Development and Prototypes	0603850A - Integrated Broadcast Service																472															
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
CMF Development	[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]			
CIB Development Sr	[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]			
CIB Development IBS	[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]			
SBC NRE Redesign Sr	[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]			
JTT Senior Technology Refresh	[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]			
Common Cryptographic Equipment Application	[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]			
COMSEC Refresh JTT Sr	[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]				[Red]			

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
4 - Advanced Component Development and Prototypes		0603850A - Integrated Broadcast Service						472
<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>
CMF Development	1Q - 2Q							
CIB Development Sr	4Q	1Q - 4Q	1Q - 4Q					
CIB Development IBS	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
SBC NRE Redesign Sr	4Q	1Q - 4Q	1Q - 2Q					
JTT Senior Technology Refresh		3Q - 4Q	1Q - 4Q					
Common Cryptographic Equipment Application	1Q - 4Q	1Q - 2Q						
COMSEC Refresh JTT Sr	1Q - 4Q	1Q - 4Q	1Q - 2Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604201A - AIRCRAFT AVIONICS			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
C97 ACFT AVIONICS	52802	71325	92977	Continuing	Continuing

A. Mission Description and Budget Item Justification: FY 2010 budget request funds the development of Aircraft Avionics systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this PE support research, development, and test efforts in the System Development and Demonstration (SDD) phases of these systems.

Aviation Tactical Communication Systems (ATCS) is an Army Aviation Program to develop, integrate, and test the Alternative Communications (Alt Comms)(ARC-231 and ARC-201D) A-Kit (hardware and software) and the Joint Tactical Radio System (JTRS) hardware onto the CH-47F, AH-64D, and UH-60M modernized aircraft. JTRS is the transformational system that provides Army Aviation interoperability capability for Future Force and Joint Force operations.

A delay in the JTRS Cluster 1 program resulted in a lack of critical communications equipment to support modernized Army Aviation aircraft production line requirements and Alt Comms was initiated to mitigate this issue. Alt Comms provides two ARC-231 and two ARC-201D radios with power amplifiers to meet the minimum interim JTRS requirements for Military Satellite Communications, Single Channel Ground and Airborne Radio System (SINCGARS), HAVEQUICK, Very High Frequency (VHF), Air Traffic Control (ATC), and Land Mobile Radio requirements and funds the integration and test of the radios onto each platform. FY10 funds are required to complete A-Kit development, integration, and system testing for UH-60M and CH-47F.

Alt Comms will be Army Aviation's communication solution until it is supplemented by the JTRS Airborne Maritime Fixed (AMF) Small Airborne (SA) radio set, beginning in FY14. Increment 1 of the AMF SA will provide the Wideband Networking Waveform, Soldier Radio Waveform, and Link-16 required for interoperation with the Future Force. Increment 2 of the AMF SA, planned for FY20, will replace the Alt Comms suite and provide legacy waveforms allowing a single hardware solution. FY10 funds are required to continue JTRS integration onto aviation platforms. JTRS integration efforts planned for FY10 are defining standardized control and data interfaces, continuing development of reusable control software to be provided to JTRS integrators, and beginning integration into the AH-64D using engineering development models.

The Improved Data Modem (IDM) is the common solution for digitizing Army Aviation. It performs as an internet controller and gateway to Tactical Internet (TI) and Fire Support (FS) internet for Army aircraft. With interfaces supporting a six channel transmit/receive terminal, the IDM provides radio connectivity to the ARC-201D/220/231, ARC-186, ARC-164, and the Blue Force Tracker's (BFT) MT-2011 Transceiver. The IDM also provides 1553 and Ethernet portals for rapid data transfer. IDM provides a flexible, software driven digital messaging system that is interoperable with existing Army and Joint forces battlefield operating systems. The IDM provides Situational Awareness and Variable Message Format messages capability to the cockpit. FY10 funds are required to continue development of an Open Systems Architecture (OSA) IDM solution compatible with the AH-64D, CH-47F, and HH/UH-60M. This effort provides the foundation to develop and qualify a new hardware architecture to host IDM and Future Combat System (FCS) Battle Command (BC) and System Of Systems Common Operating Environment (SOSCOE) applications to ensure interoperability on the future digital battlefield.

The Joint Precision Approach and Landing System (JPALS) is a precision approach and landing system providing joint operational capability for U.S. forces assigned to conventional and special operations missions including those operating from fixed base, ship, tactical, and special mission environments under a wide range of meteorological and

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - System Development and Demonstration

0604201A - AIRCRAFT AVIONICS

jamming conditions. The JPALS effort in this project evaluates technical approaches, develops the aircraft avionics equipment for operation with the JPALS sea-based and ground systems, and integrates the avionics equipment into the various Army Aviation platforms. Increment 1 has now been split into Increment 1A (Sea Based development and test) and Increment 1B (aircraft avionics development, integration, and test). The Army's involvement in Increment 1A is to address Army requirements, participate in program management and provide systems engineering, and participate in the Aircraft Integration Guide effort which will provide early coordination and interface requirements between the sea-based system and the air component. FY10 funds are required to continue avionics risk reduction and refine requirements and interfaces between the JPALS Sea-Based system and the air components.

ARC-220 radio improvements are required to increase operational capability and resolve emerging obsolescence issues. Software improvements will provide a quick Automatic Linking Process which will reduce the time for the radio to establish a communication link by more than 50%, improve secure voice reliability, and add automatic position reporting capability. FY10 funds will improve the ARC-220 software and test system changes.

The Aviation Mission Planning System (AMPS) is a mission planning/battle synchronization tool that automates aviation mission planning tasks, including tactical command and control, mission planning, and flight planning. It interfaces with Army Battle Command Systems (ABCS) and associated networks which furnish the aviation commander with continuous situational awareness, allowing the commander to rapidly adjust mission plans. The electronic formats are loaded onto the aircraft platforms, initializing the communication, navigation, situational awareness, and weapons systems on modernized fleet aircraft including the AH-64A Mod, AH-64D, CH-47D/F, Kiowa Warrior (OH-58D), UH-60A/L/M/Q, HH-60L, and Unmanned Aerial Systems (UAS). This effort will allow for the integration of the Joint Mission Planning Software (JMPS) route server and calculation engine components into the AMPS configuration and Aircraft Weapons Electronics (AWE) modifications. FY10 funds are required for software development and testing.

A requirement exists for Apache Block III to be interoperable through the future force network. Funds are included in this project for the integration of the FCS SOSCOE middleware into the Apache Block III. This includes the non-recurring engineering for integration, test, and air worthiness qualification. As part of the Army's migration to a net-centric fighting force, it is necessary for aircraft to access certain critical services that enable seamless access and operation on the future force network. At the tactical level, the FCS SOSCOE provides these services for proper functioning on the FCS Brigade Combat Team network. Examples of services include information assurance, communications services, interoperability services, data store services, and operating system extraction services. FY10 funds are to begin integration of FCS SOSCOE onto the Apache Block III.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604201A - AIRCRAFT AVIONICS
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<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	57420	71562	77630
Current BES/President's Budget (FY 2010)	52802	71325	92977
Total Adjustments	-4618	-237	15347
Congressional Program Reductions		-237	
Congressional Recissions			
Congressional Increases			
Reprogrammings	-3040		
SBIR/STTR Transfer	-1578		
Adjustments to Budget Years			15347

Change Summary Explanation:
 Funding Changes: FY10 JPALS funds realigned to other higher priority requirements (-\$11,379 thousand); JTRS integration (+\$75 thousand); IDM OSA (+\$9,569 thousand); ARC-220 radio improvements (+\$3,288 thousand); AMPS to JMPS transition (+\$2,354 thousand); FCS SOSCOE on Apache Block III (+\$11,440 thousand).

Schedule Changes: The JPALS Increment 1 program was broken into Increment 1A (Sea Based) and Increment 1B (Avionics). The Increment 1A Milestone B was delayed to 4th Quarter FY08 due to scheduling conflicts and extended source selection activities. Milestone B for Increment 1B is planned for the 1st Quarter of FY11. New initiatives for: ARC-220 radio improvements, JMPS component improvements to AMPS, and FCS SOSCOE on Apache Block III.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604201A - AIRCRAFT AVIONICS			PROJECT C97
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
C97 ACFT AVIONICS	52802	71325	92977	Continuing	Continuing

A. Mission Description and Budget Item Justification: FY 2010 budget request funds the development of Aircraft Avionics systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this PE support research, development, and test efforts in the System Development and Demonstration (SDD) phases of these systems.

Aviation Tactical Communication Systems (ATCS) is an Army Aviation Program to develop, integrate, and test the Alternative Communications (Alt Comms)(ARC-231 and ARC-201D) A-Kit (hardware and software) and the Joint Tactical Radio System (JTRS) hardware onto the CH-47F, AH-64D, and UH-60M modernized aircraft. JTRS is the transformational system that provides Army Aviation interoperability capability for Future Force and Joint Force operations.

A delay in the JTRS Cluster 1 program resulted in a lack of critical communications equipment to support modernized Army Aviation aircraft production line requirements and Alt Comms was initiated to mitigate this issue. Alt Comms provides two ARC-231 and two ARC-201D radios with power amplifiers to meet the minimum interim JTRS requirements for Military Satellite Communications, Single Channel Ground and Airborne Radio System (SINCGARS), HAVEQUICK, Very High Frequency (VHF), Air Traffic Control (ATC), and Land Mobile Radio requirements and funds the integration and test of the radios onto each platform. FY10 funds are required to complete A-Kit development, integration, and system testing for UH-60M and CH-47F.

Alt Comms will be Army Aviation's communication solution until it is supplemented by the JTRS Airborne Maritime Fixed (AMF) Small Airborne (SA) radio set, beginning in FY14. Increment 1 of the AMF SA will provide the Wideband Networking Waveform, Soldier Radio Waveform, and Link-16 required for interoperation with the Future Force. Increment 2 of the AMF SA, planned for FY20, will replace the Alt Comms suite and provide legacy waveforms allowing a single hardware solution. FY10 funds are required to continue JTRS integration onto aviation platforms. JTRS integration efforts planned for FY10 are defining standardized control and data interfaces, continuing development of reusable control software to be provided to JTRS integrators, and beginning integration into the AH-64D using engineering development models.

The Improved Data Modem (IDM) is the common solution for digitizing Army Aviation. It performs as an internet controller and gateway to Tactical Internet (TI) and Fire Support (FS) internet for Army aircraft. With interfaces supporting a six channel transmit/receive terminal, the IDM provides radio connectivity to the ARC-201D/220/231, ARC-186, ARC-164, and the Blue Force Tracker's (BFT) MT-2011 Transceiver. The IDM also provides 1553 and Ethernet portals for rapid data transfer. IDM provides a flexible, software driven digital messaging system that is interoperable with existing Army and Joint forces battlefield operating systems. The IDM provides Situational Awareness and Variable Message Format messages capability to the cockpit. FY10 funds are required to continue development of an Open Systems Architecture (OSA) IDM solution compatible with the AH-64D, CH-47F, and HH/UH-60M. This effort provides the foundation to develop and qualify a new hardware architecture to host IDM and Future Combat System (FCS) Battle Command (BC) and System Of Systems Common Operating Environment (SOSCOE) applications to ensure interoperability on the future digital battlefield.

The Joint Precision Approach and Landing System (JPALS) is a precision approach and landing system providing joint operational capability for U.S. forces assigned to conventional and special operations missions including those operating from fixed base, ship, tactical, and special mission environments under a wide range of meteorological and

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BUDGET ACTIVITY

5 - System Development and Demonstration

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0604201A - AIRCRAFT AVIONICS

PROJECT

C97

jamming conditions. The JPALS effort in this project evaluates technical approaches, develops the aircraft avionics equipment for operation with the JPALS sea-based and ground systems, and integrates the avionics equipment into the various Army Aviation platforms. Increment 1 has now been split into Increment 1A (Sea Based development and test) and Increment 1B (aircraft avionics development, integration, and test). The Army's involvement in Increment 1A is to address Army requirements, participate in program management and provide systems engineering, and participate in the Aircraft Integration Guide effort which will provide early coordination and interface requirements between the sea-based system and the air component. FY10 funds are required to continue avionics risk reduction and refine requirements and interfaces between the JPALS Sea-Based system and the air components.

ARC-220 radio improvements are required to increase operational capability and resolve emerging obsolescence issues. Software improvements will provide a quick Automatic Linking Process which will reduce the time for the radio to establish a communication link by more than 50%, improve secure voice reliability, and add automatic position reporting capability. FY10 funds will improve the ARC-220 software and test system changes.

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A requirement exists for Apache Block III to be interoperable through the future force network. Funds are included in this project for the integration of the FCS SOSCOE middleware into the Apache Block III. This includes the non-recurring engineering for integration, test, and air worthiness qualification. As part of the Army's migration to a net-centric fighting force, it is necessary for aircraft to access certain critical services that enable seamless access and operation on the future force network. At the tactical level, the FCS SOSCOE provides these services for proper functioning on the FCS Brigade Combat Team network. Examples of services include information assurance, communications services, interoperability services, data store services, and operating system extraction services. FY10 funds are to begin integration of FCS SOSCOE onto the Apache Block III.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue A-Kit Development, Integration and System Testing of Alt Comms for AH-64D, CH-47F, and UH-60M and integration of JTRS AMF-SA onto aviation platforms (ATCS)	38190	44572	40495
Continue System Engineering, Antenna Support and Logistics Effort (ATCS)	1992	2050	2093
Program Management Support for A-Kit Development (ATCS)	2390	2609	2307
Continue Test and Evaluation Support (ATCS)	2207	2900	1313
Continue development and qualification of an Open Systems Architecture IDM solution that supports FCS SOSCOE and FCS BC (IDM).	2337	3300	9072
Program Management Support (IDM)	191	173	497

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)	May 2009
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604201A - AIRCRAFT AVIONICS	PROJECT C97
Continue to provide system engineering, product support, and programmatic, cost, test, and technical documentation for JPALS development efforts. (JPALS)	628	1307
Continue JPALS Avionics Risk Reduction (JARR) and develop/define requirements and interfaces between the JPALS Sea-Based system and the air components (Air Integration Guides). (JPALS)	4446	11763
Continue JPALS Test and Evaluation planning. (JPALS)		140
Program Management Support (JPALS)	421	543
Develop and test software and hardware improvements to the ARC-220 radio.		3288
JMPS component integration and AWE modification (AMPS)		2354
Begin FCS SOSCOE development and integration onto Apache Block III.		11440
Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Reduction		1968
Total	52802	71325

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Airborne Avionics SSN AA0700	169107	174462	241287	Continuing	Continuing

Comment:

C. Acquisition Strategy This project is comprised of multiple systems:

1) ATCS - Alt Comms is required to meet minimum acceptable near-term communications requirements as defined by the U.S. Army Aviation Center of Excellence (USAACE) to mitigate production line communications equipment gaps for modernized Army aircraft (UH-60M, CH-47F, and AH-64D). The Alt Comms acquisition strategy is to use currently available communications equipment to fill these gaps. However, this equipment must be incorporated onto the modernized aviation platforms through A-Kit development, platform hardware and software development/integration, and platform testing of the Alt Comms suite.

JTRS is a software programmable radio system that enables net-centric communications capabilities. Army Aviation is now aligned with the Airborne Maritime Fixed (AMF) JTRS program and is planning to initiate JTRS Increment 1 fielding on Apache Block III as the lead aircraft. The CH-47F and UH-60M integration of the Increment 1 capabilities will be delayed, with initial fielding on those platforms beyond FY15. Increment 1 of the AMF JTRS program will provide the Wideband Networking Waveform, Soldier Radio Waveform, and LINK-16 required for interoperation with the Future Force. Increment 2, planned for FY20, replaces Alt Comms and will provide all legacy waveforms. These efforts will be accomplished using host platform development contracts, integration labs, and Airworthiness testing and certification.

2) IDM - Develop and qualify a new hardware architecture and integrate IDM OSA applications onto the new hardware. This development effort will be accomplished by a competitive cost-plus-fixed fee contract.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

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BUDGET ACTIVITY

5 - System Development and Demonstration

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3) JPALS - The Navy is the lead service for this joint program. An updated JPALS acquisition strategy separates Increment 1 into two increments (1A and 1B). Increment 1A provides for development, integration, and test of the shipboard system. Increment 1B provides for development, integration, and testing of the aircraft avionics system. The Army activity in the budget years, focused on the aircraft component, is to complete the current risk reduction effort and Technology Development (TD) phase. Army Aviation avionics TD includes a series of JPALS Avionics Risk Reduction (JARR) sole source, cost-plus fixed fee, firm fixed price, and time and materials contracts to reduce technical risk on critical components. Army will also participate in the Aircraft Integration Guide (AIG) effort which is part of the JPALS Increment 1A SDD contract. The output of the JARR and AIG contracts will be used to evaluate potential technical approaches and define the best solution. Based on that evaluation, contracts will be awarded for development, integration, and test of JPALS avionics beginning in FY12. Development will be done through either a Cost-Plus or Fixed Price Incentive contract. Aircraft platform integration and test will be accomplished using host platform contracts beginning with UH-60M.

4) ARC-220 - The ARC-220 box level software improvements will be done through a sole-source cost-plus fixed fee contract with Rockwell Collins.

5) AMPS - The core Portable Flight Planning Software (PFPS) will be improved using components provided by the Joint Mission Planning System (JMPS). Army-specific components and aircraft platform-specific Aircraft Weapons Electronics modules (AWEs) will be upgraded to work with the JMPS components. This contracted effort will be executed through the Army Research and Development Command's (RDECOM) Software Engineering Directorate and coordinated with Air Force Intelligence, Surveillance, and Reconnaissance Innovations Directorate and Unmanned Aerial Systems Task Force (AF/A2U) and the Special Operations Forces Mission Planning Office (SOFMPO) to ensure continued interoperability with other DoD components.

6) FCS Interoperability - OSA interoperability studies were completed in FY08 which provides analysis required to determine the best technical approach to implementing FCS SOSCOE capability onto the Apache Block III. Once the technical approach is selected in FY09, an acquisition strategy will be developed to begin development and integration in mid-FY10.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604201A - AIRCRAFT AVIONICS							C97		
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
Develop A-kits, integrate, and test Alt Comms. Integrate JTRS AMF-SA onto aviation platforms (ATCS)	Various	Boeing, AZ, PA, and CA; Rockwell Collins, Cedar Rapids, IA; Sikorsky, Stratford, CT; Raytheon, IN	142438	38190	1-3Q	44572	1-3Q	40495	1-2Q	Cont.	Cont.	Cont.
Develop and qualify OSA hardware to host IDM and FCS SOSCOE and FCS BC (IDM)	SS/CPFF	ICI, McLean, VA	11883	2337	2Q						14220	
Develop and qualify OSA hardware to host IDM and FCS SOSCOE and FCS BC (IDM)	C/CPFF	TBD				3300	3Q	9072	2Q	Cont.	Cont.	Cont.
JPALS Avionics Risk Reduction and Air Integration Guides (JPALS)	Various	Various	2338	4446	4Q	11763	3Q	17884	1-4Q	Cont.	Cont.	Cont.
ARC-220 operational capability improvements	SS/CPFF	Rockwell Collins, Cedar Rapids, IA						1600	1Q		1600	
FCS SOSCOE development and integration onto Apache Block III	TBD	TBD						11440	2Q	Cont.	Cont.	Cont.
JMPS component integration/AWE modifications (AMPS)	SS/FP	TBD						2354	2Q	Cont.	Cont.	Cont.
Subtotal:			156659	44973		59635		82845		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
System Engineering, Antenna Integration Support and Logistics Efforts (ATCS)	Various	Westar, Quantum, Tecolote, AL; ARINC, CSC, NJ	4970	1992	1-3Q	2050	1-3Q	2093	1-3Q	Cont.	Cont.	Cont.
System Engineering, Logistics, and Technical Support (JPALS)	Various	Various	3589	628	1-3Q	1307	1-3Q	1153	2-3Q	Cont.	Cont.	Cont.

ARMY RDT&E COST ANALYSIS (R3)										May 2009			
BUDGET ACTIVITY				PE NUMBER AND TITLE						PROJECT			
5 - System Development and Demonstration				0604201A - AIRCRAFT AVIONICS						C97			
Subtotal:				8559	2620		3357		3246		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 (ATCS)	MIPR	Various	2878	2207	1-3Q	2900	1-3Q	1313	1-3Q	Cont.	Cont.	Cont.	
Test and Evaluation (JPALS)	MIPR	Various				140	2-3Q	511	2-3Q	Cont.	Cont.	Cont.	
Test and Evaluation (ARC-220)	MIPR	Various						1688	3Q	Cont.	Cont.	Cont.	
Subtotal:			2878	2207		3040		3512		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	
PM Spt (ATCS)	In-House	AMCOM, Redstone Arsenal, AL/PM AME	6170	2390	1-4Q	2609	1-4Q	2307	1-4Q	Cont.	Cont.	Cont.	
PM Spt (IDM)	In-House	AMCOM, Redstone Arsenal, AL/PM AME	1480	191	1-4Q	173	1-4Q	497	1-4Q	Cont.	Cont.	Cont.	
PM Spt (JPALS)	In-House	AMCOM, Redstone Arsenal, AL/PM AME	246	421	1-4Q	543	1-4Q	570	1-4Q	Cont.	Cont.	Cont.	
SBIR/STTR						1968					1968		
Subtotal:			7896	3002		5293		3374		Cont.	Cont.	Cont.	
Project Total Cost:			175992	52802		71325		92977		Cont.	Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604201A - AIRCRAFT AVIONICS

PROJECT
C97

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
Continue Sys Engr, Log, Antenna, Test and Evaluation, and PM Spt (ATCS)	█				█				█																							
Develop A-Kits, Integrate & Test Alt Comms. Integrate JTRS AMF-SA (ATCS)	█				█				█																							
Continue Dev/Qual of OSA HW (IDM)	█				█				█																							
Continue JPALS Avionics Risk Reduction Activities	█				█				█																							
(1) JPALS Sea Based System (Joint Program Office) Milestone B	█				█				█																							
Provide Sys Engr, Log, & Tech Spt (JPALS)	█				█				█																							
Air Integration Guides/SDD (JPALS)	█				█				█																							
ARC-220 Software Development and Testing	█				█				█																							
FCS SOSCOE Integration on Apache Blk III	█				█				█																							
JMPS Component Integration/AWE mods (AMPS)	█				█				█																							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604201A - AIRCRAFT AVIONICS						C97	
<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>	
Continue Sys Engr, Log, Antenna, Test and Evaluation, and PM Spt (ATCS)	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Develop A-Kits, Integrate & Test Alt Comms. Integrate JTRS AMF-SA (ATCS)	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Continue Dev/Qual of OSA HW (IDM)	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Continue JPALS Avionics Risk Reduction Activities	1Q - 4Q	1Q - 4Q	1Q - 4Q						
JPALS Sea Based System (Joint Program Office) Milestone B	4Q								
Provide Sys Engr, Log, & Tech Spt (JPALS)	1Q - 4Q	1Q - 4Q	1Q - 4Q						
Air Integration Guides/SDD (JPALS)	4Q	1Q - 4Q	1Q - 4Q						
ARC-220 Software Development and Testing			1Q - 4Q						
FCS SOSCOE Integration on Apache Blk III			2Q - 4Q						
JMPS Component Integration/AWE mods (AMPS)			2Q - 4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604220A - Armed, Deployable OH-58D			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	176132	135205	65515	Continuing	Continuing
538 KIOWA WARRIOR	11004		61236	Continuing	Continuing
53H ARMED RECONNAISSANCE HELICOPTER (ARH)	165128	135205			
53Z Kiowa Warrior Replacement			4279	Continuing	Continuing

A. Mission Description and Budget Item Justification: An Acquisition Decision Memorandum (ADM) was signed by the Defense Acquisition Executive (DAE) on October 17, 2008 authorizing termination of the existing ARH program. Continuance of effort will be required to fully execute termination of the System Development and Demonstration (SDD) contract

Kiowa Warrior Replacement funding will be reprogrammed when the new project and program element, along with the program change, are established.

Kiowa Warrior funding develops, integrates and tests modifications which will allow the OH-58D to continue to safely serve as the Army's armed reconnaissance aviation capability until replaced/retired.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604220A - Armed, Deployable OH-58D		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	181145	135652	99390
Current BES/President's Budget (FY 2010)	176132	135205	65515
Total Adjustments	-5013	-447	-33875
Congressional Program Reductions		-447	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	55		
SBIR/STTR Transfer	-5068		
Adjustments to Budget Years			-33875

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

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604220A - Armed, Deployable OH-58D			PROJECT 538	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
538 KIOWA WARRIOR	11004		61236	Continuing	Continuing

A. Mission Description and Budget Item Justification: The OH-58D Kiowa Warrior is a two-seat, single-engine, observation, scout/attack helicopter with four main rotor blades. It utilizes a thermal-imaging system and a laser rangefinder/designator in a mast-mounted sight situated above the main rotor system. The aircraft is equipped with a variety of weapon systems including: HELLFIRE, 2.75-inch rockets, and a .50-caliber machine gun. The aircraft operates autonomously at standoff ranges providing armed reconnaissance, command and control, and target acquisition/designation for Apache helicopters and other airborne weapons platforms in day, night, and adverse-weather conditions. The Active Army and the National Guard fly Kiowa Warriors.

Funding develops, integrates and qualifies modifications to support Kiowa Warrior missions until a replacement is fielded. Upgrades to the Kiowa Warrior will extend the useful life of the aircraft and allow it to continue to safely serve as the Army's armed reconnaissance, aviation platform until replaced/retired. The modifications planned will address issues with interoperability, survivability, and sustainability to enhance mission capability

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Development and Integration	7725		44465
Test and Evaluation	2488		8433
Program Management	440		1101
Engineering Support Activities	351		7237
Total	11004		61236

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
AZ22000 - Kiowa Warrior	88843	117050	235103	Continuing	Continuing

Comment: \$35.350 Million has been received to date in FY09; \$2.4 Million for Vehicle Health and Usage Management System (VHUMS) and \$32.950 Million from ARH for Kiowa Warrior Life Support 2020 Development and Integration, Engineering Support Activities, Test and Evaluation and Program Management.

FY 2010 Core funding will develop, integrate, test and provide program management and engineering support for Kiowa Warrior Life Support 2020 initiatives.

C. Acquisition Strategy The Government will serve as the lead Systems Integrator managing multiple contracts.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604220A - Armed, Deployable OH-58D

PROJECT

538

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ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604220A - Armed, Deployable OH-58D							PROJECT 538		
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 and Integration (Core Funding)	Cost Plus Incentive Fee	Various Activities		7725	4Q			44465	1-4Q		52190	
Subtotal:				7725				44465			52190	

Remarks: FY 2010 Core funding will provide both contractor and in-house development and integration efforts for Life Support 2020.

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 (Core Funding)	Various	Various Activities		440	4Q			1101	1-4Q		1541	
Subtotal:				440				1101			1541	

Remarks: FY 2010 Core funding will fund Program Management and contractor support for Life Support 2020.

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 (Core Funding)	MIPR	Various Activities		2488	4Q			8433	1-4Q		10921	
Subtotal:				2488				8433			10921	

Remarks: FY 2010 Core funding will provide Life Support 2020 test and evaluation.

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
Engineering Support Activities (Core Funding)	Various	Various Activities		351	4Q			7237	1-4Q		7588	
Subtotal:				351				7237			7588	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604220A - Armed, Deployable OH-58D

PROJECT

538

Remarks: FY 2010 Core funding will fund engineering support activities for Life Support 2020 development, integration and test activities.

Project Total Cost:

11004

61236

72240

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604220A - Armed, Deployable OH-58D

PROJECT
538

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/Integration Contracts (Core Funding)																																
					DEV																											
Test and Evaluation (Core Funding)																																
									QUAL																							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604220A - Armed, Deployable OH-58D					PROJECT 538	
<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/Integration Contracts (Core Funding)	4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
Test and Evaluation (Core Funding)		4Q	1Q - 4Q	1Q - 4Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604220A - Armed, Deployable OH-58D			PROJECT 53H
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
53H ARMED RECONNAISSANCE HELICOPTER (ARH)	165128	135205			

A. Mission Description and Budget Item Justification: An Acquisition Decision Memorandum (ADM) was signed by the Defense Acquisition Executive (DAE) on October 17, 2008 authorizing termination of the existing Armed Reconnaissance Helicopter (ARH) program. Continuance of effort will be required to fully execute the termination of the System Development and Demonstration (SDD) contract.

Post ARH termination, \$32.950M was reprogrammed in FY09 from the ARH program to the OH-58D Kiowa Warrior program.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Aircraft System Development and Demonstration (SDD)	126616	81418	
SDD Termination		15000	
Kiowa Replacement Development		28000	
Engineering Support Activities	17691	1000	
Test and Evaluation	10323		
Program Management	10498	6000	
Small Business Innovative Research/Small Business Technology Transfer Programs		3787	
Total	165128	135205	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
A04203 ARMED RECONNAISSANCE HELICOPTER	75	240939		3286255	3527269

Comment: An Acquisition Decision Memorandum (ADM) was signed by the Defense Acquisition Executive (DAE) on October 17, 2008 authorizing termination of the existing Armed Reconnaissance Helicopter (ARH) program.

FY09 funding was reprogrammed to procure OH-58D Life Support 2020 modifications and AH-64D ARNG aircraft.

Kiowa Warrior Replacement funding will be reprogrammed when the new project and program element, along with the program change, are established.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604220A - Armed, Deployable OH-58D

PROJECT

53H

C. Acquisition Strategy Not applicable for this item.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604220A - Armed, Deployable OH-58D							53H		
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 and Demonstration	CPIF	Various	303089	126616		88992					518697	
SDD Termination		Various				15000	1-3Q				15000	
Kiowa Replacement Development						28000	1-4Q				28000	
Subtotal:			303089	126616		131992					561697	
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 Activities	Various	Various	18582	17691	1-3Q	1000	1-3Q		1-3Q		37273	
Subtotal:			18582	17691		1000					37273	
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	MIPR	Various Activities	15572	10323	1-3Q						25895	
Subtotal:			15572	10323							25895	
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	Various	ARH Internal Operating Budget, Matrix Support and Support Contracts	18343	10498	1-4Q	2213	1-4Q				31054	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE							PROJECT
5 - System Development and Demonstration	0604220A - Armed, Deployable OH-58D							53H
Subtotal:	18343	10498		2213			31054	
Project Total Cost:	355586	165128		135205			655919	

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604220A - Armed, Deployable OH-58D	53H	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
Armed Reconnaissance Helicopter (ARH)	127310		
Total Termination Liability Funding:	127310		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604220A - Armed, Deployable OH-58D			PROJECT 53Z	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
53Z Kiowa Warrior Replacement			4279	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The mission of the Kiowa Warrior Replacement aircraft is to provide a robust reconnaissance and security capability for the Joint Combined arms air-ground maneuver team. It will be a direct replacement for the aging OH58D Kiowa Warrior fleet.

The aircraft will provide a highly deployable, reconnaissance and security capability that will employ immediately upon arrival into theater. The platform will address the capability gaps of interoperability, survivability, versatility, agility, lethality, and sustainability to ensure interoperability over extended ranges, enhance mission effectiveness throughout the operational environment, and focus on system survivability against threats operating in the contemporary operational environment, while reducing the logistical burden on the tactical unit. The fundamental purpose is to perform reconnaissance and to provide security in combat operations. In doing so, it improves the commander's ability to maneuver and concentrate superior combat power against the enemy at the decisive time and place.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Pre Milestone A support			4279
Total			4279

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
A04203 Armed Reconnaissance Helicopter				3286255	3286255

Comment: Kiowa Warrior Replacement funding supports Analysis of Alternatives (AoA) and program support for milestone documents/reviews.

C. Acquisition Strategy Not applicable for this item.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604220A - Armed, Deployable OH-58D							53Z		
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
Pre-Milestone A support	Various	Various						4279	1-4Q	Cont.	Cont.	
Subtotal:								4279		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
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:												
Project Total Cost:								4279		Cont.	Cont.	


Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604220A - Armed, Deployable OH-58D

PROJECT
53Z

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) Materiel Development Decision (MDD)					 MDD																											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604220A - Armed, Deployable OH-58D					PROJECT 53Z	
<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>
Materiel Development Decision (MDD)		3Q						

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604270A - Electronic Warfare Development			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	53809	36206	266791	Continuing	Continuing
665 A/C SURV EQUIP DEV	3928	4052		Continuing	Continuing
L12 Signals Warfare Development (MIP)	10220	3605	28094	Continuing	Continuing
L13 COUNTER-IEDS			18598		18598
L15 ARAT-TSS	2077	2250	3095	Continuing	Continuing
L16 TROJAN DEVELOPMENT (MIP)	1407	1480	3251	Continuing	Continuing
L20 ATIRCM/CMWS	36177	24819	213753	Continuing	Continuing

A. Mission Description and Budget Item Justification: FY 2010/2011 budget request funds Electronic Warfare Development. This program element (PE) encompasses engineering and manufacturing development for tactical electronic warfare (EW), signals warfare (SW), aircraft survivability equipment (ASE), battlefield deception, rapid software reprogramming and protection of personnel and equipment from hostile artillery. EW encompasses the development of tactical EW equipment and systems mounted in both ground and air vehicles. The systems under this program provides the Army with the capability to degrade or deny hostile forces the effective use of their communications, countermortar/counterbattery radars, surveillance radars, infrared/optical battlefield surveillance systems and electronically fused munitions. Existing Army EW systems must be replaced or upgraded to maintain their capability in the face of threats. This program element satisfies requirements for brigade, division, corps and higher commanders to conduct electronic warfare to meet tactical and Special Electronic Mission Aircraft (SEMA), attack/scout, and assault/cargo mission requirements. The Prophet program provides for the development of multifunction ground based and airborne intelligence and electronic warfare systems. Trojan will complete Proof-of-Principle R&D for specific applications in advanced threat signals processing, prototype software upgrades, high frequency (HF) algorithms for compact antenna array technology (CAAT), search and acquisition capabilities for unattended signal collectors, and new digital intelligence collection, processing and dissemination technology. The Army Reprogramming Analysis Team (ARAT) Project will develop, test and equip an Army-wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604270A - Electronic Warfare Development		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	57169	32325	39720
Current BES/President's Budget (FY 2010)	53809	36206	266791
Total Adjustments	-3360	3881	227071
Congressional Program Reductions		-119	
Congressional Rescissions			
Congressional Increases		4000	18598
Reprogrammings	-1761		
SBIR/STTR Transfer	-1599		
Adjustments to Budget Years			208743

Change Summary Explanation: Funding - FY 2010: Funding increases in support of Signals Warfare Development, ATIRCM/CMWS, and anticipated FY 10 Overseas Contingency Operations supplement request increase.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604270A - Electronic Warfare Development			PROJECT 665	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
665 A/C SURV EQUIP DEV	3928	4052		Continuing	Continuing	

A. Mission Description and Budget Item Justification: The objective of the Aircraft Survivability Equipment (ASE) Development project is to improve radio frequency (RF) ASE for Army aviation. Milestone Decision Authority (MDA) approved phase 1 of a phased/incremental path forward, supported by the user and HQDA.

Phase I upgrades the Processor Line Replaceable Unit (LRU) of the AN/APR-39A(V)1 Radar Signal Detecting Set through modernization and reduced parts count. Along with improved maintainability and reliability, performance will be enhanced via increased processing speed and expanded memory. These improvements will result in faster response time, better dense environment capability and improved parameter measurement. Phase 1 serves to make the currently fielded system viable until affordable improved RF ASE capability can be pursued in Phases 2 and 3. Phase 2 initiates development of an improved digital Radar Warning Receiver (RWR) and Phase 3 adds active Electronic Countermeasures (ECM) for selected aircraft.

FY 11 funding begins the prototyping of the digital Radar Warning Receiver (RWR).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
In-house and program management administration	953	745	
Phase I Product Development (AN/APR-39A(V)1 Upgrade)	2862	2384	
Phase II Product Development (Digital RWR)			
Phase I Flight Test/Range Support/ Test and Evaluation	113	810	
Small Business Innovative Research/Small Business Technology Transfer Programs		113	
Total	3928	4052	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
AZ3511 RFCM	36239	36915	2571	Continuing	Continuing

Comment:

C. Acquisition Strategy The Army Radio Frequency (RF) Aircraft Survivability Equipment (ASE) is managed by Program Director ASE (PD ASE) for integration and installation on Army Aviation platforms. PD ASE proposed a three phased path forward commensurate with user priorities and life cycle management philosophy. Phase 1,

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**May 2009**

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604270A - Electronic Warfare Development

PROJECT

665

approved by MDA, upgrades the currently fielded AN/APR-39A(V)1 Radar Signal Detecting Set which is employed by approximately 3,000 aircraft; awarded sole source via ECP to the existing contractor of the APR-39A. Phase 2 develops an improved digital Radar Warning Receiver for modernized Army platforms by capitalizing on emerging technologies to provide enhanced aircrew situational awareness. Phase 3 will develop and integrate active Electronic Countermeasures jamming capability for select aircraft. Competition will be considered for the future phases.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604270A - Electronic Warfare Development							665		
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
AN/APR-39(V)1 Upgrade	FFP	Northrop Grumman Rolling Meadows, IL	19126	2975	2Q	2497	2-3Q				24598	
Digital Radar Warning Receiver (RWR)	Comp	TBD								103408	105719	
Subtotal:			19126	2975		2497				103408	130317	
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	Multiple	3124	903	2Q	604	2Q			12843	19703	
Contractor Support	C/FFP	Multiple	538			129	2Q			2334	3491	
Subtotal:			3662	903		733				15177	23194	
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
Phase II DT/OT/FOTE			145							23000	23000	
Flight Test/Range Support (Phase I)	MIPR	ATTC, Ft. Rucker, AL	450			600	1-2Q				1050	
Phase I Test and Evaluation	MIPR	TSSQ, Eglin AFB, FL	400			200	1-2Q				600	
Processor Upgrade Evaluation	MIPR	Evaluation Center APG, MD	25			10	1Q				35	
Subtotal:			1020			810				23000	24685	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604270A - Electronic Warfare Development							PROJECT 665		
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	PD ASE	121	50	1-4Q	12	1-4Q			259	442	
Other Development	In-House	PD ASE	7985								7985	
Subtotal:			8106	50		12				259	8427	
Project Total Cost:			31914	3928		4052				141844	186623	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604270A - Electronic Warfare Development

PROJECT
665

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				
Phase 1 Development	Phase 1				Phase 2																															
Phase 1 DT/OT																																				
(1) Phase 1 Milestone C (MS C)																																				
Phase 2 Prototyping					Phase 2																															
Phase 2 Prototyping													Phase 2																							
(2) Phase 2 MS B																					Phase 2															
Phase 2 Development																					Phase 2															
Phase 2 DT																									Phase 2											
(3) Phase 2 LRIP																													Phase 2							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604270A - Electronic Warfare Development						665	
<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>	
Phase 1 Development	1Q								
Phase 1 DT/OT	2Q - 3Q								
Phase 1 Milestone C (MS C)	3Q								
Phase 2 Prototyping		1Q - 4Q							
Phase 2 Prototyping				1Q - 4Q	1Q - 4Q				
Phase 2 MS B						1Q			
Phase 2 Development						1Q - 3Q			
Phase 2 DT						4Q	1Q - 4Q		
Phase 2 LRIP								1Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604270A - Electronic Warfare Development			PROJECT L12	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
L12 Signals Warfare Development (MIP)	10220	3605	28094	Continuing	Continuing

A. Mission Description and Budget Item Justification: Prophet's primary mission is providing 24-hour Situation Development and Information Superiority to the supported maneuver brigade to enable the most effective engagement of enemy forces. Prophet is an integral part of the Army Transformation, providing Near Real Time (NRT) information to the Brigade Commander within his combat decision cycle. It is the tactical commander's sole organic ground-based Signals Intelligence/Electronic Warfare (SIGINT/EW) system for the Division, Brigade Combat Team (BCT), Stryker Brigade Combat Team (SBCT), Armored Cavalry Regiments (ACR) and Battlefield Surveillance Brigade (BfSB). Prophet provides the tactical commander with the next generation SIGINT/EW - radio detection/direction finding and electronic attack capabilities. Prophet stationary and on-the-move direction finding information develops battlespace visualization, Intelligence Preparation of the Battlefield (IPB) and target development for enemy and gray emitters within radio line-of-sight across the brigade area of responsibility. This NRT information when processed provides a key component of the fused intelligence Common Operating Picture (COP). Prophet interfaces via Prophet Control with the maneuver brigade Analysis Control Team - Enclave (ACT-E) and All Source Analysis System (ASAS) Intelligence Fusion System (IFS). Prophet Control is a surrogate for the Distributed Common Ground System-Army (DCGS-A). The ACT-E forwards the gathered information to the division and armored cavalry Analysis and Control Element (ACE) ASAS. Also, Prophet interfaces directly with the National SIGINT Enterprise either via Prophet Control or via Wideband Beyond Line of Sight Satellite Communications. Prophet enables the Brigade Commander to detect signals while the vehicle is moving, a first for a Tactical SIGINT system. Prophet is utilizing an evolutionary acquisition strategy: Electronic Support (ES) Block I (SIGINT), ES 1 (Modern Signals) (Formerly known as Spiral 1 ES), ES 2 (Formerly known as Spiral 2 ES), Electronic Attack (EA) (Formerly known as Spiral 1 EA) and Prophet Enhanced.

FY2010 Base dollars develops P3I/TI for Next Generation Signals to increase the capabilities of the Prophet Enhanced system. It will also develop hardware and software upgrades for the ES 1 and Prophet Enhanced systems.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Prophet Spiral 2 ES System Development and Demonstration (SDD)	5096		
TI/SOI Development	5124	3605	
SIGINT Terminal Guidance			6500
Prophet Enhanced/Spiral 1 ES Software Upgrades - Phase 1			7000
Prophet Enhanced/Spiral 1 ES Software Upgrades - Phase 2			6814
Electronic Warfare Concept Exploration			4870
System Integrated Lab			2910
Total	10220	3605	28094

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604270A - Electronic Warfare Development			PROJECT L12	
<u>B. Other Program Funding Summary</u>		FY 2008	FY 2009	FY 2010	To Compl	Total Cost
BZ7326 Prophet Ground (TIARA)		122353	116249	64498	Continuing	Continuing
PE 305288G Defense Cryptological Program for PROPHET		5023	5839	598	Continuing	Continuing
BZ9751 Special Purpose Systems (TIARA) (Prophet Only)		118335	2416	7021	Continuing	Continuing

Comment:

C. Acquisition Strategy The Prophet Acquisition Strategy is structured to optimize system capability while reducing risk and streamlining business and engineering processes. Block I ES (SIGINT) Engineering and Manufacturing Development (EMD) was a sole source effort which leveraged off existing COTS equipment. Follow-on Block II (EA) and Block III (Modern Signals) RDT&E efforts were combined into a single SDD phase following an evolutionary acquisition process. Block II/III SDD was competitively awarded in 2QFY03. The Block II/III was split into spirals following the 3QFY05 LUT resulting in the Spiral 1 ES, Spiral 1 EA and future Spiral 2 ES/EA. Following a June 2005 MDA review, Spiral 1 EA (formerly Block II) entered LRIP under Cost Plus Incentive Fee contract. The Spiral 1 ES entered production under a Fixed Price Incentive Fee contract. Spiral 2 ES (formerly the Block II/III) continued in the SDD phase 1 (using the existing SDD contract) as a risk reduction phase to address the total Prophet ES requirements. The Prophet Enhanced entered production in 2QFY09 via Full and Open competition. The Prophet Enhanced contract is a Firm-Fixed-Price, Indefinite-Delivery Indefinite-Quantity and will be used to achieve the Prophet ES/EA requirements. The contract has provisions to support R&D and other developmental work.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604270A - Electronic Warfare Development							L12		
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
Prophet Spiral 2 ES SDD Contract	C-CPIF	General Dynamics Decision Systems, Scottsdale, AZ	24549	2065	2Q						26614	
Spiral 1 (SP1) ES Development Platforms	FPI	L3 Linkabit, San Diego, CA	2586	1908	1Q						4494	
DRT 4303 Enhancements	C-CPIF	Raytheon, Tampa, FL		260	4Q						260	
TI/SOI Development	C-CPIF	GD C4 Systems, Scottsdale, AZ		5124		2000					7124	
SIGINT Terminal Guidance		GD C4 Systems, Scottsdale, AZ					3Q	6500	2Q		6500	
Prophet Enhanced /SP1 ES S/W Upg - PH1		GD C4 Systems, Scottsdale, AZ					3Q	5500	2Q		5500	
Prophet Enhanced /SP1 ES S/W Upg - PH2		GD C4 Systems, Scottsdale, AZ						5182	2Q		5182	
Electronic Warfare Concept Exploration	C/T&M	TBD						4870	2Q		4870	
Modeling and Simulation	C/T&M	CACI, Alexandria, VA	1000								1000	
Subtotal:			28135	9357		2000		22052			61544	

Remarks: The contract for Prophet Enhanced Production was awarded 25 Feb 09 with a protest filed 10 Mar 09. The protest was withdrawn on 20 Apr 09. The net impact was to delay awarding and starting work on TI/SOI Development.

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	CECOM, Fort Monmouth NJ	8501	200	1-3Q	200	1-4Q	432	1Q		9333	
Contractor Engineering Support	C/T&M	CACI, Eatontown, NJ	4025								4025	
Contractor Engineering Support	C/T&M	Mitre, Eatontown, NJ	956	663	2Q	1200	2Q	800	2Q		3619	
System Integrated Lab	MIPR	I2WD, Fort Monmouth,						2910	2Q		2910	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
5 - System Development and Demonstration			0604270A - Electronic Warfare Development								L12	
		NJ										
Subtotal:			13482	863		1400		4142			19887	
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
Prepare for and Conduct Spiral 2 ES - Phase I Demo	MIPR	EPG/AEC	10095								10095	
Geo-Location Testing	C/T&M	BAH, Eatontown, NJ	365								365	
Threat T&E	MIPR	TRADOC				100	2Q				100	
Theater Test/Technical Support	MIPR	EPG/AEC						600	1-3Q		600	
Prepare and Conduct DT/FOT&E	MIPR	EPG/AEC						1000	1-3Q		2100	
Subtotal:			10460			100		1600			13260	
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	PM Signals Warfare, Fort Monmouth, NJ	6007			105	1-4Q	300	1-4Q		6412	
Blue Marauder (Congressional Add)	Funds passed thru - not related to Prophet	PM CSIS, Fort Belvoir, VA	4850								4850	
Subtotal:			10857			105		300			11262	
Project Total Cost:			62934	10220		3605		28094			105953	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
5 - System Development and Demonstration		0604270A - Electronic Warfare Development																L12														
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
Fielding - Prophet Enhanced	Fielding - Prophet Enhanced																															
(4) Prophet Control Enhanced (PCE) - Contract Award									PCE Award ▲ ₄																							
Production - PCE									Production - PCE																							
Fielding - PCE									Fielding - PCE																							
Prophet P3I and TI									Prophet P3I and TI																							
(5) FOT&E - P3I									FOT&E - P3I ▲ ₅																							
(6) FOT&E - P3I									FOT&E - P3I ▲ ₆																							
(7) FOT&E - P3I									FOT&E - P3I ▲ ₇																							
(8) FOT&E - P3I									FOT&E - P3I ▲ ₈																							
(9) FOT&E - P3I									FOT&E - P3I ▲ ₉																							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604270A - Electronic Warfare Development

PROJECT
L12

<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>
PROPHET								
Production - ES 1	1Q - 4Q	1Q - 4Q	1Q - 2Q					
ES 1 IOT&E		3Q						
Fielding - ES 1	1Q - 4Q	1Q - 4Q	1Q - 3Q					
ES 1 SOTM - DT 1		1Q - 3Q						
ES 1 SOTM - DT 2		3Q - 4Q						
ES 1 Recap/Reset Contract Award					3Q			
ES 1 Recap/Reset Fielding					4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Low Rate Initial Production - ALT EA 1	3Q - 4Q	1Q - 4Q	1Q					
LUT Alt EA 1	4Q							
SDD - ES 2 - Phase 1	1Q - 4Q							
ES 2 - Phase 1 Demo	3Q - 4Q							
Prophet Enhanced (PE) - Contract Award		2Q						
Production - Prophet Enhanced		2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Prophet Enhanced - Technical Test		4Q	1Q					
Prophet Enhanced FOT&E			2Q					
Fielding - Prophet Enhanced			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Prophet Control Enhanced (PCE) - Contract Award			2Q					
Production - PCE			3Q - 4Q	1Q - 4Q	1Q - 3Q			
Fielding - PCE				3Q - 4Q	1Q - 4Q			
Prophet P3I and TI	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
FOT&E - P3I				1Q				
FOT&E - P3I					1Q			
FOT&E - P3I						1Q		

FOT&E - P3I							1Q	
FOT&E - P3I								1Q

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604270A - Electronic Warfare Development			PROJECT L15	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
L15 ARAT-TSS	2077	2250	3095	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The Army Reprogramming Analysis Team (ARAT) is a Department of the Army directed task to develop an architecture to reprogram, in near real time, mission software embedded in Army Force Protection and Targeting Sensing Systems (TSS) in response to changes in threat signatures and to establish/maintain an ARAT infrastructure with the mission to support the tactical Commander by providing timely/rapid reprogramming and software/information dissemination for any Army supported, joint, allied service, Army Electronic Warfare (EW) Integrated Reprogramming (EWIR) target acquisition, target engagement, or vehicle/aircraft survivability equipment (ASE) supporting Electronic Attack (EA), Electronic Protect (EP) and Electronic Support (ES) systems working within the Electromagnetic Spectrum. Current military operations experience a rapidly evolving threat environment, where IR man-portable air defense systems (MANPADS) seekers, Improvised Explosive Devices (IEDs), radar emitters, radar guided surface-to-air-missiles (SAM), laser guided weapons, land mines, anti-helicopter mines, and sensors are proliferating and evolving. Integrated solutions are required to counter increasingly smart and sophisticated EW threats, where engagement timelines from enemy decision to engage US forces to impact or detonation is measured in seconds.

The ARAT rapid reprogramming architecture supports tactical requirements for airborne (Aircraft Survivability Equipment) and ground-based (CREW) survivability systems both in development and already fielded to deployed forces including the CENTCOM area of responsibility (AOR). ARAT identifies and analyzes threat signature changes which affect TSS; determines the impact of observed signature changes on TSS; creates new mission data software to accommodate the changes; and disseminates and uploads the new software into the affected Warfighter TSS and Force Protection System. The infrastructure is comprised of an AMC CECOM directed Program Office (ARAT-PO) comprising of an Warfighter Support Operations Center (ARAT-OC), reprogramming support cells (ARAT-SC), a software engineering activity (ARAT-SE) as well as a INSCOM, 1st Information Operations Command directed threat analysis activity (ARAT-TA). Each element within the ARAT infrastructure plays a specific role within the programs rapid reprogramming process, which ultimately provides the Warfighters with the capability to install mission and target identification software at the lowest possible level to provide maximum flexibility for tactical commanders. ARAT participates in the operational and developmental test design of Army Force Protection Systems, and supports Service and JCS Reprogramming Exercises in all theaters.

To meet the requirements specified in Army Regulation (AR) 525-15, "Software Reprogramming Policy for Target Sensing Weapons Systems"(U), and Reprogramming FM 3-13.10, and system ORDs, ICDs and CDDs CECOM SEC ARAT-PO is required to maintain and modify the infrastructure that assists the Post Production Software Support (PPSS) ensuring timely and responsive resolution and fielding of mission software to counter emerging threats. ARAT responsibilities include the continuing development of automated threat analysis tools to rapidly detect (flag) threat changes within the intelligence system, tools to minimize the time to develop Mission Data Sets (MDS), tools and technology to minimize the time required to test and validate MDSs, maintenance and improvement of communications conduits to transmit mission software changes to field users, and enhancement of mission software uploading tools. These efforts allow for rapid threat analysis, simulation, software development, distribution and uploading of system software directly to the unit level Warfighter utilizing Force Protection Systems.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>		<u>FY 2010</u>
Platform-specific TSS, Force Protection System (FPS) & survivability equipment support maintain Force Protection System (FPS) &		500		550

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
5 - System Development and Demonstration	0604270A - Electronic Warfare Development	L15		
Target Sensing System (TSS) survey to identify systems requiring support in Army Battlefield Functional Areas (BFAs) with a focus on operational, technical, and intelligence aspects. This survey included technical information about the actual FPS or TSS and their near and far term support requirements for intelligence collection, flagging, and threat analysis, Mission Data Set (MDS) development, communications, and field support. The survey will be kept current to reflect evolving threats to deployed Warfighters worldwide, to include the CENTCOM AOR in support of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF), and to support the development of Mission Data Sets (MDS) for Army Target Sensing Systems (TSS). Building on the work completed in prior FYs, determine individual platform benefits vs. potential costs to upgrade systems on each Aviation platform. Initiate lab testing of potential system updates to verify the additional benefit and identify intelligence collection methodology to integrate the collected intelligence data onto an intelligence network. Develop/implement integrated ASE test environment. Ensure MDS and Aircraft/CM Integration flight test support.				
Infrastructure improvements (general). Research will enhance the ARAT communications architecture to facilitate the transmission of mission software changes to FPS & TSS users, with emphasis on remote user and highly mobile Warfighter connectivity. Ensure rapid reprogramming infrastructure as part of force protection support to the CENTCOM Area of Responsibility (AOR) by defining/implementing ARAT infrastructure improvements. Support the ARAT Warfighter Survivability Software Support Portal (AWSSSP) data distribution/support system and maintain continuity of operations in the event of catastrophe. Architecture allows TSS users to "pull" mission software changes, via a secure web-based capability, as soon as they are released by the developing agency. ARAT-PO will also conduct studies to improve understanding of threat environment to include multi-spectral emissions (e.g. EO, IR, RF, acoustic, etc.) which impact MDS & tool development in support of emerging FPS & TSS systems (e.g. missile warning systems).	271	563		450
MLV development & MDS Reprogramming - Research will develop new Memory Loader/Verifier (MLV) software & hardware or enhance existing systems as necessary to expand for application to new FPS & TSS systems and provide common MLVs in the field. The MLV is a user-friendly program, utilizing Graphical User Interface (GUI) and menu-driven selections, which operates on portable personal computers and issued to aviation and ground maintenance units. Enhanced software will be distributed to all users requiring upgraded software and to users of new TSS down to the tactical unit level, using a proactive data push methodology. End goal is to have MDSs distributed automatically through tactical communications networks and loaded via platform data busses.	151	51		50
Tool Development - MDS/Intel Tools - Develop applications, user interfaces, database structure, output formats, and placeholders for ARAT internal threat analysis and MDS generator tools. Enhance intelligence analytical tools, based on supported systems performance criteria, to rapidly identify and counter emerging threats in all operational theaters that adversely affect the performance of TSS. Create MDS development, testing and validation tools to decrease time from threat change detection to the distribution of MDS products. These tools decrease the response & MDS development timelines, increase the accuracy and fidelity of threat identification, and reduce the engineering involvement/workload associated with the manually intensive analysis and MDS development processes.	1081	780		799
Tool Development - NGES User Tools - Define requirements and develop tools to migrate to a data support infrastructure that employs Next Generation EWIR System (NGES) and which supports the intelligence and reprogramming needs of ARAT-TA (Lackland and Eglin AFBs) and ARAT-SE (Fort Monmouth). System(s) development will include common user interfaces, intelligence inputs, modular threat analysis and MDS generator tools, support for intelligence reporting, RF simulation scenario generation and MDS development. Maximum effort will be made to leverage the use of existing EWIR and emerging NGES tools. Data support infrastructure must be migrated to use NGES when EWIR is potentially decommissioned in the near term since NGES release is behind schedule.	411	180		330
Tool Development RF Flagging Models - Work jointly with the USAF at Lackland AFB, TX to complete the conversion of the current flagging database structure shared by the US Army and USAF flagging models to a more modern database structure. In addition, initiate	163	113		135

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604270A - Electronic Warfare Development	L15	
converting the US Army flagging models over to the new database structure and create new flagging models as required when new systems are fielded. Respond to high priority threat changes adversely affecting TSS performance within threshold.			
Automated Multi-Spectral IED Trigger Intercept: Conduct initial study to develop process for automated multi-spectral IED trigger intercept in order to support future CREW reprogramming requirements. Determine intelligence/information requirements, and develop methodology for data collection to reprogram multi-spectral IED triggers.			50
CREW Reprogramming: Determine intelligence/information requirements, study methods to reduce the effort and time necessary to collect, process, analyze and disseminate information required for CREW reprogramming, develop methodology, and develop tools to reprogram CREW in order to establish government post production, MDS support for the system. Continuing effort is required in out-years to accommodate threat changes and CREW system improvements.			661
Keeping Pace with the Enemy & Technology - Analysis & Studies for EO/IR/UV Multi-Spectral FPS/TSS Support: In order to keep pace with changing threat and technology ARAT requires assets to better understand the impact of the physical battlefield environment on deployed high-technology sensors and their sustainment. This effort will 1) study the intelligence data requirements to support MDS development for Electro-optical/Ultra-violet/Infra-red (EO/UV/IR) and other multi-spectral sensors for aviation & non-aviation force protection systems (FPS) and target sensing systems and to include active protection systems (APS), 2) Develop government organic knowledge and application-base enabling reprogramming of future systems and 3) Perform requirements analysis and concept development for the reprogramming of multi-spectral TSS.			70
Small Business Innovative Research/Small Business Technology Transfer Programs		63	
Total	2077	2250	3095

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

C. Acquisition Strategy The efforts to be funded in this project will require a combination of systems specific and high-tech knowledge. The contractual services portion for the project will be obtained from both the CECOM Software Engineering Center (SEC) competitive omnibus and the RDEC High Tech contracts.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604270A - Electronic Warfare Development							L15		
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
Labor (internal Gov't)	Labor (internal Gov't)	CECOM, Fort Monmouth, NJ & Aberdeen Proving Grounds, MD	2332	851	1-4Q	225	1-4Q	550	1-4Q	Cont.	Cont.	Cont.
Travel	Travel	Various sites	380	100	1-4Q	80	1-4Q	95	1-4Q	Cont.	Cont.	Cont.
Subtotal:			2712	951		305		645		Cont.	Cont.	Cont.
Remarks: Organic Government R&D Development Labor.												
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
Development Support (INSCOM Full Spectrum)	Development Support (INSCOM)	TBD/Various sites	2210	543	1-4Q	513	1-4Q	540	1-2Q	Cont.	Cont.	Cont.
Development Support (CECOM RDEC T&E CECOM SEC Omnibus)	Development Support (CECOM)	TBD/Various sites	5877	583	1-4Q	1432	1-4Q	1910	1-2Q	Cont.	Cont.	Cont.
Subtotal:			8087	1126		1945		2450		Cont.	Cont.	Cont.
Remarks: R&D Development Costs associated with contractual ARAT Team.												
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

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604270A - Electronic Warfare Development						PROJECT L15		
	Type				Date		Date		Date		Contract
Subtotal:											

Project Total Cost:	10799	2077		2250		3095		Cont.	Cont.	Cont.
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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604270A - Electronic Warfare Development			PROJECT L16	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
L16 TROJAN DEVELOPMENT (MIP)	1407	1480	3251	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project is a Tactical Intelligence and Related Activities (TIARA) program. TROJAN RDT&E supports TROJAN Classic XXI (TCXXI) and next generation (NexGEN) future capabilities to fulfill the Army's need for a worldwide, deployable, remobile, intelligence, surveillance and reconnaissance (ISR) support that can dynamically execute operations from sanctuary-based to deployed assets in theater. In support of the Objective Force and Future Combat System (FCS), TCXXI will provide soldiers with a real-world, hands-on, live and near-real time SIGINT training environment sustaining, maintaining and enhancing their military occupational specialty (MOS) proficiencies and specific target expertise. This operational readiness training will fulfill the Army's larger intelligence training requirement via a secure collaborative architecture.

A key factor for success the Objective Force and FCS will be the ability to collect, process and use information about an adversary while preventing similar information from being disclosed. TROJAN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, facsimile, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. This project engineers, tests and evaluates new digital intelligence collection, processing and dissemination technology using the fielded TROJAN systems, prior to the acquisition of those technologies. As part of the Objective C4ISR Architecture, these capabilities will enable processing and dissemination of real-time intelligence data from various sources to form the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative that TROJAN keeps pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threats.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Integrate and test specialized hardware/software for classified pre-processing of new signals of interest utilizing enhanced signal processing algorithms. Resource development of GLAIVE software. Integrated several new NSA SW packages-efforts still ongoing.	201	250	260
Acquire and apply multi-bandwidth compression algorithm technology to maximize TROJAN intelligence network throughput.	111	115	120
Develop prototype QRC Receiver packages for fixed and transportable TROJAN systems to acquire non-standard modulations using DSP and FPGA technologies.	300	310	320
Integrate Direction Finding (DF) and geolocation technologies into TROJAN Remote Receiving Groups (RRGs).	320	325	330
Develop hardware/software interface for TCXXI system and NexGEN to ONEROOF storage system	275	280	300
Develop specialized software enhancements to the TROJAN audio streaming subsystems to improve system redundancy & throughput capacity and system management capabilities; Investigate compression/processing technologies to reduce communications bandwidth requirements for remoted TROJAN systems, including streaming audio technologies.	200	200	220
Development of smaller more mobile SATCOM dishes and receivers. Development of more efficient use of bandwidth, Comm's on the move and man-packable intelligence collection systems.			701

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)	May 2009
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604270A - Electronic Warfare Development	PROJECT L16
Labor for two SW engineers at NSA in support of GLAIVE and other above applicable efforts. Labor for one MAT DEV technologist, one MAT DEV software and one MAT DEV HW engineer.		1000
Total		1407 1480 3251

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
New OFS item					

Comment:

C. Acquisition Strategy This Acquisition Strategy for the TROJAN Classic XXI System supported by TROJAN RDT&E is to adapt and leverage from Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) products. Additionally leverage off of development by DoD and other Government agencies to the greatest extend possible. TROJAN RDT&E is used to fund the development of enhancing these technologies to meet specific user requirements. The funding for production and fielding of these capabilities are funded under TROJAN BA0331.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604270A - Electronic Warfare Development							L16		
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
Develop Prototype QRC Receiver packages	MIPR	CERDEC I2WD Ft Monmouth	3006	251		300		310	1-2Q	Cont.	Cont.	Cont.
Develop DF Capabilities for TROJAN RRG	MIPR	CERDEC I2WD Ft Monmouth	642	320		325	1-2Q	330	1-2Q	Cont.	Cont.	Cont.
Investigate Compression /processing technologies		CERDEC I2WD Ft Monmouth	1038							Cont.	Cont.	Cont.
Develop specialized software enhancements to TROJAN audio streaming	MIPR	CERDEC I2WD Ft Monmouth	1437	200		200	1-2Q	220	1-2Q	Cont.	Cont.	Cont.
Develop hardware/software interface to ONEROOF	MIPR	CERDEC I2WD Ft Monmouth	700	275		280	1-2Q	300	1-2Q	Cont.	Cont.	Cont.
Develop smaller SATCOM, efficient BW and COTM	MIPR	CERDEC I2WD Ft Monmouth					1-2Q	701	1-2Q	Cont.	Cont.	Cont.
Labor for NSA and MAT DEV	MIPR										Cont.	Cont.
Subtotal:			6823	1046		1105		1861		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
Aquire & Apply muliti bandwidth compr Algorithm	MIPR	CECOM I2WD FT Monmouth	900	111	1-2Q	115	1-2Q	120	1-2Q	Cont.	Cont.	Cont.
Labor	MIPR	REX Office-Ft Meade; CECOM Ft Monmouth						1000	1-2Q	Cont.	Cont.	Cont.
Subtotal:			900	111		115		1120		Cont.	Cont.	Cont.
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		
5 - System Development and Demonstration			0604270A - Electronic Warfare Development							L16		
	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
Integrate/test hardware/software	MIPR	CECOM I2WD FT Monmouth	2090	250		260	1-2Q	270	1-2Q	Cont.	Cont.	Cont.
Operational test/eval of enhanced SIG Processing		CECOM I2WD Ft Monmouth	429							Cont.	Cont.	Cont.
Subtotal:			2519	250		260		270		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
Subtotal:												
Project Total Cost:			10242	1407		1480		3251		Cont.	Cont.	Cont.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604270A - Electronic Warfare Development			PROJECT L20	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
L20 ATIRCM/CMWS	36177	24819	213753	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The Advanced Threat Infrared Countermeasure (ATIRCM) is a US Army program to develop, test, and integrate defensive infrared (IR) countermeasures capabilities into existing, current generation host platforms for more effective protection against a greater number of IR- guided missile threats than afforded by currently fielded IR countermeasures. The US Army operational requirements concept for IR countermeasure systems is known as the Suite of Integrated Infrared Countermeasures (SIIRCM). It is an integrated warning and countermeasure system to enhance aircraft survivability against IR guided threat missile systems. The core element of the SIIRCM concept is the Advanced Threat Infrared Countermeasure (ATIRCM), Common Missile Warning System (CMWS) Program. The ATIRCM/CMWS, a subsystem to a host aircraft, is an integrated ultraviolet (UV) missile warning system and an IR Laser Jamming and Improved Countermeasure Dispenser (ICMD).

The CMWS also functions as a stand-alone system with the capability to detect missiles and provide audible and visual warnings to the pilot(s); and, when installed with the ICMD, activates expendables to provide a degree of protection. ATIRCM/CMWS is the key IR survivability system for Future Force Army aircraft.

The A-Kit is the modification hardware, wiring harness, cable, etc., necessary to install and interface the ATIRCM/CMWS Mission Kit to each platform. The A-Kit ensures the Mission Kit is functionally and physically operational with the host platform.

The Mission Kit consists of the ATIRCM/CMWS which performs the missile detection, false alarm rejection, and missile declaration functions of the system. The Electronic Control Unit (ECU) of the CMWS sends a missile alert signal to on-board avionics and other Aircraft Survivability Equipment (ASE) such as expendable flare dispensers. Threat missiles detected by the CMWS are handed over to the ATIRCM.

FY 2010 Core funding supports technology assessment and the Engineering and Manufacturing Development(EMD) Phase for Common Infrared Countermeasure (CIRCM), a separate ATIRCM increment established by an Acquisition Decision Memorandum (ADM) dated April 15, 2009.

FY 2010 OCO-N/A

*Acquisition Decision Memorandum (ADM) to revise Acquisition Strategy was signed on April 15, 2009. Appropriate notifications forthcoming.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Product Development	24732	16222	147554
Management Services	300	995	37730
Test and Evaluation	11145	7602	28469

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)	May 2009
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604270A - Electronic Warfare Development	PROJECT L20
Support Costs		
Total	36177	24819

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
APA, BA 4 AZ3507 ASE Infrared CM	442461	433941	339642		1216044

Comment: continue development of Generation 3 Electronic Control Unit (ECU).

C. Acquisition Strategy Funding supports an acquisition strategy of buying CMWS separately from ATIRCM, while installing A-kits on all modernized aircraft. The current production contract is a fixed-priced, five year, Indefinite Delivery, Indefinite Quantity (IDIQ) contract to BAE Systems. Due to acceleration of CMWS, the acquisition strategy accounts for separate Initial Operational Test and Evaluation (IOT&E's) and Full Rate Production decisions for CMWS and ATIRCM. Based on the Army Overarching Integrated Product Team (OIPT's) recommendation to the AAE in November 2005, the CMWS entered the Full Rate Production and Deployment phase of the acquisition, based upon submittal of the Beyond Low Rate Initial Production (LRIP) Report to Congress on April 25, 2006. The AAE approved the ATIRCM path forward in December 2005 with the incorporation of the Multi-band Laser into the production baseline. Schedule and costs have been updated to include CIRCM, a new ATIRCM increment.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT		
5 - System Development and Demonstration			0604270A - Electronic Warfare Development								L20		
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	
AIRCMM	C/CPIF	Thiokol, Brigham City, UT	1563								1563	1563	
ATIRCM EMD Basic Contract	C/CPAF	BAE Systems, Nashua, NH	23574								23574	23574	
ATIRCM 6 Lot/EMD/RDT	SS/CPFF	BAE Systems, Nashua, NH	199250								199250	195250	
ATIRCM	C/CPFF	Cowley, Chantilly, VA	100								100	100	
Test Facility	C/CPFF	Amherst, Huntsville, AL	1300								1300	1300	
Modeling and Simulation	T & M	CAS, Huntsville, AL	3300	1200	1-2Q	1200	1-2Q	1200	1-2Q	3600	10500	10500	
Gen 3 ECU ETC	C/CPFF	TBD						3000	1-2Q		3000	3000	
Gen 3 Providence Additional Phases	C/CPFF	TBD						6500	1-2Q		6500	6500	
CMWS System Development	C/CPFF	TBD	1839	21732	1-2Q	9222	1-2Q	10308	1-2Q	34796	77897	77897	
CIRCM System Development	TBD	TBD						85446	1-2Q	10318	95764	95764	
CMWS Modernization Efforts (HFI)	C/FFP	BAE Systems, Nashua, NH				4000	1-2Q	40100	1-2Q	107563	151663	151663	
Tier 2/3 Threat Upgrades	Various	BAE Systems, Nashua, NH	675	1800	1-2Q	1800	1-2Q	1000	1-2Q	2815	8090	8090	
Subtotal:			231601	24732		16222		147554		159092	579201	575201	
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 Support	C/FFP	Huntsville, AL	37911								37911	37911	
Matrix Support	MIPR	CECOM, Ft Monmouth NJ; AMCOM, Huntsville AL	3055								3055		
Subtotal:			40966								40966	37911	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604270A - Electronic Warfare Development

PROJECT
L20

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
Technical Support for User Tests	MIPR	Electronic Proving Ground, Ft. Huachuca, AZ	8851	550	1-3Q	400	1-3Q	500	1-4Q	1500	11801	
ATIRCM E2E	MIPR	TSMO, Redstone Ars, AL	303	595	1-3Q	400	1-3Q	400	1-4Q	1200	2898	
ACR	Various	TBD	609							1500	2109	
ATIRCM ACR3	MIPR	WSMR, NM	8	500	1-3Q						508	
ATIRCM IOT&E	MIPR	ATEC and others	10781	500	1-3Q	400	1-3Q				11681	
ATIRCM FOT&E (Follow On Operating Tests)								750	1-3Q	2250	3000	
Test Support	MIPR	ATTC, Ft. Rucker, AL; RTTC, Redstone Ars, AL	102530					500	1-3Q	2200	105230	
Test Support (Instrumentation)	C/FFP	Westar, Huntsville, AL and Neer/Thomsen, Huntsville, AL	4194	500	1-3Q	400	1-3Q				5094	5094
RSA HITL (Hardware in the Loop)	MIPR	Redstone Ars, AL				1000	1-3Q	2000	1-3Q	6000	9000	
Test Support With Live Missile Firing. Data Gathering and System Evaluation	MIPR	PM, Instrumentation Targets and Threat Simulators (ITTS) and 46th Test Wing, Eglin AFB, FL	3989	500	1-3Q	800	1-3Q	1000	1-3Q	2650	8939	
Test Support	C/FFP	BAE Systems, Eglin AFB, FL	2306	500	1-3Q	400	1-3Q	400	1-3Q	1200	4806	4806
SMEOS Phase 2	C/FFP	Various	376			500	1-3Q	500	1-3Q		1376	1376
Simulation And Evaluation	MIPR	TSMO, Redstone Ars, AL	85	600	1-3Q						685	
Missiles and Telemetry Kits for	MIPR	Various	7052	900	1-3Q	702	1-3Q	1000	1-3Q	5100	14754	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
5 - System Development and Demonstration			0604270A - Electronic Warfare Development								L20	
Testing												
Guided Weapons Evaluation Facility (GWEF)	MIPR	46th Test Wing, Eglin AFB, FL	415	500	1-3Q	500	1-3Q	1000	1-3Q	2315	4730	
ATIRCM Test Flights	MIPR	ATTC, Ft. Rucker, AL; RTTC, Redstone Ars, AL		900	1-3Q	200	1-3Q	200	1-3Q	1250	2550	
Tier I Threat Verification Testing/Missile Shots/PM Missile Test	MIPR	Various	2500	800	1-3Q	700	1-3Q	1000	1-3Q	3000	8000	
Tier I Threat Verification Testing/FAR Trolling	MIPR	ATTC, Ft. Rucker, AL; RTTC, Redstone Ars, AL	1082	600	1-3Q	600	1-3Q	600	1-3Q	750	3632	
AWR Testing	MIPR	ATTC, Ft. Rucker, AL; RTTC, Redstone Ars, AL	1200	600	1-3Q	200	1-3Q	200	1-3Q	1800	4000	
Delta A-Kit for UH-60 Testing	MIPR	Various	1000	875	1-3Q						1875	
Captive Seeker Tests	MIPR	TBD		875	1-3Q		1-3Q	500	1-3Q	1000	2375	
Sled Test #2	MIPR	TBD		850	1-3Q					500	1350	
PM Jammer Test	MIPR	TBD								800	800	
RDT (Government)	MIPR	RTTC, Redstone Ars, AL				400	1-3Q	400	1-4Q	1200	2000	
CIRCM Test & Evaluation	Various	TBD						17519	1-3Q		17519	
Subtotal:			147281	11145		7602		28469		36215	230712	11276

Remarks: 0

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
CMWS Project Management	In House Support	PD ASE Huntsville, AL	123198	300	1-4Q	300	1-4Q	300	1-4Q	900	124998	
CIRCM Project Managemnet	In House Support							37430	1-4Q		37430	
SIBR/STTR		PD ASE Huntsville, AL	414			695	1-4Q				1109	2201

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT		
5 - System Development and Demonstration	0604270A - Electronic Warfare Development						L20		
Subtotal:	123612	300		995		37730	900	163537	2201
Project Total Cost:	543460	36177		24819		213753	196207	1014416	626589

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604270A - Electronic Warfare Development

PROJECT
L20

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																																
FY 2010 CORE																																																																
(1) CIRCM Milestone B																																																																
(2) CIRCM Engineering and Manufacturing Development Contract Award																																																																
(3) HFDS Milestone A																																																																
FY 2010 OCO																																																																
(4) Start Fielding to support QRC Assets																																																																
(5) Start of Fielding to support OH-58 Platform																																																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604270A - Electronic Warfare Development						L20	
<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>	
FY 2010 CORE									
CIRCM Milestone B			3Q						
CIRCM Engineering and Manufacturing Development Contract Award			3Q						
HFDS Milestone A			4Q						
FY 2010 OCO		1Q							
Start Fielding to support QRC Assets		4Q							
Start of Fielding to support OH-58 Platform			4Q						

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604270A - Electronic Warfare Development	L20	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
Total Termination Liability Funding:			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604270A - EW DEVELOPMENT			PROJECT L13
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
L13 COUNTER-IEDS			18598		18598

A. Mission Description and Budget Item Justification: FY 2010 Overseas Contingency Operations (OCO) supplement funding will develop, re-configure, and test the systems engineering solutions which integrate hardware and software upgrades to the CREW systems to achieve the key performance parameters within the CREW Capabilities Production Document (CPD).

FY 2010 Overseas Contingency Operations supplement funding will develop, re-configure, and test threat configuration loads; conduct EME analyses on new threats; and support technical working group activities. The RCIED threat is able to rapidly evolve using COTS technology.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY 2010 OCO: Develop, re-configure, and test Counter-IED devices.			18598
Total			18598

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

C. Acquisition Strategy Not applicable for this item.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - System Development and Demonstration	0604321A - ALL SOURCE ANALYSIS SYSTEM				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	7023	16411	13107	Continuing	Continuing
B19 ASAS EVOLUTIONARY ACQ (MIP)	3289	3399			6688
B41 CI/HUMINT Software Products (MIP)	3406	1716	3132	Continuing	Continuing
B44 ASAS TADSS (MIP)	201	204			405
B49 CHIMS TADSS (MIP)	127	128			255
B51 SEQUOYAH - FOREIGN LANGUAGE TRANSLATION SYSTEM		10964	9975	Continuing	Continuing

A. Mission Description and Budget Item Justification: The All Source Analysis System (ASAS) provides US Army commanders at all echelons from battalion to Army Service Component Command (ASCC) with automated support to the management and planning, processing and analysis, and dissemination of intelligence, counterintelligence, and electronic warfare. ASAS provides the means to enhance the commander's timely and comprehensive understanding of enemy deployments, capabilities, and potential courses of action. The system uses standard joint and Army protocols and message formats to interface with selected National, joint, theater, and tactical intelligence, surveillance, and reconnaissance systems and preprocessors and Army, joint, and coalition battle command systems. The ASAS Family of Systems is migrating into the Distributed Common Ground System-Army (DCGS-A) program and Army is using it as the initial platform to provide accelerated DCGS-A capabilities to the force. The initial DCGS-A Enabled ASAS systems began fielding in 4QFY07 and will continue through FY10. This fielding assures the availability of an initial, base DCGS-A capability in Active, National Guard, and Reserve units battalion to ASCC. The DCGS-A enabled ASAS product set currently includes: DCGS-A enabled ASAS-Light (ASAS-L) laptops; DCGS-A enabled ASAS Intelligence Fusion Station (IFS) desktop computers; the shelterized, High Mobility Multipurpose Wheeled Vehicle (HMMWV)-mounted DCGS-A enabled ASAS Analysis Control Team-Enclave (ACT-E); and various DCGS-A enabled ASAS Analysis and Control Element (ACE) configurations at Special Forces Group, Armored Cavalry Regiment, Division, Corps, and Military Intelligence Brigade.

The Counterintelligence and Human Intelligence Automated Reporting and Collection Systems (CHARCS), formally known as Counterintelligence and Human Intelligence (CI/HUMINT) Information Management System (CHIMS), provides the Army automation support for collection and reporting of CI/HUMINT data to satisfy tactical human intelligence requirements. CHARCS functionality provides support for CI/HUMINT information collection, reporting, investigation, interrogation, biometrics, document exploitation operations. The CHARCS architecture extends from the individual Tactical HUMINT team soldier or CI agent to Theater and National intelligence organizations. CHARCS provides systems to all Army Commands (ARCOM), Special Forces, Reserves, National Guard, Stryker Brigade Combat Teams (SBCT), and the training base. CHARCS systems produce and disseminate messages and reports through an array of communications systems including: combat Net Radio, Single Channel Ground and Airborne Radio System (SINGARS), Portable Radio Communications (PRC)-150 Secure Telephone Equipment (STE), Secure Telephone Unit (STU), satellite, and other organic communications devices. The CHARCS systems reports collected intelligence directly to Operational Management Teams (OMT) of U.S. Army intelligence units. Future development efforts will provide CI agents and HUMINT collectors improved collection, reporting, biometrics, language, communications and mission management capabilities.

The Sequoyah - Foreign Language Translation System (S-FLTS) program is to develop, acquire, field and sustain the warfighter with a basic automated foreign speech and text

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - System Development and Demonstration

0604321A - ALL SOURCE ANALYSIS SYSTEM

translation capability into Army systems of record, to augment and compliment limited human linguistic resources. These stand-alone and integrated automated translation capabilities will be applicable across three different system configurations; a hand-held/wearable portable device, a lap-top or mobile device, and in a networked system. The software modules will translate English into a prioritized listing of languages in a prioritized collection of domains. Sequoyah will be interoperable with commercial off the shelf (COTS), or government off the shelf (GOTS) automation equipment to include the Net Enabled Command Capability (NECC), the Distributed Common Ground System (DCGS), Battle Command System (BCS), Soldier as a System (SaaS) Ground (GSS), Mounted (MSS) and Air (AirSS) Soldier Systems, Future Combat System (FCS), DoD Intelligence Information Systems (DoDIIS) and any associated devices and peripherals.

FY 2010/2011 funding continues the development of improved counterintelligence and human intelligence collection and reporting capabilities under CHARCS.

FY 2010/2011 funds development of Foreign Language Translation Systems.

ASAS does not have an RDT&E funding line after FY 2009.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604321A - ALL SOURCE ANALYSIS SYSTEM		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	5384	16465	13017
Current BES/President's Budget (FY 2010)	7023	16411	13107
Total Adjustments	1639	-54	90
Congressional Program Reductions		-54	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	1639		
SBIR/STTR Transfer			
Adjustments to Budget Years			90

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604321A - ALL SOURCE ANALYSIS SYSTEM			PROJECT B19	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
B19 ASAS EVOLUTIONARY ACQ (MIP)	3289	3399			6688

A. Mission Description and Budget Item Justification: The All Source Analysis System (ASAS) provides US Army commanders at all echelons from battalion to Army Service Component Command with automated support to the management and planning, processing and analysis, and dissemination of intelligence, counterintelligence, and electronic warfare. ASAS provides the means to enhance the commander's timely and comprehensive understanding of enemy deployments, capabilities, and potential courses of action. The system uses standard joint and Army protocols and message formats to interface with selected national, joint, theater, and tactical intelligence, surveillance, and reconnaissance systems and preprocessors and Army, joint, and coalition battle command systems. The ASAS product set currently includes: ASAS-Light (L) laptops, ASAS Intelligence Fusion Station (IFS) desktop computers, the shelterized, High Mobility Multipurpose Wheeled Vehicle (HMMWV)-mounted Analysis and Control Team-Enclave (ACT-E), and various Analysis and Control Element (ACE) configurations at Special Forces Group, Armored Cavalry Regiment, Division, Corps, and Military Intelligence Brigade. Through FY09 these ASAS systems will be configured to operate as integral components of the Army's Distributed Common Ground System-Army (DCGS-A) capability.

The Map-Human Terrain (MAP-HT)Toolkit is responsible for addressing the military problem of there existing a limited Joint, Service, or Interagency capability (organization, methods, tools) to effectively collect/consolidate, visualize, and understand open source socio-cultural information to assist Commanders in understanding the human terrain in which they operate. The Map-Human Terrain (MAP-HT)Toolkit will provide a joint common relevant picture of the human terrain for use by tactical elements, operational commanders, theatre planners, interagency organizations, and coalition partners. The Map-Human Terrain (MAP-HT) Toolkit will provide the capability to establish direct cultural support to Brigade Combat Team/Marine Expeditionary Force commander and interagency end-users, provide a means for human terrain data collection and dissemination, and provide human terrain baseline information and toolkit.

FY09 provides funding to reconfigure ASAS systems into an integral component of the Army's DCGS-A capability, resolve high priority Software Anomaly Reports (SAR); conduct interoperability development and test; and comply with DOD mandates and provide Defense Information Infrastructure (DII) Common Operating Environment (COE)/Net Centric Enterprise Services (NCES) maintenance for the ASAS family of systems.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Resolve high priority Software Anomaly Reports (SARs); conduct interoperability development and test; and comply with DOD mandates and provide Defense Information Infrastructure (DII) Common Operating Environment (COE)/Network Centric Enterprise Services (NCES) maintenance for ASAS Light, IFS, Analysis Control Team-Enclave (ACT-E), and Analysis and Control Element (ACE).	3289	3399	
Total	3289	3399	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA (K28801) ASAS Modules	147149	79361	9901		236411

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT

B19

Spares (BS9704)

1744

1066

2810

Comment:

C. Acquisition Strategy The ASAS development program builds upon and expands the capabilities and functionality developed and produced in the ASAS Block I System including conversion to the Common Hardware Systems (CHS) and the Defense Information Infrastructure Common Operating Environment/Network Centric Enterprise Services (DII COE/NCES) and Modernized Integrated Database (MIDB). ASAS is being developed using a block upgrade evolutionary acquisition strategy.

- ASAS Block I: Fielded ruggedized, tactical systems at Active Component (AC) corps, divisions, and the institutional training base.
- ASAS-Extended: Provided the rest of the AC and National Guard enhanced separate brigades with an interim ASAS capability running Block I software on commercial hardware.
- ASAS Block II: Uses common hardware and software, built on the DII COE/NCES standard. Provides open architecture, assured interoperability, and enhanced capability with room for growth. ASAS Light is the key intelligence provider for Army Battle Command Systems (ABCS).
- Army Software Blocking: ASAS Light synchronizes with Software Block 1 and 2 execution phases.

The program emphasizes multiple evolutionary deliveries, with incremental enhancements of ASAS products, integrated test, and continuous evaluation opportunities. ASAS builds upon experience and feedback gained from the fielded ASAS products and real-world operational deployments providing the soldier with improved reliability, supportability, and survivability.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604321A - ALL SOURCE ANALYSIS SYSTEM			PROJECT B41	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
B41 CI/HUMINT Software Products (MIP)	3406	1716	3132	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Counterintelligence and Human Intelligence Automated Reporting and Collection Systems (CHARCS), formally known as Counterintelligence and Human Intelligence (CI/HUMINT) Information Management System (CHIMS), provides the Army automation support for collection and reporting of CI/HUMINT data to satisfy tactical human intelligence requirements. CHARCS provides support for CI/HUMINT information collection, reporting, investigation, interrogation, biometrics, and document exploitation operations. The CHARCS architecture extends from the individual Tactical HUMINT Team soldier or CI agent to Theater and National intelligence organizations through its interoperability with Distributed Common Ground System - Army (DCGS-A). CHARCS provides systems to all Army Commands (ARCOM), Special Forces, Reserves, National Guard, Stryker Brigade Combat Teams (SBCT), and the training base. CHARCS systems produce and disseminate messages and reports through an array of communications systems including: combat Net Radio, Single Channel Ground and Airborne Radio System (SINCGARS), Portable Radio Communications (PRC)-150 Secure Telephone Equipment (STE), Secure Telephone Unit (STU), satellite, and other organic communications devices. The CHARCS systems reports collected intelligence directly to Operational Management Teams (OMT) of U.S. Army intelligence units. Future development efforts will provide CI agents and HUMINT collectors improved collection, reporting, biometrics, language, communications source management and mission management capabilities.

FY 2010 CORE amount of \$3.183 million RDTE funding continues the development of improved counterintelligence and human intelligence collection and reporting capabilities.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue development of improved collection and reporting software functionality.	3156	1591	2936
Continue Test and Security Accreditation efforts.	250	125	196
Total	3406	1716	3132

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA (BK5275) CI HUMINT AUTO REPRTING AND COLL (CHARCS) (MIP)	28543	37521	38717	Continuing	Continuing
RDTE (PE 64321, Project B49) CHIMS TADSS	128	128			256

Comment:

C. Acquisition Strategy The Counterintelligence and Human Intelligence Automated Reporting and Collection Systems (CHARCS) software is being developed under a

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT

B41

competitively awarded Indefinite Delivery/Indefinite Quantity (ID/IQ) type contract. CHARCS software is the common software on two collection and reporting products CI/HUMINT Automated Tool Set (CHATS) and Individual Tactical Reporting Tool (ITRT). CHARCS software will be continuously improved to keep pace with evolving capability requirements. The hardware for both product lines is an integration of commercial off-the-shelf (COTS) and Government off-the-shelf (GOTS) hardware. As COTS technology evolves, new hardware will be introduced to keep CHARCS users at the forefront of intelligence automation.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604321A - ALL SOURCE ANALYSIS SYSTEM							B41		
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
CI/HUMINT Utilities SW Development	IDIQ Competitive	Northrop Grumman, Sierra Vista, AZ	224								224	
CHARCS Software Development	IDIQ Competitive	Northrop Grumman, Sierra Vista, AZ	9324	2968	1Q	1306	1Q	2707	1Q	Cont.	Cont.	
CHATS Development	Competitive T&M	TAMSCO, Eatontown, NJ	1808								1808	
CI/HUMINT SS SW Development	IDIQ Competitive	Northrop Grumman, Sierra Vista, AZ	50								50	
CI & I OPS WS Development	Competitive T&M	TAMSCO, Eatontown, NJ	1566								1566	
ITRT Development	Competitive T&M	TAMSCO, Eatontown, NJ	444								444	
Refugee Management System	CPFF	EWA, Fairmont, WV	3000								3000	
CECOM Transition Support	MIPR	CECOM, SW Engineering Center, Ft. Huachuca AZ	1028								858	
Subtotal:			17444	2968		1306		2707		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 Support	BPA	The Sytex Group Inc./Eatontown, NJ	2367	208	1Q	230	1Q	199	1Q	Cont.	Cont.	
Matrix Support	MIPR	I2WD, CECOM Fort Monmouth, NJ	368								368	
Subtotal:			2735	208		230		199		Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT
B41

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
Developmental Test	MIPR	PRC, McLean, VA	401								401	
Developmental Test	MIPR	JITC, Ft. Huachuca, AZ	374	35	1Q	20	1Q	20	1Q	Cont.	Cont.	
Test Support and Interoperability	MIPR	CTSF, Ft. Hood Tx.	110	55	1Q	30	1Q	30	1Q	Cont.	Cont.	
Operational Test	MIPR	PD CHARCS, Ft. Hood, TX	79			50	2Q	75	1Q		361	
Test Articles	MIPR	ESS, Frederick, MD	120								120	
Security Accreditation Collateral	MIPR	CECOM, Ft. Monmouth, NJ	280	85	2Q	45	2Q	61	2Q	Cont.	Cont.	
SCI PL2	MIPR	NGMS, Sierra Vista, AZ	80								80	
SCI PL2 Certification	MIPR	Air Force Research Lab (AFRL), Rome, NY	160								160	
Safety Release	MIPR	CECOM, Ft. Monmouth, NJ	25	30	1Q	10	1Q	10	1Q	Cont.	Cont.	
Subtotal:			1629	205		155		196		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		ASPO/PD CHARCS, Ft Belvoir, VA	669	5	2Q	5	2Q	10	2Q	Cont.	Cont.	
Facility Support		PD IE, Ft Belvoir, VA	635	20	1Q	20	2Q	20	2Q	Cont.	Cont.	
Subtotal:			1304	25		25		30		Cont.	Cont.	
Project Total Cost:			23112	3406		1716		3132		Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT
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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
CHARCS V1.0.0.1 Development	V1.0.0.1																															
(1) V.1.0.0.1 User Jury/Eval					▲ CONUS User Jury/Eval																											
CHARCS V1.2 Development	V1.0.0.2																															
(2) V1.2 CTSF Testing					▲ CTSF																											
(3) V1.2 OEF User Evaluation					▲ OEF USER EVAL																											
(4) Incr 2 MS B					▲ Incr 2 MS B																											
CHARCS V1.3 Development					V1.0.0.3																											
(5) V1.3 CTSF Testing					▲ CTSF/OT																											
(6) V1.3 User Evaluation					▲ V1.3 FUE																											
CHARCS V2.1 Development									V2.1																							
(7) V2.1 Operational Test													▲ CHARCS V2.1 OT																			
(8) Incr 2 MS C													▲ Incr 2 MS C																			
(9) V2.1 First Unit Equipped													▲ V2.1 FUE																			
V2.1 Upgrades													V2.1 Upgrades																			
CHARCS V2.2 Development																					V2.2											
(10) V2.2 Operational Test																									▲ V2.2 OT							


Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT
B41

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
(11) V2.2 First Unit Equipped																													<div style="text-align: right;">  V2.2 FUE </div>			
V2.2 Upgrades																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT
B41

<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>
CHARCS V1.0.0.1 Development	1Q - 3Q							
V.1.0.0.1 User Jury/Eval	4Q							
CHARCS V1.2 Development	1Q - 4Q	1Q						
V1.2 CTSF Testing		2Q						
V1.2 OEF User Evaluation		2Q						
Incr 2 MS B		4Q						
CHARCS V1.3 Development		1Q - 4Q						
V1.3 CTSF Testing			1Q					
V1.3 User Evaluation			2Q					
CHARCS V2.1 Development			1Q - 4Q	1Q				
V2.1 Operational Test				2Q - 3Q				
Incr 2 MS C				4Q				
V2.1 First Unit Equipped				4Q				
V2.1 Upgrades				2Q - 4Q	1Q - 4Q			
CHARCS V2.2 Development						1Q - 4Q	1Q	
V2.2 Operational Test							2Q	
V2.2 First Unit Equipped							3Q - 4Q	
V2.2 Upgrades							2Q - 4Q	1Q - 4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604321A - ALL SOURCE ANALYSIS SYSTEM			PROJECT B44
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
B44 ASAS TADSS (MIP)	201	204			405

A. Mission Description and Budget Item Justification: The All Source Analysis System (ASAS) is a ground based, mobile, command and control, intelligence processing system that provides tactical commanders a common view of the battlefield and a means for gaining a timely and comprehensive understanding of enemy force deployments, capabilities, and potential courses of action. The system interfaces with selected national, joint, and theater Intelligence assets, adjacent/higher/lower military intelligence preprocessors, Distributed Common Ground System-Army (DCGS-A), Army Battle Command System (ABCS), and organic deployed Intelligence/Electronic Warfare (IEW) teams and assets. The ASAS product set currently includes: ASAS-Light, Intelligence Fusion Station (IFS), Analysis and Control Team-Enclave (ACT-E), Analysis and Control Element (ACE), and the Communications Control Set (CCS). The ASAS system uses standard joint and Army protocols and message formats to interface with forward deployed sensor/teams, intelligence preprocessors and joint/national/Army C3I systems.

FY08 and FY09 funding provides for Training Aids Devices Simulators and Simulations (TADSS).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Training Aids Devices Simulators and Simulations	201	204	
Total	201	204	

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

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604321A - ALL SOURCE ANALYSIS SYSTEM			PROJECT B49	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
B49 CHIMS TADSS (MIP)	127	128			255

A. Mission Description and Budget Item Justification: The Counterintelligence/Human Intelligence (CI/HUMINT) Information Management System (CHIMS) is the Army system responsible for collection, processing, and analysis of CI/HUMINT data to satisfy tactical and strategic human intelligence requirements. CHIMS provides the automation support for Army tactical CI/HUMINT information collection, investigation, interrogation, operations, biometrics, document exploitation, and force protection. The CHIMS architecture extends from the individual agent/collector to National and Theater intelligence organizations. CHIMS is the only HUMINT automation provider for All-Source architectures for the Current to Future Force, including: ASAS Block 1 and 2, Distributed Common Ground System - Army (DCGS-A), PORTICO and Future Combat System (FCS). CHIMS systems are used to produce intelligence products to feed and maintain HUMINT databases and the All Source Correlated Data Base (ASCDB). CHIMS provides systems to both vertical and horizontal customer bases. Vertical (Army) clients include: Special Forces, Long Range Surveillance Units, all MACOMS, Reserves, National Guard, Stryker Brigade Combat Teams (SBCT), and the Intelligence School. Horizontal clients (non-Army) include U.S. Navy, U.S. Marine Corps, Joint Task Force (JTF) GTMO Cuba, and Defense Intelligence Agency (DIA). Organic automation and analysis capabilities are provided to Military Intelligence (MI) units with hand held reporting devices and to CI Staff Officers (CISO) with high capacity workstations and web servers, providing collection management, asset management, transmission, receipt, storage, and export of electronic data and digital imagery information including exploitation of foreign language materials and biometrics. CHIMS can produce and disseminate messages and reports through an array of communications systems including: serial, SINCGARS, STE, STU, satellite, and other organic communications devices. The CHIMS suite of systems incorporates a multi-tiered architecture that reaches from hand held devices to Web servers providing multiple security level access with both brilliant push and smart pull tools to the battlefield commander and National interests. PM CHIMS develops the CI/HUMINT Automated Management Software (CHAMS), a 3rd generation product providing advanced capabilities with a soldier friendly interface. The software provides asynchronous distributed databases that use a client server schema to maintain synchronicity In-Theater. This project provides Training Aids, Devices, Simulators and Simulations (TADSS) for CHIMS.

FY07 continues development of Computer Based Training (CBT) segments of the TADSS requirement.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Develop Training Aids, Devices, Simulators and Simulations for CHIMS systems.	127	128	
Total	127	128	

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE (PE 654321, Proj B41) CI/HUMINT Software Products	1632	1697	2968	Continuing	7437
OPA (BK5275) CHIMS (TIARA)	5125	5942	10285	Continuing	17328

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT

B49

Comment:

C. Acquisition Strategy The CI/HUMINT Automated Management Software (CHAMS), is the common software baseline for all CI/HUMINT Info Management System (CHIMS) product lines. CHAMS will be continuously improved through spiral development to keep pace with evolving capability requirements and TADSS requirements. CHIMS Training Aids, Devices, Simulators and Simulations development will be accomplished under the base CHAMS development contract, a competitively awarded IDIQ type contract.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604321A - ALL SOURCE ANALYSIS SYSTEM			PROJECT B51
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
B51 SEQUOYAH - FOREIGN LANGUAGE TRANSLATION SYSTEM		10964	9975	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Sequoyah - Foreign Language Translation System (S-FLTS) program is to develop a basic automated foreign speech and text translation capability into Army systems of record, to augment and compliment limited human linguistic resources. These stand-alone and integrated automated translation capabilities will be applicable across three different system configurations; a hand-held/wearable portable device, a lap-top or mobile device, and in a networked, web-enabled system. The software modules will translate English into a prioritized listing of languages in a prioritized collection of domains. Sequoyah will be interoperable with Commercial Off The Shelf (COTS), or Government Off The Shelf (GOTS) automation equipment to include the Net Enabled Command Capability (NECC), the Distributed Common Ground System (DCGS), Soldier as a System (SaaS) Ground (GSS), Mounted (MSS) and Air (AirSS) Soldier Systems, Future Combat System (FCS), DoD Intelligence Information Systems (DoDIIS) and any associated devices and peripherals.

FY2010 Core \$9.975 million RDTE develops S-FLT systems.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Support program management activities		1018	1048
Domain development		800	550
Development and integration of Critical Technology Elements (CTE) of Automated Speech Recognition (ASR), Optical Character Recognition (OCR), and Machine Language Translation Translation Engine (MLT TE) prototypes		8661	7277
Test the automated language translation capabilities using established metrics and validation process		485	1100
Total		10964	9975

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
B88605 Sequoyah Foreign Language Translation System		6339	6936		36078
654321.B41 Congressional Earmark for Bi-Directional Iraqi-English Trans Development	1777				1777

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT

B51

C. Acquisition Strategy The S-FLT program acquisition strategy is to conduct a full and open competition to select a developer of language translation capabilities to include the Automated Speech Recognition (ASR) and associated interfaces with the Machine Language Translation (MLT) Translation Engine (TE). Investments will be made to advance MLT technology to reach program Key Performance Parameter goals of an Interagency Language Roundtable (ILR) Level of 1 for speech translation and an ILR Level of 1+ for text translation prototypes, and develop metrics and user testing methodologies to validate prototypes' ILR levels for selection and integration as S-FLT systems. Funds will also be invested to assure network readiness for Foreign Media Monitoring and reachback to language data repository and develop embedded training. Further, improvements will be made in associated technologies that support MLT TE, ASR, and Optical Character Recognition (OCR).

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604321A - ALL SOURCE ANALYSIS SYSTEM							B51		
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
Initial Capability Development Contracts	TBD	TBD				8661	3Q	7277	1Q		15938	
Subtotal:						8661		7277			15938	
Remarks: Initial Capability development delivers S-FLT software with 3 priority speech language modules and 2 priority text language modules in 2 task-oriented domains for use in mobile, portable, and web enabled networked systems of records.												
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 Support	In House	ASPO, Ft. Belvior, VA				1018	2Q	1048	1Q		3145	
Subtotal:						1018		1048			3145	
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
Developmental Test and Evaluation	MIPR	USA Test and Eval Command, Alexandria, VA				485	2Q	1100	2Q	Cont.	Cont.	
Subtotal:						485		1100		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
Domain Development	MIPR	RDD, Fort Hauchuca, AZ				800	2Q	550	1Q	Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604321A - ALL SOURCE ANALYSIS SYSTEM					PROJECT B51		
Subtotal:					800		550	Cont.	Cont.
Project Total Cost:					10964		9975	Cont.	Cont.

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604321A - ALL SOURCE ANALYSIS SYSTEM

PROJECT
B51

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) Initial Increment - MS A					MS A ▲ ₁																											
Initial Increment TD Phase													TD Phase																			
(2) PDR													PDR ▲ ₂																			
(3) Initial Increment- MS B													MS B ▲ ₃																			
Initial Increment EMD																	EMD															
(4) CDR													CDR ▲ ₄																			
(5) LUT																	LUT ▲ ₅															
(6) Initial Increment - MS C																	MS C ▲ ₆															
Initial Increment																					Production											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
5 - System Development and Demonstration		0604321A - ALL SOURCE ANALYSIS SYSTEM						B51
<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>
Initial Increment - MS A		3Q						
Initial Increment TD Phase		3Q - 4Q	1Q - 4Q	1Q - 3Q				
PDR				2Q				
Initial Increment- MS B				3Q				
Initial Increment EMD				3Q - 4Q	1Q - 2Q			
CDR				3Q				
LUT					1Q			
Initial Increment - MS C					2Q			
Initial Increment					2Q - 4Q	1Q - 4Q		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604601A - Infantry Support Weapons			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	59602	58064	74814	Continuing	Continuing
033 ADV CREW SVC WPN	9662	7973	1968		19603
S58 SOLDIER ENHANCEMENT PROGRAM	15252	16814	4890	Continuing	Continuing
S60 CLOTHING & EQUIPMENT	12463	13809	9753	Continuing	Continuing
S61 ACIS ENGINEERING DEVELOPMENT	10422	14638	10513	Continuing	Continuing
S62 Counter-Defilade Target Engagement - SDD			21865	Continuing	Continuing
S63 SMALL ARMS IMPROVEMENT	6801	4830	24504	Continuing	Continuing
S64 COMMON REMOTELY OPERATED WPN SYS (CROWS)	5002				5002
S70 PERSONNEL RECOVERY SUPPORT SYSTEM (PRSS)			1321	Continuing	Continuing

A. Mission Description and Budget Item Justification: FY 2010/2011 budget request funds Infantry Support Weapons. This program element (PE) for System Development and Demonstration (SDD) manages the Soldier as a system, with the goal of increasing Soldiers' combat effectiveness, increasing survivability, and improving the Soldiers' quality of life. It develops and tests prototypes of weapons, clothing, equipment, and other items useful to support the Soldier.

Project 033 (Advanced Crew Served Weapon) develops the Lightweight .50 Caliber Machine Gun which enables the Soldier to effectively suppress and incapacitate exposed personnel targets out to 2,000 meters as well as providing a capability to defeat light armored vehicles out to 1,500 meters. The new .50 Caliber weapon will reduce weight and recoil, and eliminate manual adjustment of headspace and timing.

Project S58 (Soldier Enhancement Program) supports accelerated integration, modernization, and enhancement efforts of lighter, more lethal weapons, and improved soldier items including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigational aids.

Project S59 (Soldier Support Equipment) supports system development and prototyping of critical Soldier support systems and other combat service support equipment that will improve unit sustainability and combat effectiveness.

Project S60 (Clothing and Equipment) supports pre-production development of state-of-the-art individual clothing and equipment to improve the survivability, mobility and sustainment affecting the quality of life of the individual Soldier.

Project S61 (Aircrew Integrated Systems) provides System Development programs with improved aviator safety, survivability, and human performance that amplify the warfighting effectiveness and facilitates full-spectrum dominance of the Army aircraft including the AH-64 Apache/Longbow, CH-47 Chinook, UH/HH-60 Blackhawk, Light

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - System Development and Demonstration

0604601A - Infantry Support Weapons

Utility Helicopter, and Armed Reconnaissance Helicopter.

Project S62 (Counter-Defilade Target Engagement-SDD) the XM25, Individual Airburst Weapon System (IAWS) delivers a 25mm programmable high explosive airburst (HEAB) round to defeat defilade and point areas targets out to approximately 600 meters. Accurate and lethal engagement of defilade targets at the squad level is the number one capability gap identified by the United States Army Infantry Center (USAIC).

Project S63 (Small Arms Improvements) demonstrates engineering development models or integrated commercial items designed to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems and ammunition.

Project S64 (CROWS) funds will be applied to continue enhancing CROWS capability and reliability, and to increase its application across combat and tactical platforms. This capability will enhance the Soldier's survivability, lethality and situational awareness.

Project S70 (Personnel Recovery Support System) provides system research, development and testing of the Personal Recovery Support System/Personnel Recovery Support Equipment supporting operations to report and locate isolated, missing, detained or captured Soldiers.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604601A - Infantry Support Weapons
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<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	63026	42414	46805
Current BES/President's Budget (FY 2010)	59602	58064	74814
Total Adjustments	-3424	15650	28009
Congressional program reductions		-190	
Congressional rescissions			
Congressional increases		15840	
Reprogrammings	-1665		
SBIR/STTR Transfer	-1759		
Adjustments to Budget Years			28009

Change Summary Explanation:

FY 2009: Congressional Adds: \$8.0 million for Lightweight Caliber .50 Machine Gun (LW50MG), \$2.8 million for Next-generation Combat Helmet Development, \$1.6 million for Headborne Energy Analysis and Diagnostic System (HEADS), \$1.44 million for Next Generation High Performance Ballistic Materials and Technologies Providing 7.62mm Small Arms Protection for US Armed Forces Helmets, and \$2 million for Composite Bottles for Survival Egress Air.

FY 2010: Funding increase to support the Counter Defilade Target Engagement System and Personnel Recovery Support System. \$9.9 million for Carbine Competition.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604601A - Infantry Support Weapons			PROJECT 033
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
033 ADV CREW SVC WPN	9662	7973	1968		19603

A. Mission Description and Budget Item Justification: This project develops the Lightweight .50 Caliber Machine Gun which will meet the US Army/SOCOM requirements for a Lightweight Enhanced .50 Caliber Machine Gun. The project will result in the development of a lightweight .50 Caliber machine gun system enabling the Soldier to effectively suppress and incapacitate exposed personnel targets out to 2,000 meters, as well as providing a capability to defeat lightly armored vehicles out to 1,500 meters. Successful development of the Lightweight .50 Caliber Machine Gun will increase the warfighter's lethality while significantly reducing tactical load and supportability costs. The new .50 Caliber weapon will reduce weight and recoil, and eliminate manual adjustment of headspace and timing.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Award Development Contract	1778	6416	
Design Weapon System Hardware	3106	453	
Fabricate Weapon System Hardware	3200	427	
Establish Interface Controls	378	100	
Integrated Logistics Support	700	253	200
Conduct Weapon System Design Test	500	100	1768
Small Business Innovative Research/Small Business Technology Transfer Program		224	
Total	9662	7973	1968

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
WTCV, G12800, Lightweight .50 Caliber Machine Gun			977		977

Comment:

C. Acquisition Strategy In support of the US Army Infantry Center (USAIC) Capability Production Document (CPD) for Enhanced .50 Caliber Machine Gun (M2A1), the Lightweight .50 Caliber Machine Gun will be developed. Milestone C is scheduled fourth quarter FY2010. The development contractor is General Dynamics Armament and Technical Products (GDATP) of Burlington, Vermont. The Acquisition Strategy (Sole Source), Acquisition Plan, and Milestone B were approved by the Milestone Decision Authority (MDA) - PEO Soldier.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604601A - Infantry Support Weapons

PROJECT

033

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ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604601A - Infantry Support Weapons							033		
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	SS /CPFF	Gen Dyn and Arm Tech Prod, Burlington, VT		8203	3Q	6515	3Q				14718	
Subtotal:				8203		6515					14718	
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
Development (Weapon and Mount)	MIPR	RDECOM-RDEC,Picatinny Arsenal,NJ		1259	2Q	1250	2-4Q	518	1Q		3027	
Subtotal:				1259		1250		518			3027	
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
Development Test/Limited User Test (DT/LUT)	MIPR	ATC, Aberdeen PG, MD						1250	2Q		1250	
Subtotal:								1250			1250	
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			180	3-4Q	208	3-4Q	180	1-4Q		568	
Travel	In House			20	3-4Q			20	1-4Q		40	
Subtotal:				200		208		200			608	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604601A - Infantry Support Weapons

PROJECT

033

Project Total Cost:

9662

7973

1968

19603

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
033

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
Award Development Contract																																
Design Weapon System Hardware																																
Fabricate Weapon System Hardware																																
Establish Interface																																
ILS/Training																																
Conduct Weapon System Design Validation Test																																
Award Development Contract																																
Design Weapon System Hardware																																
ILS Training																																
ILS/Training/Log Demo																																
Conduct Initial Operational Test and Evaluation (IOTE)																																
Milestone C/TC LRIP																																
TC Std																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604601A - Infantry Support Weapons						033	
<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>	
Award Development Contract	2Q - 4Q	1Q - 4Q	1Q						
Design Weapon System Hardware	3Q - 4Q	1Q - 2Q							
Fabricate Weapon System Hardware	4Q	1Q							
Establish Interface	2Q - 4Q								
ILS/Training	3Q - 4Q	1Q - 4Q							
Conduct Weapon System Design Validation Test		2Q - 4Q							
Award Development Contract		3Q							
Design Weapon System Hardware			1Q - 4Q						
ILS Training			1Q - 2Q						
ILS/Training/Log Demo			2Q						
Conduct Initial Operational Test and Evaluation (IOTE)				1Q - 4Q					
Milestone C/TC LRIP			4Q						
TC Std				4Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604601A - Infantry Support Weapons			PROJECT S58	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S58 SOLDIER ENHANCEMENT PROGRAM	15252	16814	4890	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program supports accelerated integration, modernization, and enhancement efforts of lighter, more lethal weapons, including improved optics, sights, and fire controls; and improved soldier items including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigational aids. Soldiers are managed in three categories: dismounted Soldiers, combat crews (air and ground), and other Soldiers. Projects are generally completed in three years or less.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08-FY10: Accomplishments and Current Plan include evaluation and procurement of prototypes and/or test for the following Soldier Equipment Items: Enhanced Hearing Protection, Parachute Electronic Activation Device, Parachute Oxygen Mask, and On-The-Move Hydration System, Aircrew Laser Pointer, Ghillie Suit, Concealable Body Armor Demo, Clip on Sniper Night Sight, and Mounted Soldier Body Armor Demonstration and Mountain Boots and Sniper Detection Kit.	3693	7138	1330
FY08-FY10: Accomplishments and Current Plan include evaluation and procurement of prototypes and/or test for the following Soldier Weapons Items: 12 Ga Non-lethal Extended Range Round, 40 MM Extended Range Non-lethal Round, Close Quarters Battle Kit Re-compete, Modular Accessory Shotgun System, XM320 Genade Launcher Module, Advanced Sniper Accessory Kit, the M2 Quick Change Barrel Kit, M68 CCO Re-Competition.	6490	2823	500
FY08-FY10: Continue in-house engineering support services, conduct technical evaluations and program reviews.	1737	2527	1207
FY08-FY10: Initiate market surveys and/or evaluations on new items to commence development and demonstration. New items initiated will continue evaluation/procurement of new prototypes.	1971	1792	1300
FY08-FY10: Current Plan includes evaluation and procurement of prototypes and/or test for Soldier equipment and Lethality programs that will be reviewed in a semi-annual review scheduled for Feb 2009 which could include: Individual Force Protection System, SmartCard Explosives Detection Reader, Engineer Equipment Set: Urban Operations, Platoon, Range Finders with Angle Range Compensation (ARC), Zerust, Combat Cushion, ACCU-SHOT MONOPOD, Bio-Degradable, Self Neutralizing AP Mine, Weapons Magazine Well Cover, Portable Boresight Fixture, Enhanced - Laser Module Unit (E-LMU) Bullet Proof Universal Weapons Mount, Tactical Equipment Lanyard Kit, SandHopper, Flame Resistant Clothing (Socks), Sand Bagger Fixture, V-Pac Vests, In-Ear Noise Reduction Headphones, Improved Helmet Chinstrap, Enhanced Bed Net System, Model 863 M-4 Tactical Padded Hard Case, Hammer Mechanism For Firearms, Canine Dental Enhancement, Improved Bed Net System, Dustoff Modular Weapon Protection System, Tempus IC from RDT Ltd, Load-Ready, (Posture Orange), Michaelosheld, Steiner 10x42 R Binoculars #650, SmartBagger, Expanding Point Munitions for Small Arms, RYNOSKIN Insect Protection Suit, Gloshade, Improved MEDEVAC GTA, M16/M4 Family Weapons ID Band, MVMS (Mobile Surveillance TV-System), Free-Floating Rail System for M4/M16, Designated Marksman Precision Trigger.	1361	2109	553
Small Business Innovative Research/Small Business Technology Transfer Programs		425	
Total	15252	16814	4890

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S58

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA3, MA68000, Soldier Enhancement	20662	9898	4500	Continuing	Continuing
OPA2, BA5300, Soldier Enhancement	10123	7545	5020	Continuing	Continuing
WTCV, GC0076, Small Arms (SEP)	4394	1250	5131	Continuing	Continuing
WTCV, GZ1290, Squad Automatic Wpn (Mods)	44275	22134	7196	Continuing	Continuing
WTCV, GZ2800, M16 Rifle Mods	5905	1181	4285	Continuing	Continuing
WTCV, GB3007, M4 Carbine Mods	17594	16746	17885	Continuing	Continuing
WTCV, GO1500, Sniper Rifle	414	223	229	Continuing	Continuing
WTCV, GC0925, Mods	2772	3763	6310	Continuing	Continuing
PAA, F47500, 7.62mm AP	10000	10000	10000	Continuing	Continuing
PAA, F47600, 5.65mm AP				Continuing	Continuing
OMA, 121017, Central Funding & Fielding	110684	92606	89100	Continuing	Continuing
WTCV, G14904 - M4 Carbine	178341	150610	62738	Continuing	Continuing

Comment:

C. Acquisition Strategy The Soldier Enhancement Program (SEP) focuses on developmental initiatives and integration efforts that lend themselves to accelerated acquisition and fielding in the near term (within three years). New SEP candidates are reviewed and approved semi-annually. SEP items are procured from multiple appropriations, i.e., OMA, OPA, WTCV, and PAA.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604601A - Infantry Support Weapons							S58		
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
Various	Various	TBD	25275	6580	1-3Q	8979	1-3Q	1795	1-3Q		42629	
Subtotal:			25275	6580		8979		1795			42629	
Remarks: Candidates for the Soldier Enhancement Program are received, reviewed, and approved semi-annually. Contractual efforts are focused on procuring prototypes for testing.												
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
Various	Various	TBD	3051	1672	1-4Q	2896	1-4Q	805	1-4Q		9324	
Subtotal:			3051	1672		2896		805			9324	
Remarks: Support costs vary annually depending on the type of items that are being evaluated. Research, Development, and Engineering Centers support to evaluate these items also varies annually depending on the number and types of items.												
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
Various	Various		4842	3965	1-3Q	2543	1-3Q	1590			14449	
Subtotal:			4842	3965		2543		1590			14449	
Remarks: Testing costs vary annually depending on number and type of items being evaluated.												
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	MIPR	PEO Soldier, Ft Belvoir, Va	5936	3035	1-4Q	2396	1-4Q	700	1-4Q		12817	
Subtotal:			5936	3035		2396		700			12817	
Remarks: Costs vary annually depending on number and type of items being evaluated.												

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604601A - Infantry Support Weapons

PROJECT

S58

Project Total Cost:

39104

15252

16814

4890

79219

Schedule Detail (R4a Exhibit)		May 2009
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604601A - Infantry Support Weapons	S58
<u>Schedule Detail:</u> Not applicable for this item.		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604601A - Infantry Support Weapons			PROJECT S60	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S60 CLOTHING & EQUIPMENT	12463	13809	9753	Continuing	Continuing

A. Mission Description and Budget Item Justification: Funding supports pre-production development of state-of-the-art individual clothing and equipment to improve the survivability, mobility, comfort, and sustainment affecting the quality of life of the individual Soldier.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Individual Soldier Ballistic Protection: (FY08-09) Continued efforts to integrate incremental capability improvements into Interceptor Body Armor related to technology maturity & operational feedback. Evaluated & guided industries to product improve commercial ballistic eyewear & selected the most viable for incorporation of standard prescription carriers & protection against lasers. Tested advanced photo chromic technology & dielectric stack technology to ballistic protective lenses. Continue system integration & formal Developmental/Operational Testing (DT/OT) of pre-production and production representative systems applying advanced ballistic materials to increase Soldier survivability while decreasing weight, cube & cost. Assess head protection technologies & integration of technologies to mitigate the effects of high speed ballistic blunt trauma & enhance non-ballistic impact (crash) protection from current & emerging ballistic/blast threats. Prove out commonality at the component & subsystem levels to provide a modular layered/integrated ballistic protection system & spiral in new technologies as they mature. Continue assessment of NDTE Prototype/Engineering Development models performance & reliability baseline. (FY10-11) Improve fit/function, heat management, & reduce weight of Improved Outer Tactical Vest (IOTV). Continue with prove out commonality at the component & subsystem levels & spiral in new technologies as they mature. Procure test equip to conduct data analysis & blast testing on protective items. Continue with NDTE software improvements. Make NDTE production decision & begin initial fielding. Continue to improve ballistic & advanced laser protection on combat eyewear. Improve lens coatings to improve scratch & fog resistance.	6693	9578	5130
Soldier Uniforms and Clothing: (FY08-09) Conduct system integration and formal DT/OT of preproduction and production representative systems leveraging advancements in materials, nanotechnology, fabrication techniques, moisture management, fire resistance, antimicrobial treatments, insect protection, extreme environmental protection and advancements in chemical/biological protection to increase the capabilities and durability of tactical and non-tactical clothing such as the improved Fire Resistant (FR) Army Combat Uniform (ACU) and the Army Aviation Combat Uniform. Prove out commonality across as broad a spectrum of users as possible to provide a modular integrated uniform/clothing system from skin out and head-to-toe. (FY10-11) Conduct Limited User Evaluation (LUE) on FR FHC on a common fabric for Army Aviator Combat Uniform/Improved Combat Vehicle Crewman (A2CU/iCVC) uniforms. Conduct product improvements for clothing bag items. Conduct user evaluations of clothing bag items. Continue current technology regarding Signature Management for the combat uniform including thermal, infrared and visual effects required for the uniform to meet warfighter requirements. Continue to assess improved Fire Resistant (FR) materials and apply to gloves. Publish an updated FR glove Approved Products List (APL). System Engineering Change Proposals (ECPs) and technology insertions to update components and synergy of Generation (GEN) IV Extended Cold Weather Clothing System (ECWCS).	2309	1604	2000
Individual Equipment: (FY08-09) Conduct Engineering Manufacturing Development (EMD) of preproduction and production representative systems utilizing advancements in technology for load bearing equipment, hydration technologies including water filtration	3461	1996	2298

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604601A - Infantry Support Weapons	PROJECT S60	
and Nuclear, Biological, Chemical (NBC) hydration, and other mission essential and/or mission specific equipment for Soldiers. Prove out as much commonality as feasible across a broad spectrum of user and mission scenarios. Purchase equipment and conduct pilot testing for Radio Frequency Identification (RFID). (FY10-11) Continue to refine design and incorporate new material/technology that pertains to form, fit, and function of the Rucksack. Continue to serve the Airborne community by developing equipment that is tailorable to Airborne operations. Purchase navigational aid and advanced ram air parachute test items and conduct developmental testing and operational testing. Continue to certify lights for the Approved Family of Flashlight List (AFFL) Certification Program.			
Soldier Cooling: (FY08-09) Conduct system integration and conduct testing of prototype/engineering development models to demonstrate advanced lightweight, low power cooling systems for use with Nuclear, Biological, and Chemical (NBC) and ballistic protection ensembles in an operationally relevant environment. Prove out courses of action from trade-off analyses and system integration providing Soldiers enhanced ability to conduct missions for longer periods of time in extreme environments. (FY10-11) Integrate enhanced capabilities and conduct initial DT/OT.			
Small Business Innovative Research/Small Business Technology Transfer Programs			
Total			
		12463	9753

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE, 0603827.S53, Clothing and Equipment	13619	6549	7047	Continuing	Continuing
OMA, 121017, Central Funding and Fielding	118231	95576	88872	Continuing	Continuing

Comment:

C. Acquisition Strategy Acquisition strategies will vary in methods: (1) Quick fixes in 12-24 months or less from concept to Type Classification (TC), (2) modernization improvements which require limited RD&E and will be completed in more than 24-48 months from inception to Type Classification, and (3) fully integrated development that will require substantial RDT&E funding and will be completed in four years or more.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604601A - Infantry Support Weapons							S60		
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
Various	MIPRS	Natick Soldier Center, Natick, MA	6100	1539	1-3Q	1070	1-3Q	1200	1-3Q	Cont.	Cont.	
Various	Contracts	Various	8249	5400	1-3Q	6760	1-3Q	4329	1-3Q	Cont.	Cont.	
Subtotal:			14349	6939		7830		5529		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
Misc Support Costs	MIPR	Various	5529	2200	1-2Q	2145	1-2Q	1833	1-2Q	Cont.	Cont.	
Subtotal:			5529	2200		2145		1833		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
Various	MIPRS	Various	3821	1756	1-3Q	2303	1-3Q	1495	1-3Q	Cont.	Cont.	
Subtotal:			3821	1756		2303		1495		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
In-House Support		PM Ft Belvoir, VA	2357	1568	1-4Q	1531	1-4Q	896	1-4Q	Cont.	Cont.	
Subtotal:			2357	1568		1531		896		Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604601A - Infantry Support Weapons

PROJECT

S60

Project Total Cost:	26056	12463		13809		9753		Cont.	Cont.
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S60

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
BALLISTIC																																
Recertify Combat Eyewear Protection (APEL)	█																															
(1) APEL Recertification					▲																											
Recertify Combat Eyewear Protection (APEL)													█																			
(2) APEL Recertification																	▲															
Recertify Combat Eyewear Protection (APEL)																					█											
(3) APEL Recertification																									▲							
Evaluate (Dye) Laser Protective Eyewear					█																											
(4) Transition Laser Protective Eyewear to Production									▲																							
Test Advanced Eyewear Laser Protection (LP)	█																															
(5) Transition Advanced Laser Protection to Production					▲																											
Evaluate/test Extremity Protection System	█																															
Integrate/Test Spiral I Material Enhancements and Transition to Production													█																			
(6) Transition Spiral I to Production																	▲															

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S60

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
Integrate/Test Spiral II Material Enhancements and Transition to Production																																
(7) Transition Spiral II to Production																																
Integrate/Test Spiral I Head Protection Enhancements & Transition to Production																																
(8) Transition Spiral I to Production																																
NDTE Operational Test (Kuwait)																																
(9) NDTE transition to production																																
Evaluate/test NDTE System/Software Capability Upgrades																																
(10) Transition Spiral I to Production																																
Integrate/Test Spiral II NDTE Software Upgrades & Transition to Production																																
(11) Transition Spiral II to Production																																
ABS NVVS Test and Evaluation																																
Test 7.62 Helmet Engineering Dev Models																																

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S60

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
(12) Transition 7.62 Helmet to Production								▲12																								
Evaluate/test Improved Non-Ballistic Impact Protection																																
(13) Transition Soft Armor Upgrades to Production												▲13																				
Integrate/evaluate Hard/soft Armor Upgrades																																
(14) Transition Hard Armor Upgrades to Production																▲14																
UNIFORM CLOTHING																																
(15) Army Combat Uniform Enhancements Transition to Production																																
A2CU P3I																																
(16) Moist Wick Flame Resist Undergarment Transition to Production												▲16																				
(17) Modular Boot Transition to Production																																
FR FHC Insertion Tech/User Test																																
ACU Design Improvements																																
Spiral I																																

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S60

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
Spiral II																																
ProTech Fabric ACU Evaluation																																
GEN III Product Improvement																																
GEN IV Product Improvement - Next Generation																																
GEN IV System Concept/Development Evaluation																																
Clothing Bag Upgrades and Evaluations																																
ACU Signature Management																																
Glove Enhancements																																
INDIVIDUAL EQUIPMENT																																
ATPS T-11 OT																																
(18) ATPS T-11 MS C					▲ 18																											
ATPS P3I																																
ARAPS Development and Testing																																
Purchase RFID items and Conduct DT/OT																																
MOLLE Upgrade																																
Spiral I, Spiral II																																

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S60

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
Cold Weather Stove User Eval - Final				■																												
(19) Cold Weather Stove trans to production									▲ ₁₉																							
Nuclear Environmental Protective Hydration System OT																																
Spiral I				■																												
Spiral II								■																								
Individual Water Treatment Device DT/OT																																
Spiral I								■																								
Spiral II																				■												
Increment III - Refill in a Field Environment																■																
Ruck Sack for Airborne DPS Improvements												■																				
Flashlights - AFFL Certification																■																
FR Glove APL Certification												■																				
Conduct Radio Frequency Identification (RFI) pilot test				■																												
Navigational Aid DT/OT												■																				

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT														
5 - System Development and Demonstration		0604601A - Infantry Support Weapons																S60														
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
SOLDIER COOLING																																
Soldier Cooling DT/OT																																
(20) Transition Soldier Cooling to Production																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S60

<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>
BALLISTIC								
Recertify Combat Eyewear Protection (APEL)	1Q - 4Q	1Q - 2Q						
APEL Recertification		2Q						
Recertify Combat Eyewear Protection (APEL)				1Q - 4Q				
APEL Recertification					2Q			
Recertify Combat Eyewear Protection (APEL)							1Q - 4Q	
APEL Recertification								2Q
Evaluate (Dye) Laser Protective Eyewear		1Q - 4Q	1Q					
Transition Laser Protective Eyewear to Production			1Q					
Test Advanced Eyewear Laser Protection (LP)	1Q - 4Q	1Q						
Transition Advanced Laser Protection to Production		1Q						
Evaluate/test Extremity Protection System	2Q - 4Q	1Q						
Integrate/Test Spiral I Material Enhancements and Transition to Production				3Q - 4Q	1Q - 4Q			
Transition Spiral I to Production					4Q			
Integrate/Test Spiral II Material Enhancements and Transition to Production						3Q - 4Q	1Q - 4Q	
Transition Spiral II to Production							4Q	
Integrate/Test Spiral I Head Protection Enhancements & Transition to Production						3Q - 4Q	1Q - 4Q	
Transition Spiral I to Production							4Q	
NDTE Operational Test (Kuwait)		1Q - 2Q						
NDTE transition to production		2Q						
Evaluate/test NDTE System/Software Capability Upgrades			1Q - 4Q	1Q - 4Q				

Integrate/Test Spiral I NDTE Software Upgrades & Transition to Production					3Q - 4Q	1Q - 4Q		
Transition Spiral I to Production						4Q		
Integrate/Test Spiral II NDTE Software Upgrades & Transition to Production							1Q - 4Q	1Q - 2Q
Transition Spiral II to Production								2Q
ABS NVVS Test and Evaluation	1Q - 4Q							
Test 7.62 Helmet Engineering Dev Models		1Q - 2Q						
Transition 7.62 Helmet to Production		2Q						
Evaluate/test Improved Non-Ballistic Impact Protection			4Q	1Q - 4Q				
Transition Soft Armor Upgrades to Production			1Q					
Integrate/evaluate Hard/soft Armor Upgrades	1Q - 4Q	1Q - 4Q	1Q - 4Q					
Transition Hard Armor Upgrades to Production			4Q					
UNIFORM CLOTHING								
Army Combat Uniform Enhancements Transition to Production	1Q							
A2CU P3I						2Q - 4Q	1Q - 2Q	
Moist Wick Flame Resist Undergarment Transition to Production			2Q					
Modular Boot Transition to Production				4Q				
FR FHC Insertion Tech/User Test				2Q - 4Q				
ACU Design Improvements								
Spiral I	3Q							
Spiral II		3Q - 4Q	1Q - 2Q					
ProTech Fabric ACU Evaluation		1Q - 2Q						
GEN III Product Improvement		2Q - 4Q	1Q - 4Q	1Q - 4Q				
GEN IV Product Improvement - Next Generation						1Q - 4Q	1Q	
GEN IV System Concept/Development Evaluation			2Q - 4Q	1Q - 3Q				
Clothing Bag Upgrades and Evaluations		1Q - 4Q	1Q - 4Q					

ACU Signature Management			1Q - 4Q	1Q - 4Q				
Glove Enhancements			1Q - 4Q	1Q - 2Q				
INDIVIDUAL EQUIPMENT								
ATPS T-11 OT	2Q - 4Q	1Q						
ATPS T-11 MS C		2Q						
ATPS P3I							2Q - 4Q	1Q - 4Q
ARAPS Development and Testing		2Q - 4Q	1Q - 4Q	1Q - 3Q				
Purchase RFID items and Conduct DT/OT			1Q - 4Q	1Q - 4Q				
MOLLE Upgrade								
Spiral I			1Q - 4Q					
Spiral II						1Q - 4Q	1Q - 3Q	
Cold Weather Stove User Eval - Final	4Q							
Cold Weather Stove trans to production			1Q					
Nuclear Environmental Protective Hydration System OT								
Spiral I	4Q	1Q						
Spiral II		3Q - 4Q						
Individual Water Treatment Device DT/OT								
Spiral I		2Q						
Spiral II						2Q - 3Q		
Increment III - Refill in a Field Environment				1Q - 4Q				
Ruck Sack for Airborne DPS Improvements			2Q - 4Q	1Q - 2Q				
Flashlights - AFFL Certification			4Q	1Q - 4Q				
FR Glove APL Certification			1Q - 4Q					
Conduct Radio Frequency Identification (RFI) pilot test	2Q - 4Q							
Navigational Aid DT/OT		2Q - 4Q	1Q - 4Q					
SOLDIER COOLING								
Soldier Cooling DT/OT			1Q - 4Q	1Q - 3Q				
Transition Soldier Cooling to Production				4Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604601A - Infantry Support Weapons			PROJECT S61	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
S61 ACIS ENGINEERING DEVELOPMENT	10422	14638	10513	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This project provides System Development programs seeking to enhance the warfighting effectiveness of aircrew on Army fixed and rotary-winged aircraft through improved endurance, force protection, and situational awareness/understanding of Army aircrew. These programs include Air Soldier System and equipment which are unique and necessary for the improved performance of Army aircrews conducting full spectrum operations in the future integrated battlefield. The Air Soldier program will use the Soldier-as-a-System model to provide enhancements over the current Air Warrior ensemble. Improved endurance is achieved through the pursuit of lighter weight materials and integrated components that reduce weight and bulk. Additionally, innovations in miniaturized electronics would contribute to this key objective. Enhancements in ballistic, impact, directed energy protection, as well as fire resistant materials will contribute to soldier force protection. Systems that improve awareness and understanding of both the tactical environment and aircraft systems will increase the efficiency and effectiveness of the aircrew in addition to contributing to their lethality in combat. Air Warrior Encrypted Wireless Intercom System (AWIS) will provide a hands-free telecommunication device to allow aircrew to communicate via intercom without the use of communication cords, thereby eliminating a safety hazard for aircrew operating in the rear of the aircraft. Under Air Soldier accelerated fielding of equipment and technical insertions of standalone components will enhance and maximize mission performance, comfort, safety, and survivability of aircrew using Air Warrior. These funds also resource improved laser protection against emerging new threat systems and product improvement of existing helmets to improve performance and increased commonality. Maximum advantage will be taken of simulation to reduce program technical risk through early user evaluation and to reduce program design and test cost and schedules. This program does not duplicate any aircraft platform program efforts. Both joint and service independent efforts continue to be pursued under the scope of this program. Within this Project, FY 2008 and FY 2009 funding is included for the development of the Personnel Recovery Support Equipment (PRSE) support program. FY 2010 and later funding for PRSE development will be provided in the RDTE Project of S70, Personnel Recovery Support System within this same Program Element of 0604601A, Infantry Support Weapons.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue integration of preplanned Air Warrior Increment III including AWIS encryption certification and Air Soldier System improvements. AWIS effort will be completed in FY 2009. Funding in FY 2010/2011 will be utilized for Air Soldier improvements.	5430	5494	10513
Development of Personnel Recovery Support Equipment (PRSE)	4992	6799	
Congressional Add, Composite Bottles for Survival Egress Air		1938	
Small Business Innovative Research/Small Business Technology Transfer Programs		407	
Total	10422	14638	10513

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE, A PE 0603827A, PROJ S51 - Adv Dev	2577	1	138	Continuing	Continuing
Aircraft Procurement, Army SSN AZ3110 - ACIS	54222	48149	77525	Continuing	Continuing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604601A - Infantry Support Weapons

PROJECT

S61

Comment:

C. Acquisition Strategy System Development and Demonstration efforts are for the Air Warrior program including the Air Warrior Aircraft Wireless Intercom System (AWIS) and Air Soldier System. The AWIS is a hands-free telecommunication device using radio signals for aircrew communication. Development efforts are awarded through competitive cost plus fixed fee contracts or by Military Interdepartmental Purchase Requests (MIPRs) to other government agencies.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604601A - Infantry Support Weapons							S61		
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
Air Warrior and Air Soldier Development	C - CPFF	Various	7918	5235	1-4Q	5399	1-4Q	9958	1-2Q		28510	
Personnel Recovery Support Equipment Development	MIPR	Various	24042	4992	1-4Q	6487	1-4Q				35521	
Congressional Add, Composite Bottles for Survival Egress Air	TBD					1938	1-4Q				1938	
Subtotal:			31960	10227		13824		9958			65969	
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 and Project Order	Various Government	96	38	1-4Q	376	1-4Q	251	1-4Q		761	
Subtotal:			96	38		376		251			761	
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
Developmental Testing	MIPR	Various	77	28	1-4Q	79	1-4Q	56	1-4Q		316	
Subtotal:			77	28		79		56			316	
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	
5 - System Development and Demonstration			0604601A - Infantry Support Weapons							S61	
PM Administration	Allotment	Various Government	408	129	1-4Q	359	1-4Q	248	1-4Q		1144
Subtotal:			408	129		359		248			1144

Project Total Cost:			32541	10422		14638		10513			68190
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S61

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
Personnel Recovery Support Equipment (PRSE) Development	PRSE																															
Increment III AWIS Encrypted System Dev, Testing and Certification	AWIS Encrypted System																															
Air Soldier System Development and Demonstration and Qualification Testing	Air Soldier System Development and Qualification Testing																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604601A - Infantry Support Weapons					PROJECT S61	
<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>
Personnel Recovery Support Equipment (PRSE) Development	1Q - 4Q	1Q - 4Q						
Increment III AWIS Encrypted System Dev, Testing and Certification	1Q - 4Q	1Q - 4Q						
Air Soldier System Development and Demonstration and Qualification Testing		2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604601A - Infantry Support Weapons			PROJECT S62	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
S62 Counter-Defilade Target Engagement - SDD			21865	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The XM25, Individual Airburst Weapon System (IAWS) delivers a 25mm programmable high explosive airburst (HEAB) round to explode near or directly on target to significantly increase hit probability to defeat defilade and point area targets out to approximately 600 meters. The IAWS includes an integrated, multifunctional, all environment, full-solution target acquisition/fire control system. Independent analysis expects a 600% increase to down range effectiveness. The technology provides the Soldier a leap-ahead capability to defeat defilade targets while significantly reducing collateral damage without the use of a mortar, artillery, or air-to-surface weapon systems. The IAWS has been identified by the U.S. Army Infantry Center's (USAIC) Joint Capabilities Integration and Development System (JCIDS) analysis as the number one materiel approach to mitigate the Counter Defilade Target Engagement (CDTE) gap (accurate and lethal engagement of defilade at squad level).

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Design, Develop and Fabricate -			19501
Engineering Evaluation and Training Development			1364
Program Management -			1000
Total			21865

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE: PE 0603827A, Project S55	6502	5380	2600		14482
RDTE: PE 0603607A, Project 627	6000				6000

Comment:

C. Acquisition Strategy The XM25 IAWS will transition from the Technology and Development phase to Engineering and Manufacturing Development (EMD) phase by achieving Milestone B in 2Q FY2010. The EMD phase will complete development of the XM25 IAWS and verify training solution for the Milestone C approval in FY 2012. Research and Development acquisition strategy is to use sole source contracting with ATK, Plymouth, MN.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604601A - Infantry Support Weapons							S62		
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, Develop & Fabricate	Sole Source CPFF	ATK Minneapolis, MN						10301	2Q		10301	
Subtotal:								10301			10301	
Remarks: The XM25 IAWS contract award is subject to the Joint Requirements Oversight Council (JROC) approval of the Capability Development Document (CDD) prior to 1Q FY2010.												
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	Multiple						1114	2Q		2944	
Training Development Support	MIPR	PEO STRI						250	2Q		350	
Subtotal:								1364			3294	
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
Development Test	MIPR	Various						9200	2Q		9200	
Subtotal:								9200			9200	
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	PM Soldier Weapons Picatinny Arsenal, NJ						1000	2Q		2000	
Subtotal:								1000			2000	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604601A - Infantry Support Weapons

PROJECT

S62

Project Total Cost:

21865

24795

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S62

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) MS B																																												
Design, Develop & Fabricate																									■																			
Development Tests & Evaluation																													■															
(2) MS C/Type Classification-Low Rate Initial Production																																												
Production Qualification Test (POT)																																	■											
Operational Test & Evaluation (OT&E)																																	■											
Low Rate Initial Production (LRIP)																																	■											
(3) Type Classification - Standard																																					▲							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
5 - System Development and Demonstration		0604601A - Infantry Support Weapons						S62
<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>
MS B			2Q					
Design, Develop & Fabricate			3Q - 4Q	1Q - 2Q				
Development Tests & Evaluation				3Q - 4Q	1Q - 2Q			
MS C/Type Classification-Low Rate Initial Production					3Q			
Production Qualification Test (PQT)					3Q - 4Q			
Operational Test & Evaluation (OT&E)					4Q	1Q - 2Q		
Low Rate Initial Production (LRIP)					3Q - 4Q	1Q - 4Q	1Q	
Type Classification - Standard							2Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604601A - Infantry Support Weapons			PROJECT S63	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
S63 SMALL ARMS IMPROVEMENT	6801	4830	24504	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The Small Arms Improvement program funds system demonstration of engineering development models/studies and the integration of commercial items with weapons/ammunition. Small arms include individual and crew-served weapons/ammunition ranging up to 40 millimeter. Current and future efforts focus on improvements designed to enhance lethality, target acquisition, fire control, training effectiveness, and reliability of small arms weapons/ammunition. Focus areas include the demonstration, integration and study of light weight materials, obscurants, reconnaissance, observation, lethal and non-lethal ammunition, and electronics. Benefits include improvements to fire control equipment, optics, training devices, component mounts, weapon mounts, and ammunition. In accordance with congressional language and the Secretary of the Army's direction, the Army is initiating a new start individual weapon in FY10. The new carbine will provide the Soldier with an enhanced weapons capability and will be competed utilizing a best value, full and open competition to meet operational requirements. The requirement for the new individual carbine is being coordinated with other joint services to equip the warfighter with an accurate, reliable, Soldier-centric basic weapon capability which will be evaluated against current and emerging threats and incorporates technology advancements in the small arms industry mitigating capability gaps and shortcomings in currently fielded carbines.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Small Arms Weapons Enhancements			
- Design, Development and Engineering	1328	1691	5724
- Prototype Fabrication	288	670	2250
- Testing and Evaluation	550	906	4463
- Demonstration	830	180	2000
Ammunition			
- Design, Development and Engineering	1877	498	2267
- Prototype Fabrication	903		2000
- Testing and Evaluation	825	500	2150
- Demonstration	200		350
Fire Control			
- Design, Development and Engineering		250	1200
- Prototype Fabrication			650
- Testing and Evaluation			1450
Small Business Innovative Research/Small Business Technology Transfer Programs		135	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604601A - Infantry Support Weapons	PROJECT S63
Total	6801	4830 24504

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
WTCV, GZ1290, Squad Automatic Weapon (SAW) MODS	25279	7067	28733	Continuing	Continuing
WTCV, GZ2800, M16 Rifle MODS	5905	1178	4186	Continuing	Continuing
WTCV, GB3000, MK19 MODS	6222	7631	8164	Continuing	Continuing
WTCV, GZ1300, M240 Medium Machine Gun MODS	14635	21066	22764	Continuing	Continuing
WTCV, GB3007, M4 Carbine MODS	132890	16746	31472	Continuing	Continuing
WTCV, GB4000, M2 Machine Gun MODS	21665	12500	35338	Continuing	Continuing

Comment:

C. Acquisition Strategy Primary strategy is to mature and finalize design efforts, award RDT&E hardware contracts, and test and evaluate systems that will result in type classification and follow-on production contract awards.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604601A - Infantry Support Weapons							S63		
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
Hardware Development	TBD	Various	1483	675		1250		5344		Cont.	Cont.	
Subtotal:			1483	675		1250		5344		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
Development	MIPR	RDECOM - ARDEC, Picatinny Arsenal, NJ	3926	2428		1273		3979			11606	
Logistics	MIPR	TACOM, Rock Island Arsenal, IL	170	170		120		810			1270	
Human Research and Eng Directorate	MIPR	Aberdeen Proving Ground (APG), MD	630	110		90		560			1390	
Subtotal:			4726	2708		1483		5349			14266	
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
Developmental Testing	MIPR	Developmental Test Command (DTC), Aberdeen Proving Ground (APG), MD	1854	1072		945		7257		Cont.	Cont.	
Operational Testing	MIPR	Army Test and Evaluation Command (ATEC), Alexandria, VA	702	987		502		2750			4941	
Validation Testing	MIPR	Developmental Test Command (DTC),	2680	762		165		720			4327	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
5 - System Development and Demonstration			0604601A - Infantry Support Weapons								S63	
		Aberdeen Proving Ground (APG), MD										
Subtotal:			5236	2821		1612		10727		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	In House	PM Soldier Weapons, Picatinny Arsenal, NJ	1020	517		390		2844			4771	
Travel	In House	PM Soldier Weapons, Picatinny Arsenal, NJ	130	80		95		240			545	
Subtotal:			1150	597		485		3084			5316	
Project Total Cost:			12595	6801		4830		24504		Cont.	Cont.	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S63

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
SMALL ARMS WEAPONS ENHANCEMENTS																																
M2 MG Light Weight Tripod	SDD																															
(1) MS C													MS C																			
Carbine Competition																	SDD															
Sniper Rifle									SDD																							
Weapon Upgrades	SDD																															
AMMUNITION																																
Improved Counter Defilade Fuze													SDD																			
40MM Close in Antipersonnel													SDD																			
(2) MS C																	MS C															
Micro Mechanical S&A													SDD																			
Small Arms Deployable Sensors Network																	SDD															
Improved Small Caliber Armor Piercing													SDD																			
Small Caliber Light Weight Ammo	SDD																															
(3) IPR									IPR																							
40MM Airburst Non-Lethal													SDD																			

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT																						
5 - System Development and Demonstration		0604601A - Infantry Support Weapons																S63																						
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								
Improved Small Caliber													SDD																											
Ammunition Upgrades													SDD																											
COMBAT OPTICS																																								
Optics Upgrades																													SDD											
FIRE CONTROL													SDD																											
XM320 Improved GLM Fire Control													SDD																											
Small Arms Fire Control													SDD																											
Fire Control Upgrades	SDD																																							

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S63

<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>
SMALL ARMS WEAPONS ENHANCEMENTS	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
M2 MG Light Weight Tripod	1Q - 4Q	1Q - 4Q	1Q - 4Q					
MS C			4Q					
Carbine Competition			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Sniper Rifle		1Q - 4Q						
Weapon Upgrades	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
AMMUNITION	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Improved Counter Defilade Fuze			1Q - 4Q	1Q - 4Q				
40MM Close in Antipersonnel	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
MS C				4Q				
Micro Mechanical S&A			1Q - 4Q	1Q - 4Q	1Q - 4Q			
Small Arms Deployable Sensors Network				1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
Improved Small Caliber Armor Piercing			1Q - 4Q	1Q - 4Q				
Small Caliber Light Weight Ammo	1Q - 4Q							
IPR	4Q							
40MM Airburst Non-Lethal			1Q - 4Q	1Q - 4Q				
Improved Small Caliber				1Q - 4Q	1Q - 4Q	1Q - 4Q		
Ammunition Upgrades	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
COMBAT OPTICS	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Optics Upgrades	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
FIRE CONTROL	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
XM320 Improved GLM Fire Control			1Q - 4Q	1Q - 4Q	1Q - 4Q			
Small Arms Fire Control						1Q - 4Q	1Q - 4Q	1Q - 4Q
Fire Control Upgrades	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604601A - Infantry Support Weapons			PROJECT S64
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S64 COMMON REMOTELY OPERATED WPN SYS (CROWS)	5002				5002

A. Mission Description and Budget Item Justification: This project develops capability, reliability and supportability enhancement for Remote Weapon Station platforms, to include the Common Remotely Operated Weapons Station (CROWS), that enhance the Soldier's survivability, lethality and situational awareness while increasing the system's application across combat and tactical platforms.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Design & Fabricate CROWS Acoustic Sensor Integration Kits	500		
Development Support for CROWS Acoustic Sensor	300		
Development Support for Javelin CROWS Integration	190		
Javelin/CROWS Integration Kit System Development & Demonstration Test	1400		
CROWS Increased Elevation Study	100		
Design & Fabricate MK-47/CROWS Integration Kits	483		
Development Support for MK-47/CROWS Integration	517		
CROWS Enhancement Operational Test & Evaluation	1499		
Program Management	13		
Total	5002		

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
WTCV, G04700, CROWS	223	280	235		738

Comment:

C. Acquisition Strategy To conduct research, development and evaluation for Type Classification - Standard (TC-STD) potential system enhancements which may be implemented as part of the CROWS Capability Production Document (CPD), Increment 2, currently in staffing with an expected 1QFY10 approval date. CROWS is currently in production with an approved CPD (1 Aug 2005), validated Operational Needs Statements (ONS) and a Basis of Issue Plan (BOIP) in staffing.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604601A - Infantry Support Weapons

PROJECT

S64

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604601A - Infantry Support Weapons			PROJECT S70
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
S70 PERSONNEL RECOVERY SUPPORT SYSTEM (PRSS)			1321	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project provides system research, development, and testing of the Personnel Recovery Support System/Personnel Recovery Support Equipment (PRSE) that supports operations to report and locate isolated, missing, detained or captured soldiers. The current PRSE program consists of the development of personnel recovery equipment and the research, development, and test of upgrades to system components in order to enhance and increase system performance and ensure continued successful interoperability within the relevant theaters of operation. FY 2009 and prior year RDTE funding was provided in the RDTE Project of S61, Aircrew Integrated Systems (ACIS) Engineering Development within the PE of 0604601A, Infantry Support Weapons. This project is being established to separately manage and account for Personnel Recovery Support development from Aircrew Integrated Systems.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Development of Personnel Recovery Support System/Personnel Recovery Support Equipment (PRSE)			1321
Total			1321

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
Other Procurement, Army, SSN G01101 - Personnel Recovery Support System (PRSS)			6981		6981
Aircraft Procurement, Army SSN AZ3110 - ACIS, includes funding of PRSE aircraft mods			77525		77525

Comment: Aircraft Procurement, Army SSN of AZ3110 - ACIS primarily includes the funding of traditional Aircrew Integrated Systems efforts including Air Warrior and Air Soldier requirements as well as Personnel Recovery Support System/Personnel Recovery Support Equipment (PRSE) aircraft modification requirements.

C. Acquisition Strategy The Personnel Recovery Support System/Personnel Recovery Support Equipment (PRSE) program development effort provides integration and optimization of personnel recovery systems performance support equipment being executed through cost plus fixed fee contracts and Military Interdepartmental Purchase Requests to other governmental agencies.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604601A - Infantry Support Weapons							S70		
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
Personnel Recovery Support Equipment Development	MIPR	Various						766	1-4Q		766	
Subtotal:								766			766	
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 and Project Order	Various Government						236	1-4Q		236	
Subtotal:								236			236	
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
Developmental Testing	MIPR	Various						78	1-4Q		78	
Subtotal:								78			78	
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
PM Administration	Allotment	Various Government						241	1-4Q		241	
Subtotal:								241			241	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604601A - Infantry Support Weapons

PROJECT

S70

Project Total Cost:

1321

1321

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604601A - Infantry Support Weapons

PROJECT
S70

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				
Personnel Recovery Support Equipment (PRSE) Development																																				
	PRSE																																			

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604601A - Infantry Support Weapons					PROJECT S70	
<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>
Personnel Recovery Support Equipment (PRSE) Development			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604604A - MEDIUM TACTICAL VEHICLES				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
H07 FAMILY OF MED TAC VEH	4633	1943	5683	Continuing	Continuing

A. Mission Description and Budget Item Justification: This Program Element (PE) supports continued modernization of the Army's medium truck and trailer fleet and the Armored Security Vehicle (ASV). In the medium fleet, the Family of Medium Tactical Vehicles (FMTV) replaces aging M35 2 1/2-ton trucks, and M809 and M900 Series 5-ton trucks that are beyond their economic useful life of 15-20 years. FMTV fills 2 1/2-ton Light Medium Tactical Vehicle (LMTV) and 5-ton truck Medium Tactical Vehicle (MTV) requirements, and includes companion trailers, performing over 55% of the Army's local and line haul, and unit resupply missions, and operates throughout the theater as multi-purpose transportation vehicles in combat, combat support and combat service support units. The ASV is an all-wheel drive armored vehicle that provides ballistic protection, overhead protection and protection against landmines. It is used by the Military Police to perform missions of area security, maneuver and mobility support, police intelligence, and law and order across the entire operational continuum. It is also being used as a Convoy Protection Platform for Combat Support and Combat Service Support units. This PE funds government technical insertion initiatives that will feed into implementation of the Tactical Wheeled Vehicle (TWV) Modernization Strategy and the TWV Armoring Strategy as a bridge to future tactical vehicle efforts. This PE allows the PM to leverage technology and address capability gaps in performance and reliability as identified by the user community and reported in the field. FY09 funding will be used to continue Technology Insertion and address field issues requiring RDT&E funds to do so. FY10-15 funds will be used to increase protection and survivability of the FMTV through continued development and integration of armor enhancements and applications. ASV funds will be used to develop a Military Police Non-Lethal A-Kit to accept a Non-Lethal Mission Enhancement Package.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604604A - MEDIUM TACTICAL VEHICLES		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	6354	1949	1798
Current BES/President's Budget (FY 2010)	4633	1943	5683
Total Adjustments	-1721	-6	3885
Congressional Program Reductions		-6	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-1721		
SBIR/STTR Transfer			
Adjustments to Budget Years			3885

Change Summary Explanation: Funding - FY 10: Increase to support the Family of Medium Tactical Vehicles program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604604A - MEDIUM TACTICAL VEHICLES			PROJECT H07	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
H07 FAMILY OF MED TAC VEH	4633	1943	5683	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This Program Element (PE) supports continued modernization of the Army's medium truck and trailer fleet and the Armored Security Vehicle (ASV). In the medium fleet, the Family of Medium Tactical Vehicles (FMTV) replaces aging M35 2 1/2-ton trucks, and M809 and M900 Series 5-ton trucks that are beyond their economic useful life of 15-20 years. FMTV fills 2 1/2-ton Light Medium Tactical Vehicle (LMTV) and 5-ton truck Medium Tactical Vehicle (MTV) requirements, and includes companion trailers, performing over 55% of the Army's local and line haul, and unit resupply missions, and operates throughout the theater as multi-purpose transportation vehicles in combat, combat support and combat service support units. The ASV is an all-wheel drive armored vehicle that provides ballistic protection, overhead protection and protection against landmines. It is used by the Military Police to perform missions of area security, maneuver and mobility support, police intelligence, and law and order across the entire operational continuum. It is also being used as a Convoy Protection Platform for Combat Support and Combat Service Support units. This PE funds government technical insertion initiatives that will feed into implementation of the Tactical Wheeled Vehicle (TWV) Modernization Strategy and the TWV Armoring Strategy as a bridge to future tactical vehicle efforts. This PE allows the PM to leverage technology and address capability gaps in performance and reliability as identified by the user community and reported in the field. FY09 funding will be used to continue Technology Insertion and address field issues requiring RDT&E funds to do so. FY10-15 funds will be used to increase protection and survivability of the FMTV through continued development and integration of armor enhancements and applications. ASV funds will be used to develop a Military Police Non-Lethal A-Kit to accept a Non-Lethal Mission Enhancement Package.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FMTV Automotive Technological Evaluation, Testing & Insertion	4633	1889	1740
FMTV Armor Spiral Development			2965
ASV Military Police Non-Lethal Mission Enhancement Package			978
Small Business Innovative Research/Small Business Technical Transfer Program		54	
Total	4633	1943	5683

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA1 Family of Medium Tactical Vehicles (D15500)	2147048	1017497	1620179	3375100	8159824
OPA 1 Armored Security Vehicle (ASV) (D02800)	568867	318732	149811	302483	1339893

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604604A - MEDIUM TACTICAL VEHICLES

PROJECT

H07

C. Acquisition Strategy FMTV - Technological insertion will be accomplished by a Fixed Price or Cost Plus Fixed Fee (Level of Effort) basis.

ASV - The Mission Enhancement Package (MEP) effort will be completed by TARDEC on a level of effort basis. The procurement of the MEP will be included in the follow-on production contract.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604604A - MEDIUM TACTICAL VEHICLES							H07		
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
FMTV Automotive Technological Evaluation and Insertion	Various	BAE Systems TVS, Sealy, TX/Other	4690	4441	1-4Q	1893	4Q	1740	2-4Q		12764	
FMTV Armor Spiral Development	TBD	TBD						2965	2Q		2965	
FMTV CAT Transmission	Work Directive	BAE Systems TVS, Sealy, TX		192	3-4Q						192	
ASV Mission Enhancement Package (MEP)	MIPR	TARDEC, Warren, MI						978	1Q		978	
Subtotal:			4690	4633		1893		5683			16899	
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
FMTV Export Power Test	MIPR	Aviation Ground Support Equipment				50	3-4Q				50	
Subtotal:						50					50	
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 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604604A - MEDIUM TACTICAL VEHICLES						PROJECT H07			
Subtotal:										
Remarks: Not Applicable										
Project Total Cost:	4690	4633		1943		5683			16949	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604604A - MEDIUM TACTICAL VEHICLES

PROJECT
H07

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
RESEARCH, DEVELOPMENT, TEST & EVALUATION																																
FMTV Technology Insertion	Technology Insertion																															
FMTV Armor Technology Insertion	Technology Insertion																															
ASV Mission Enhancement Package (MEP)	ASV MEP																															
PROCUREMENT																																
FMTV Current Production	Current Production																															
(1) FMTV Competitive Rebuy Award	1																															
FMTV Competitive Rebuy & Follow-on Production	Competitive Rebuy & Follow-on Production																															
ASV	Current Production																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604604A - MEDIUM TACTICAL VEHICLES						H07	
<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>	
RESEARCH, DEVELOPMENT, TEST & EVALUATION									
FMTV Technology Insertion	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
FMTV Armor Technology Insertion			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
ASV Mission Enhancement Package (MEP)			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
PROCUREMENT									
FMTV Current Production	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q			
FMTV Competitive Rebuy Award		3Q							
FMTV Competitive Rebuy & Follow-on Production			2Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
ASV	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604609A - Smoke, Obscurant and Target Defeating Sys - Eng Dev			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	1302	5584	978	Continuing	Continuing
198 Target Defeating System	1302	5584		Continuing	Continuing
200 SMOKE/OBSCURANT SYSTEM			978	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project 0604609A supports the conduct of System Development and Demonstration (SDD) of logistically supportable, high performance smoke and obscurants, munitions, and devices to improve the survivability of the combined armed forces, support extended range capability and complement combined weapons systems. The program element supports critical management studies and analyses that are conducted on a continuing basis to ensure that engineering and manufacturing development efforts are targeted against the emerging threat. Program element supports the conduct of SDD in smoke and obscurant agents, munitions, and devices to improve the survivability of the combined armed forces, complement combined weapon systems, and enhance force effectiveness and combat power.

U.S. Forces must be able to effectively neutralize and degrade energy weapon systems and electro-optical systems/smart weapons that operate in the full range of the electromagnetic spectrum. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and projected smoke systems. The smoke obscurant technologies supported by this program element enhance smoke systems as force multipliers.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604609A - Smoke, Obscurant and Target Defeating Sys - Eng Dev		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	1339	5603	478
Current BES/President's Budget (FY 2010)	1302	5584	978
Total Adjustments	-37	-19	500
Congressional Program Reductions		-19	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-37		
Adjustments to Budget Years			500

Change Summary Explanation: Funding - FY 2010: Funding increase in support of Smoke/Obscurant Systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604609A - Smoke, Obscurant and Target Defeating Sys - Eng Dev			PROJECT 198	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
198 Target Defeating System	1302	5584		Continuing	Continuing

A. Mission Description and Budget Item Justification: Project supports the development and improvement of an array of obscurant agents, munitions, and devices to improve survivability of the combined armed forces, support extended range capability, complement combined weapon systems, and enhance force effectiveness and combat power. This program element supports critical management studies and analyses that are conducted on a continuing basis to ensure that engineering and manufacturing development efforts are targeted against the emerging threat. US Forces must be able to effectively neutralize and degrade energy weapon systems and electro-optical systems/smart weapons that operate in the full range of the electromagnetic spectrum. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and launched smoke systems. The smoke obscuration technologies supported by this program element enhance smoke systems as force multipliers.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Conducted Limited Objective Experiment.	1077		
Prepare and conduct Milestone A.	225	450	
Prepare and award modeling and simulation (M&S) contract.		550	
Concept Development of Projected/Generated Obscuration Capability.		4427	
Small Business Innovative Research/Small Business Technology Transfer Program.		157	
Total	1302	5584	

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

C. Acquisition Strategy System Development and Demonstration will begin in FY09 with a full and open competition contract for engineering design, construction and testing of prototype systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604609A - Smoke, Obscurant and Target Defeating Sys - Eng Dev			PROJECT 200	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
200 SMOKE/OBSCURANT SYSTEM			978	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports the development and improvement of an array of obscurant agents, munitions, and devices to improve survivability of the combined armed forces, support extended range capability, complement combined weapon systems, and enhance force effectiveness and combat power. This program element supports critical management studies and analyses that are conducted on a continuing basis to ensure that engineering and manufacturing development efforts are targeted against the emerging threat. US Forces must be able to effectively neutralize and degrade energy weapon systems and electro-optical systems/smart weapons that operate in the full range of the electromagnetic spectrum. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and launched smoke systems.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Continue development of Screening Obscuration Devices (SOD) alternatives.			578
Continue test and evaluation of SOD and alternatives.			100
Continue development and refinement of SOM alternatives.			300
Total			978

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
RDTE, A Budget Activity 2, PE 0602622A, Project 552 Smoke/Novel Munitions				Continuing	Continuing
Modification MMW MA4501	2994		529		4000

Comment:

C. Acquisition Strategy Contract initiated in FY 2000 with a full and open competitive contract for engineering design, construction, and testing of prototype systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604622A - Family of Heavy Tactical Vehicles			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	15016	4487	7477	Continuing	Continuing
659 FAMILY OF HVY TAC VEH	3135		4107	Continuing	Continuing
65A MOVEMENT TRACKING SYSTEM (MTS)	1237	2677	1361	Continuing	Continuing
E49 HEMTT	9661				9661
E50 TRAILER DEVELOPMENT	983	1810	2009	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element aligns system development and demonstration of Heavy Tactical Vehicles with Future Modular Force requirements to support combat and combat support missions. These missions include the following: line haul, local haul, and unit resupply. These trucks transport water, ammunition, and general cargo over all terrain and throughout the battle-space. Funding will also be used for developing the Army's next generation of tactical truck, as part of the Army's Tactical Wheeled Vehicle Modernization Strategy. Funding in Project 65A is for the development of the Movement Tracking System (MTS). Funding in Project E50 supports the continued modernization of the Army's trailer fleets and supports the continuous product improvements, technology insertion, and new capabilities for tactical trailers.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604622A - Family of Heavy Tactical Vehicles		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	12666	2901	3446
Current BES/President's Budget (FY 2010)	15016	4487	7477
Total Adjustments	2350	1586	4031
Congressional Program Reductions		-14	
Congressional Rescissions			
Congressional Increases	2704	1600	
Reprogrammings			
SBIR/STTR Transfer	-354		
Adjustments to Budget Years			4031

Change Summary Explanation:

FY 2008: Supplemental funding provided to adapt SPARK minerollers to operations in OEF.

FY 2009: Congressional increase for VIPER Mobile Power Development Project and Enhanced Ku-Band/L-Band Antenna System.

FY 2010: Funding increase to support the Family of Heavy Tactical Vehicles program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604622A - Family of Heavy Tactical Vehicles			PROJECT 659	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
659 FAMILY OF HVY TAC VEH	3135		4107	Continuing	Continuing

A. Mission Description and Budget Item Justification: The existing Heavy Tactical Vehicle programs require insertion of mature, state-of-the-art technologies. Funding will provide for the demonstration, design evaluations and testing of a Line Haul Replacement Tractor (LHRT) able to provide increased capability to enable a more agile, flexible, full spectrum movement of supplies and equipment across the range of military operations through the battlefield.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Developmental work to adapt SPARK minerollers to operations in OEF.	3135		
Reliability Growth and Study Analysis: The LHRT is required to be operationally reliable in excess of three times the operational reliability of its predecessor Military Line Haul Tractor Truck. Reliability growth will be studied through analysis of Military, U.S. commercial, and foreign commercial line haul tractor trucks. The study will evaluate drivelines, suspension, fuel management, and vehicle maintenance systems and practices that result in peak system performance. The results of the reliability growth study will be used to revise vehicle designs planned for LHRT, incorporate proven maintenance methodologies for maintaining the LHRT when stored and in use, and to evaluate the reliability requirement of the LHRT in terms of the impact of the cost of reliability growth over the system life cycle.			400
Command, Control, Communication, and Computer Integration (C4I) into the LHRT: The LHRT requires an integrated communications system to incorporate the SINCGARS, DAGR, DVE, MTS, and JTRS systems to provide real time situational awareness data for Combat Support & Combat Service Support units to safely and efficiently transport cargoes to destinations throughout the battle space as weather and road safety conditions fluctuate. Loads are prioritized or redirected and indications warrant re-routing in response to increased enemy activity. A single monitor data screen interlinked to each C4I system with a capability to be expanded to meet the need for increased computing capability will be developed and assessed.			3033
Suspension and Chassis enhancements will balance chassis weight distribution, and carry the added weight of chassis and fuel tank protective applique armor. Fuel Tank development will center on optimizing fuel tank design to direct fuel away from the crew compartment during a mine, IED, or targeted blast event.			674
Total	3135		4107

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA1 D15900, Truck, Tractor, Line Haul M915A2	1203928	119884	41485		1461599

Comment:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**May 2009**

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604622A - Family of Heavy Tactical Vehicles

PROJECT

659

C. Acquisition Strategy The Reliability Growth study will be a NAC/TARDEC effort. The requirement of the study will be written into a SOW by 3rd Qtr FY09, with a planned award by 1st Qtr FY10. For the Hardware Development Projects, each project will be preceded by formal and informal market research. Existing C4I and Fuel system technologies will be researched and compared to systems in use in the US Military. Market Research will be performed starting 2nd Qtr FY09. Specific scope of work requirements for each project will be developed and refined as data is gathered. A SOW for each project will be prepared by 3rd Qtr 09 and solicited with industry in 4th Qtr 09. Contracts will be ready for award NTL 2nd Qtr FY10.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604622A - Family of Heavy Tactical Vehicles							659		
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
Developmental work to adapt SPARK minerollers to operations in OEF.				3135	3-4Q						3135	
Reliability Growth Study and Analysis	TBD	TBD						400	2Q		400	
Command, Control, Communication, and Computer Integration (C4I) into the LHRT	TBD							2533	2Q		2533	
Suspension and Chassis Enhancements	TBD							674	2Q		1365	
Subtotal:				3135				3607			7433	
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
C4I testing and evaluation	MIPR	CECOM, Ft. Monmouth, NJ						500	2Q		1000	
Subtotal:								500			1000	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604622A - Family of Heavy Tactical Vehicles							659		
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:												
Project Total Cost:				3135				4107			8433	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604622A - Family of Heavy Tactical Vehicles

PROJECT
659

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
Reliability Growth Study and Analysis																																
Design, Develop and Build C4I																																
Design, Develop and Build Suspension and Chassis Enhancements																																
Test and Evaluate C4I																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604622A - Family of Heavy Tactical Vehicles					PROJECT 659	
<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>
Reliability Growth Study and Analysis				2Q - 4Q	1Q - 2Q			
Design, Develop and Build C4I				2Q - 4Q	1Q - 4Q	1Q - 4Q		
Design, Develop and Build Suspension and Chassis Enhancements				2Q - 4Q	1Q - 4Q	1Q - 4Q		
Test and Evaluate C4I				2Q - 4Q	1Q - 4Q	1Q - 4Q		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604622A - Family of Heavy Tactical Vehicles			PROJECT 65A	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
65A MOVEMENT TRACKING SYSTEM (MTS)	1237	2677	1361	Continuing	Continuing

A. Mission Description and Budget Item Justification: Movement Tracking System (MTS) is a satellite based, asset visibility and situational awareness enabler that assists Combat Support/Combat Service Support (CS/CSS) commanders and their staffs. MTS identifies and tracks the location of vehicles, communicates with vehicle operators, and redirects missions on a worldwide, near real-time basis during peacetime operations and war. MTS provides the capability to link ground level operators conducting missions and commanders/managers that plan, direct, and control operations and allows for continuous CS/CSS asset visibility across the tactical area of operations. FY08/09 funding supports development of block modifications on the MTS. This block modification will develop and test required interfaces to Transportation Coordinator's Automated Information for Movement System (TC AIMS II) (direct electronic interface) and Global Combat Support System-Army (GCSS-Army) (direct electronic interface). FY10/11 funding continues interface development & testing.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Development of block modifications on the Movement Tracking System	1237	2602	1261
System Testing			100
Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)		75	
Total	1237	2677	1361

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA1 D16103000, Movement Tracking System (MTS)	89248	141709	119100	Continuing	Continuing

Comment:

C. Acquisition Strategy RDTE efforts to support block development approach through a continuous series of overlapping modular development and integration testing to include multiple interface developments in support of follow-on production.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604622A - Family of Heavy Tactical Vehicles							65A		
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, engineering, testing, program management	FFP/IDIQ	Comtech Mobile Datacom Corp., Germantown, MD	8798	957	4Q	2203		1211		3239	16408	
Subtotal:			8798	957		2203		1211		3239	16408	
II. Support Costs			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
Software Testing	MIPR	Electronic Proving Ground, Yuma, AZ	2007	280		474		150		1079	4140	
Subtotal:			2007	280		474		150		1079	4140	
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

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604622A - Family of Heavy Tactical Vehicles

PROJECT

65A

Project Total Cost:

10805

1237

2677

1361

4318

20548

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604622A - Family of Heavy Tactical Vehicles

PROJECT
65A

<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>
Full Fielding	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q			
Sustainment	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
MTS Continuous Block Improvements	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604622A - Family of Heavy Tactical Vehicles			PROJECT E49
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
E49 HEMTT	9661				9661

A. Mission Description and Budget Item Justification: Funds the Heavy Expanded Mobility Tactical Truck (HEMTT) A3 prototype development. The HEMTT vehicle program requires insertion of current, mature technology to increase the capability of the vehicle toward the future force requirements. Received FY2008 Congressional add to continue A3 prototype development. Also received FY2008 Congressional add for Advanced Drivetrains for Enhanced Mobility and Safety. This is to assess and analyze alternative drivetrain configurations to incorporate state-of-the-art technology and design characteristics for improved military vehicles.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
HEMTT advanced technology improvement development.	6471		
Testing of HEMTT advanced technology improvements.	3190		
Total	9661		

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA1, DA0500, Family of Heavy Tactical Vehicles	362526	452206	415745		1289324

Comment:

C. Acquisition Strategy Limited RDTE effort to support follow-on production. Continue A3 prototype development.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604622A - Family of Heavy Tactical Vehicles			PROJECT E50	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
E50 TRAILER DEVELOPMENT	983	1810	2009	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This program element supports continued modernization of the Army's trailer fleet. The funds support development and integration of emerging state of the art technology improvements and new capabilities. FY10/11 funding will develop, design and build prototype trailers to meet Army operational capability gaps identified by CASCOM, and also will support continued insertion of new technology to the current trailer fleet, including the testing of hitch devices and leg modernization. Other on-going technologies being looked at are corrosion prevention and modularity and transportability enhancements such as improved suspension, electrohydraulic brakes, lift bed, and enhanced coupling/uncoupling. Modernized trailers are better able to match the capabilities of today's improved tactical wheeled vehicles and tractors.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Program Management	222	250	
Current fleet technical insertion and testing	128	200	
Design, develop and build System Prototype Demonstrator Trailer(s)	633	1309	
Design, develop, build and test trailers			2009
Small Business Innovative Research/Small Business Technology Transfer Programs		51	
Total	983	1810	2009

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
OPA 1 D01500 Semi-Trailer Flatbed 22.5T M871A3	273	6464	2480	Continuing	Continuing
OPA 1 D01600 Semi-Trailer Flatbed 34T M872A4	9690	38880	11384	Continuing	Continuing

Comment: Initial efforts relate to flatbed trailers; however, any member of the tactical trailer fleet may be affected.

C. Acquisition Strategy Conduct feasibility testing on existing tactical semi-trailers. Identify enhanced transportability and safety concepts and other responses to field issues. Modify existing equipment or develop new equipment. The ultimate goal is to develop and test improvements, acquire necessary technical data, and place improved hardware into production.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604622A - Family of Heavy Tactical Vehicles							E50		
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
Program Management	In-House	TACOM-WRN	3293	222		250					3765	
Design, develop and build System Prototype Demonstrator Trailers	In-House	TARDEC-WRN	1949	633		1360					3942	
Design, develop, build and test trailers	TBD	TBD						2009			2009	
Subtotal:			5242	855		1610		2009			9716	
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
M870A3 Suspension testing	MIPR	Yuma Proving Ground, Yuma, AZ	783	128		200					1111	
Subtotal:			783	128		200					1111	
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

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604622A - Family of Heavy Tactical Vehicles

PROJECT

E50

Project Total Cost:

6025

983

1810

2009

10827

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604622A - Family of Heavy Tactical Vehicles

PROJECT
E50

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				
Technical Insertion and TDP Development																																				
ECP Production Cut-in																																				
MWO Field Retrofit																																				
Design, develop and build Hardware																																				
System Level Testing																																				
Tech Insertion																																				

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604622A - Family of Heavy Tactical Vehicles

PROJECT
E50

<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>
Technical Insertion and TDP Development	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
ECP Production Cut-in	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
MWO Field Retrofit	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Design, develop and build Hardware		1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 2Q
System Level Testing	3Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q
Tech Insertion			1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q

The MWO Field Retrofit will actually be completed every other year starting after FY2009. The Designing, developing and building of hardware will be completed the 1st two quarters of every year starting in FY2010. The System Level Testing will be completed the last two quarters of every year starting in FY2010.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - System Development and Demonstration	0604633A - AIR TRAFFIC CONTROL				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
586 AIR TRAFFIC CONTROL	11676	14167	7578	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element (PE) funds continuous efforts in the development of modernized tactical and fixed base Air Traffic Control (ATC) systems that will significantly enhance aviation safety in both the tactical and strategic ATC domains. ATC systems are required to achieve or maintain compliance with civil, military, domestic, and international air traffic control and combat identification requirements and mandates. Funding will be utilized to develop, evaluate and integrate candidate systems in each key technology area. Funded in this program element is the development of the Tactical Airspace Integration System (TAIS) Service Oriented Architecture (SOA), Advanced Surveillance, Air Traffic Navigation Integration and Coordination System (ATNAVICS) modernization and Mobile Tower System (MOTS). ATNAVICS provides all weather instrument flight capabilities to include enroute, terminal, radar precision approach and landing services to all Army, Joint, and allied aircraft. The MOTS is a tactical mobile tower designed to meet the deployability and communication requirements of the current to future force. TAIS SOA develops software and required hardware for airspace management web services, integrates a common view, integrates new Battle Command architecture, and provides a bridge to Unified Battle Command (UBC) and Net Enable Command and Control capabilities. TAIS also integrates advanced surveillance interfaces to further facilitate a dynamic airspace management capability.

Funded project improvements to ATC systems, including the TAIS and ATNAVICS, will align these programs with advanced networking and communications goals, and provide compatibility with the Army Aviation aircraft and avionics upgrade programs. In a networked battlefield, joint service systems and radars provide operational data to ATC missions assuming a communications infrastructure and data processing capability is embedded in ATC systems. ATC systems control or maintain information relevant to higher level organizations or other external systems; advanced networks and communications allow such information to be transmitted, to include aircraft positional information, weather data, landing surface conditions, airspace density, airspace control orders, restricted airspace, and flight plan data. As the Department of Defense transitions military aircraft to positional self reporting technologies, Product Manager ATC will demonstrate and test these various technologies prior to integration into the ATC systems. Advanced surveillance relies on aircraft self-reporting technologies which include Automatic Dependent Surveillance Broadcast (ADS-B), Mode 5, and Mode S. Initial testing and integration of these systems are foundational to Advanced Surveillance to increase ATC systems availability to detect, manage, and disseminate aircraft information. ATNAVICS will network its surveillance data to aviation and joint network nodes. TAIS, as a Battlefield Automated System (BAS) of the Army Battle Command System (ABCS), requires the development and testing of web-based services for Airspace Command and Control (AC2) and Air Traffic Services (ATS), and integration of these new web-based services into a Service Oriented Architecture (SOA) supporting Army Battle Command, ATS and Dynamic Airspace Management through advanced surveillance interfaces and situational awareness to the cockpit. TAIS RDTE efforts also include Pre-Planned Product Improvements (P3I). TAIS P3I include, but are not limited to, developing and testing improvements to the air picture. To facilitate increased maintenance and system support, a remote maintenance capability will be developed.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604633A - AIR TRAFFIC CONTROL		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	8899	14214	2717
Current BES/President's Budget (FY 2010)	11676	14167	7578
Total Adjustments	2777	-47	4861
Congressional Program Reductions		-47	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	3004		
SBIR/STTR Transfer	-227		
Adjustments to Budget Years			4861
Change Summary Explanation: FY08 - Funds reprogrammed (\$3004) to support the MOTS Program. FY10 - Funding increased for TAIS Battle Command Migration.			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604633A - AIR TRAFFIC CONTROL			PROJECT 586	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
586 AIR TRAFFIC CONTROL	11676	14167	7578	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element (PE) funds continuous efforts in the development of modernized tactical and fixed base Air Traffic Control (ATC) systems that will significantly enhance aviation safety in both the tactical and strategic ATC domains. ATC systems are required to achieve or maintain compliance with civil, military, domestic, and international air traffic control and combat identification requirements and mandates. Funding will be utilized to develop, evaluate and integrate candidate systems in each key technology area. Funded in this program element is the development of the Tactical Airspace Integration System (TAIS) Service Oriented Architecture (SOA), Advanced Surveillance, Air Traffic Navigation Integration and Coordination System (ATNAVICS) modernization and Mobile Tower System (MOTS). ATNAVICS provides all weather instrument flight capabilities to include enroute, terminal, radar precision approach and landing services to all Army, Joint, and allied aircraft. The MOTS is a tactical mobile tower designed to meet the deployability and communication requirements of the current to future force. TAIS SOA develops software and required hardware for airspace management web services, integrates a common view, integrates new Battle Command architecture, and provides a bridge to Unified Battle Command (UBC) and Net Enable Command and Control capabilities. TAIS also integrates advanced surveillance interfaces to further facilitate a dynamic airspace management capability.

Funded project improvements to ATC systems, including the TAIS and ATNAVICS, will align these programs with advanced networking and communications goals, and provide compatibility with the Army Aviation aircraft and avionics upgrade programs. In a networked battlefield, joint service systems and radars provide operational data to ATC missions assuming a communications infrastructure and data processing capability is embedded in ATC systems. ATC systems control or maintain information relevant to higher level organizations or other external systems; advanced networks and communications allow such information to be transmitted, to include aircraft positional information, weather data, landing surface conditions, airspace density, airspace control orders, restricted airspace, and flight plan data. As the Department of Defense transitions military aircraft to positional self reporting technologies, Product Manager ATC will demonstrate and test these various technologies prior to integration into the ATC systems. Advanced surveillance relies on aircraft self-reporting technologies which include Automatic Dependent Surveillance Broadcast (ADS-B), Mode 5, and Mode S. Initial testing and integration of these systems are foundational to Advanced Surveillance to increase ATC systems availability to detect, manage, and disseminate aircraft information. ATNAVICS will network its surveillance data to aviation and joint network nodes. TAIS, as a Battlefield Automated System (BAS) of the Army Battle Command System (ABCS), requires the development and testing of web-based services for Airspace Command and Control (AC2) and Air Traffic Services (ATS), and integration of these new web-based services into a Service Oriented Architecture (SOA) supporting Army Battle Command, ATS and Dynamic Airspace Management through advanced surveillance interfaces and situational awareness to the cockpit. TAIS RDTE efforts also include Pre-Planned Product Improvements (P3I). TAIS P3I include, but are not limited to, developing and testing improvements to the air picture. To facilitate increased maintenance and system support, a remote maintenance capability will be developed.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
MOTS System Development, Demonstration & Testing	7772	6550	698
TAIS Battle Command Migration	3204	5500	5000
TAIS P3I		800	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604633A - AIR TRAFFIC CONTROL		PROJECT 586
ATNAVICS Modernization			1239
Advanced Surveillance			122
Tech and Log support	615	841	408
Program Management Support	85	101	111
Small Business Innovative Research/Small Business Technology Transfer Programs		375	
Total	11676	14167	7578

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
APA AA0050 - Air Traffic Control	110875	122413	76999	Continuing	Continuing

Comment:

C. Acquisition Strategy PM ATC will continue to embrace new technology initiatives for the development of tactical and fixed base ATC equipment and the integration of new technology into existing systems. These systems are required to achieve or maintain compliance with civil, military, domestic and international air traffic control and combat identification requirements and mandates. Funding will be utilized to develop, evaluate, and integrate candidate systems in each key technology area. Technology insertion will be acquired through contract modifications, engineering services tasks, and new/follow-on contracts. TAIS BC Migration contract was awarded in FY08. Development and testing will continue in FY09-12.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604633A - AIR TRAFFIC CONTROL							586		
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
MOTS System Development and Demo	C/CPFF	Sierra Nevada Corp, Sparks, Nevada	12852	6704	2Q	1960	2Q				21516	
MOTS Systems Development Support	Various	Various	829	62	1-3Q	66	1-4Q				957	
MOTS Contracted Services	C/T&M	AMCOM	242	334	1Q	390	1Q				966	
TAIS Battle Command Migration	SS/CPFF	General Dynamics C4S, Huntsville, AL		3204	1Q	5500	2Q	5000	2Q	Cont.	Cont.	Cont.
TAIS P3I	SS/CPFF	General Dynamics C4S, Huntsville, AL				800	2Q			Cont.	Cont.	Cont.
ATNAVICS Modernization	SS/CPFF	Raytheon, Marlboro, MA						1239	2Q	Cont.	Cont.	Cont.
Advanced Surveillance	Various	Various						122	2-3Q	Cont.	Cont.	Cont.
Tech and Log Development Support	Inhouse	PM ATC, Redstone	1140	615	1-4Q	841	1-4Q	408	1-4Q	Cont.	Cont.	Cont.
											Cont.	Cont.
Subtotal:			15063	10919		9557		6769		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
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
MOTS Prototype Testing	MIPR	Various	130	672	3Q	4134	2-3Q	698	2-4Q		5634	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604633A - AIR TRAFFIC CONTROL	PROJECT 586
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Subtotal:	130	672		4134		698		5634
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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 Support	In-House	PM ATC, Redstone Arsenal, AL	1937	85	1-4Q	101	1-4Q	111	1-4Q	Cont.	Cont.	Cont.
SBIR/STTR						375					375	
Subtotal:			1937	85		476		111		Cont.	Cont.	Cont.

Project Total Cost:	17130	11676		14167		7578		Cont.	Cont.	Cont.
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Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604633A - AIR TRAFFIC CONTROL						PROJECT 586	
<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>	
MOTS System Development Demonstration and Testing	1Q - 4Q	1Q - 4Q	1Q - 4Q						
TAIS Battle Command Migration	1Q - 4Q	1Q - 4Q	1Q - 4Q						
TAIS P3I Development		2Q - 4Q							
ATNAVICS Modernization			2Q - 4Q						
Advanced Surveillance			2Q - 4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604646A - Non-Line of Sight Launch System			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
F72 NON LINE OF SIGHT LAUNCH SYSTEM	246071	208009	88660	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program funds the System Development and Demonstration (SDD) for the Non-Line of Sight Launch System (NLOS-LS), which is a core system of the FCS. In FCS Spin Out 1, NLOS-LS has been called upon to deliver its enabling lethality capabilities to the Early Infantry Brigade Combat Teams (E-IBCTs). Later NLOS-LS will provide these capabilities to the Threshold IBCT (T-IBCT). NLOS-LS consists of the Precision Attack Missile (PAM) and a highly deployable, platform-independent Container Launch Unit (CLU) with self-contained technical fire control, electronics, communications and software for remote, unmanned operations.

This program focuses on the development of a materiel solution to meet the NLOS-LS operational need as delineated in the FCS Operational Requirements Document (ORD). The PAM will be vertically launched directly from the CLU based on fire missions received via the FCS network and will be capable of being updated in-flight via on-board radios by the network. The vertical launch capability permits a system that is highly deployable as well as the ability to engage a wide spectrum of targets in diverse environments and terrain. The PAM will have Automatic Target Acquisition (ATA) capability which can be upgraded in future versions.

NLOS-LS, delivered during the Spin Out timeframe, will equip Current Forces with an AFATDS command based unmanned precision attack missile system. Additional threshold requirements planned for FCS core fieldings include Interoperability with Battle Command, level 5 Interactive Electronic Technical Manual System, In-Flight Target Updates, disenable in flight, 72 hour on-board power, functioning Platform Soldier Mission Readiness System/Logistics Decision Support System.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604646A - Non-Line of Sight Launch System		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	253075	200099	40043
Current BES/President's Budget (FY 2010)	246071	208009	88660
Total Adjustments	-7004	7910	48617
Congressional program reductions		-690	
Congressional rescissions			
Congressional increases		8600	
Reprogrammings	77		
SBIR/STTR Transfer	-7081		
Adjustments to Budget Years			48617

Change Summary Explanation: Increased funding in FY 2010 finances FCS Network integration and support NSA Information Assurance.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604646A - Non-Line of Sight Launch System			PROJECT F72	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
F72 NON LINE OF SIGHT LAUNCH SYSTEM	246071	208009	88660	Continuing	Continuing

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY08 Accomplishments - PAM Systems Engineering & Program Mgt: Continued common component detail design; system detailed design; system and program management support engineering; and radio integration. Performed modeling and threat analyses. Completed PAM pilot line setup. NLOS-LS Certification & Accreditation on PAM build 3 for Authority to Operate (ATO). Supported/maintained Container Launch Unit (CLU) prototypes fielded to AETF; continued CLU detailed system design; radio integration; and current force interoperability based on feedback from AETF. Successfully conducted and completed AETF NLOS-LS NET training at Ft. Bliss, TX. Secured approval for Verification, Validation & Accreditation activities. Supported/maintained system NLOS-LS hardware fielded with the AETF and support logistic validation effort. Completed system Production Readiness Assessment (PRA). Continued developing NLOS-LS Instrumentation Data Acquisition System (NIDAS).	89040		
FY09 Planned Accomplishments - PAM Systems Engineering & Program Mgt: Continue system detailed design and Single Channel Radio System (SCRS) radio integration. NLOS-LS Certification & Accreditation PAM Build 4 for Authority to Operate (ATO).		86075	
FY10 Planned Accomplishments - PAM Systems Engineering & Program Mgt: Continue design efforts to meet threshold requirements such as in-flight target updates and disable in-flight capabilities. Support requirements development and system integration of missile improvements with simulations and operational analysis. Collect PAM data/design NLOS-LS Interactive Electronic Technical Manual System.			20578
FY08 Accomplishments - PAM PROTOTYPE: Built and delivered 55 PAM prototypes for developmental testing.	35983		
FY09 Accomplishments - PAM PROTOTYPE: Build and deliver 23 PAM prototypes for developmental testing.		14049	
FY08 Accomplishments - PAM SOFTWARE: Successfully completed PAM SW Build 2 to support Captive Flight Test 12 and Control Test Vehicle 2. Continued supporting IV1 simulations. Continued software design code testing and integration.	10011		
FY09 Planned Accomplishments - PAM SOFTWARE: Continue software design code testing and integration of incremental Flight SW builds (PAM Build 6) to incorporate Radio Version (RV)4 and RV5 radios.		9182	
FY10 Planned Accomplishments - PAM SOFTWARE: Continue PAM software design, code, testing, and integration to support new build for SOSCOE Insertion and FCS BC communication Army SW Block upgrade. Update PAM Interface Software.			12716
FY08 Accomplishments - CLU Systems Engineering & Program Mgt: Conducted Performance Based Logistics evaluations. Supported/maintained Container Launch Unit (CLU) prototypes fielded to AETF; continued CLU detailed system design; radio integration; and current force interoperability based on feedback from AETF. Successfully conducted and completed AETF NLOS-LS NET training at Ft. Bliss, TX. Secured approval for Verification, Validation & Accreditation activities. Supported/maintained system NLOS-LS hardware fielded with the AETF and support logistic validation effort. Completed system Production Readiness Assessment	59113		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604646A - Non-Line of Sight Launch System	F72	
<i>(PRO). Continued developing NLOS-LS Instrumentation DATA Acquisition System (NIDAS).</i>			
FY09 Planned Accomplishments - CLU Systems Engineering & Program Mgt. System engineering analysis of test results. Finalize Training Support Packages/Level III IETM; continue to evaluate UID/IUID marking. Continue developing NLOS-LS Independent Data Acquisition System (NIDAS).		48105	
FY10 Planned Accomplishments - CLU Systems Engineering & Program Mgt: Update Safety Release. CLU integration and software development. Update CLU Interface Specifications for B2F Software. Perform IV&V of updated tech data package. Continue integration of the JTRS SFF-J radio into the CLU.			24167
FY08 Accomplishments - CLU PROTOTYPE: Completed delivery of 7 AETF CLUs and additional 11 CLU prototypes for developmental testing.	9665		
FY09 Planned Accomplishments - CLU PROTOTYPE: Build and deliver 7 CLU prototypes for developmental testing.		3773	
FY08 Accomplishments - CLU SOFTWARE: Continued supporting IV1 simulations. Continued software design testing. Continued CLU/AFATDS/SOSCOE interoperability testing. Continued to investigate use of congressionally funded Enforce-It anti-tamper software	6724		
FY09 Planned Accomplishments - CLU SOFTWARE: NLOS-LS Certification and Accreditation SOSCOE RTE 2.0 for ATO and continue software design testing.		4835	
FY10 Planned Accomplishments - SOFTWARE: NLOS-LS Certification & Accreditation for Block 6+ for ATO for FCS Battle Command upgrades. Continue CLU software design, code, testing, and integration. Continue SOSCOE RE 3.5 integration and testing. Update CLU Interface Software.			10231
FY08, FY09, FY10 Accomplishments - Government Systems Engineering & Prog Mgt: Continued Gov't management of NLOS-LS acquisition program to include: program management, contract management, system and subsystem level engineering analysis, budget planning and execution, cost analysis, milestone documentation preparation, test program management, PAM and CLU products management, production planning, system software management, AETF support, logistics planning, engineering and logistics subject management expert support, and management of NLOS-LS efforts performed by other government agencies.	18517	14415	9098
FY08 Accomplishments - GOVERNMENT TEST: Continued Gov't Developmental Test Program; qualification testing (engines, warheads, ESAD, etc.). Supported Live Fire Activities with lethality analyses. Continued supporting IV1 simulations. Validated Integrated Flight Simulation (IFS) Design. Continued developmental testing; conducted Spin Out preliminary Limited User Testing and technical field test; conducted CLU First Article Testing (FAT); updated NLOS-LS Certification and Accreditation CLU iteration for ATO; continued health hazard assessment and CLU component level qualifications testing. Successfully conducted and completed AETF LOG DEMO. Continued subsystem qualification; continue hardware testing; pursue NLOS-LS Certification and Accreditation of SOSCOE Real Time Edition (RTE) 1.8 for ATO; participated in FCS IMT1 and support JEFX08 (Experiment 2.1); continued CLU/AFATDS/SOSCOE interoperability testing; integrate hardware/software into HWIL facility.	17018		
FY09 Planned Accomplishments - GOVERNMENT TEST: Continue Gov't validation of the IFS in support of Army Technical Evaluation Command (ATEC) accreditation package for the Guided Test Vehicle (GTV). Continue support for developmental test. IFS and HWIL pre-test predictions and post-test analysis to support GTV flight test. Conduct 10 PAM GTV flight tests (3 of the 10 will be in Ft. Greely, AK). Flight Limited User Test (LUT) (6 total PAM GTVs), CFT (WSMR), Electronic Warfare (EW) Test; and Nuclear Test; and Electromagnetic Environmental Effects (E3) Tests. Conduct PAM FAT. Complete AETF evaluations; prepare for Operational Test (OT); update NLOS-LS Certification and Accreditation of CLU iteration 12 software for ATO. Prepare for and conduct Flight LUT and continue		21750	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604646A - Non-Line of Sight Launch System	PROJECT F72
support for Live Fire Test and Evaluation with tests, models, and simulations; model and simulation (IFS and HWIL) support for LUT (pre-test and post-test analysis) and associated evaluations; Electronic Warfare Susceptibility tests; Nuclear Effects testing; complete system qualification; ground LUT; post LUT updates to HW/SW based on tests and prepare for initial Operational Test and Evaluation (IOT&E).		
FY10 Planned Accomplishment - GOVERNMENT TEST: Modeling and simulation support for FCS Integrated Mission Test 2 and Experiment 3 execution. Support SO1 Technical Test and Operational Assessment of hardware in a classified environment using JTRS Radios. JTRS Ground Mobile Radio (GMR) radio integration into control cell. Test updated software. Conduct associated training and provide logistics in support of soldier test events. Conduct flight LUT.		11870
Small Business Innovative Research/Small Business Technology Transfer Programs		5825
Total		246071 208009 88660

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
PE 0603639A 656 Mounted Combat System (MCS) Ammunition	43068	40731		Continuing	Continuing
PE 0604647A F58 Non Line of Sight - Cannon	133139	89545	58216	Continuing	Continuing
PE 0604660A FCI Manned Grd Veh & Common Grd Veh Components	635846	782664	368557	Continuing	Continuing
PE 0604661A FC2 FCS System of Systems Engr & Prog Mgmt	1292514	1414756	1067191	Continuing	Continuing
PE 0604662A FCS RECONNAISSANCE (UAV) PLATFORMS	42772	57190	68701	Continuing	Continuing
PE 0604663A FCS UNMANNED GROUND VEHICLES	78826	102976	125616	Continuing	Continuing
PE 0604664A FCS UNATTENDED GROUND SENSORS	22007	17011	26919	Continuing	Continuing
PE 0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
PE 0604666A FCS Spin Out Technology/Capability Integration	84111	111032		Continuing	Continuing
WTCV G86100 FCS CORE PROGRAM	78932	154127		Continuing	Continuing
WTCV G86200 FCS SPIN OUT PROGRAM	1370	67268	327921	Continuing	Continuing
0605625A - Manned Ground Vehicles			100000	Continuing	Continuing

Comment: NLOS-LS system is being developed for both Army and Navy requirements. The NLOS-LS Project Office and PMS 420 are the designated action offices for the respected services.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)**May 2009**

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604646A - Non-Line of Sight Launch System

PROJECT

F72

FY10 increased funds is to perform NSA certification test.

Comp Programs:

JTRS-HMS, JTRS-AMF,DCGS-A, FBCB2, OneTESS, OneSAF

C. Acquisition Strategy The Army awarded the NLOS-LS SDD contract, on 19 March 2004, to Netfires Limited Liability Company (LLC), consisting of Lockheed Martin Corporation, doing business through its Missiles and Fire control and operating entity in Grand Prairie, TX; and the Raytheon Corporation, doing business through its Missile Systems Business Unit in Tuscon, AZ. The NLOS-LS SDD contract was definitized 20 August 2004. The NLOS-LS was technological mature enough to be included as a desired capability into Current Force Early-Infantry Brigade Combat Teams (E-IBCTs) Spin Out.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604646A - Non-Line of Sight Launch System							F72		
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	Various	See remarks	210174	148153	1-4Q	140005	1-4Q				498332	
Prototype	Various	See remarks	46189	45648	1-3Q	17822	1-4Q				109659	
Software	Various	See remarks	26418	16658	1-4Q	14017	1-4Q				57093	
PAM Software	Various	See remarks						12716		21765	48321	
CLU Design	Various	See remarks						24167	2Q	19704	65078	
PAM Prototype	Various	See remarks									2920	
CLU Prototype	Various	See remarks									1900	
PAM Design	Various	See remarks						20578		14546	52804	
CLU Software	Various	See remarks						10231		16860	36051	
Subtotal:			282781	210459		171844		67692		72875	872158	
Remarks: Prime contractors: #1 Lockheed, Dallas, Texas #2 Raytheon, Tuscon, Arizona Sub Contractors: #3 Lockheed, Baltimore, MD #4 ATK, Rocket City, WV #5 Raytheon, Fullerton, CA #6 IGS, Minneapolis, MN #7 IEC, Anaheim, CA #8 KDI, Cincinatti, OH #9 Raytheon, Louisville, KY #10 Sparta, San Diego, CA #11 General Dynamics, Niceville, FL #12 BrenTronics, Commack, NY #13 MOOG, Salt Lake City, UT												
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
Various	Various	MULTI	2793	2271		2492		2167		1905	11628	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604646A - Non-Line of Sight Launch System	PROJECT F72
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Subtotal:	2793	2271		2492		2167		1905	11628	
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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
Various	Various	MULTI	7292	17018		21750		11870		5200	69830	
Subtotal:			7292	17018		21750		11870		5200	69830	

Remarks: Test Sites: WSMR; Eglin Air Force Base; CRTTC, Ft. Greeley, AK; RTTC, Redstone Arsenal, AL; APG, Aberdeen, Maryland; Ft. Bliss, TX

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
Various	Various	MULTI	21115	16323		11923		6931		8988	65280	
Subtotal:			21115	16323		11923		6931		8988	65280	

Project Total Cost:	313981	246071		208009		88660		88968	1018896	
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604646A - Non-Line of Sight Launch System

PROJECT
F72

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
NLOS-LS SDD	NLOS-LS SDD																															
Spin Out (Early) to IBCT (PLUT)	SO Early PLUT																															
Spin Out (Early) to IBCT (LUT)	SO Early LUT																															
(1) Tactical Prototype CLUs to AETF	▲ ₁ Tactical Prototype CLUs																															
(2) Spin Out Long Lead Items	▲ ₂ SO LLI																															
(3) Spin Out MS C	▲ ₃ SO MS C																															
LRIP	LRIP																															
Tech Test	Tech Test																															
Operational Assessment	OA																															
Operational Testing	TFT/FDTE/IOTE																															
(4) Flight OT	▲ ₄																															
(5) Initial Operational Capability	▲ ₅																															
NLOS-LS S&T Increment I and Objective Systems	S&T for Increment I and Objective Systems																															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604646A - Non-Line of Sight Launch System

PROJECT
F72

<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>
NLOS-LS SDD	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 3Q				
Spin Out (Early) to IBCT (PLUT)	4Q							
Spin Out (Early) to IBCT (LUT)		4Q						
Tactical Prototype CLUs to AETF	2Q							
Spin Out Long Lead Items		3Q						
Spin Out MS C			1Q					
LRIP			1Q - 4Q	1Q - 2Q				
Tech Test			2Q - 3Q					
Operational Assessment			4Q					
Operational Testing				1Q - 4Q				
Flight OT				4Q				
Initial Operational Capability				4Q				
NLOS-LS S&T Increment I and Objective Systems	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)	May 2009
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604646A - Non-Line of Sight Launch System	PROJECT F72
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Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
F72 NLOS Launch System	9874	345	12
Total Termination Liability Funding:	9874	345	12

Remarks:
The NLOS-LS prime contract incorporates the "Limitation of Funds" clause, FAR 52.232-22, to limit the Government's liability and FAR 52.249-6, Termination (Cost Reimbursement), for contract termination. (Some efforts in the FY 2010 timeframe represent additional scope of work efforts). Once contract negotiations are complete on these additional efforts, the termination liability will be adjusted accordingly.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604647A - Non-Line of Sight Cannon			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
F58 NON LINE OF SIGHT CANNON	133139	89545	58216		280900

A. Mission Description and Budget Item Justification: This NLOS-C program contains the development effort associated with NLOS-C unique work. The Manned Ground Vehicle (MGV) common sub components for NLOS-C and MGV are included in the MGV PE0604660 Project FC1.

The Army established NLOS-C as the lead MGV of the FCS Family of Systems (FoS). Eight Early prototypes were mandated. One prototype was delivered to test in FY 2008 with four to be delivered in FY 2009 and three in FY 2010. The first 5 early prototypes, delivered in FYs 2008 and 2009, will be the 24 ton MGV configuration as previously discussed with Congress. The 3 remaining FY 2010 prototype deliveries will be updated to the 30 ton configuration. These 3 prototypes will provide greater fidelity test data for the ultimate MGV SDD common design components and may reduce final MGV prototype testing cost. Concurrent with the Congressionally mandated MGV SDD prototypes, 3 final configuration threshold NLOS-C prototypes will be delivered in fiscal year 2011.

The NLOS-C is the Army's first fully automated 155-mm howitzer, 38 caliber cannon, that provides automated, 24/7, all-weather, precision fire support to the FCS (BCT) commander. It will be organic to and provide networked, extended-range (30kms), responsive and sustained precision attack of point and area targets in support of the FCS (BCT). The NLOS-C will provide close support and destructive fires for tactical standoff engagement during both offensive and defensive operations in concert with line-of-sight, beyond line-of-sight and other NLOS, external and joint capabilities in combat scenarios spanning the spectrum of ground combat. The NLOS Cannon's fully automated ammunition handling system and real-time digital operating environment enables two soldiers to perform tasks that normally require four soldiers on current force systems. The cannon will be able to move rapidly, stop quickly, and deliver lethal first round effects on target in record time largely due to the fully automated gun laying, ammunition handling, and fuze setting of all current and precision guided 155mm artillery rounds. The NLOS-C will have a multiple round simultaneous impact (MRSI) capability, unmatched sustained rate of fire of six-rounds per minute and precision fires, through the XM982 Excalibur, to provide unprecedented effects on target from a smaller number of systems.

The NLOS-C program has been changed due to restructuring of the MGV portion of the FCS program and the refocusing of the FCS program to spin out FCS technologies faster to the IBCT.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604647A - Non-Line of Sight Cannon		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	136929	89841	71396
Current BES/President's Budget (FY 2010)	133139	89545	58216
Total Adjustments	-3790	-296	-13180
Congressional Program Reductions		-296	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	42		
SBIR/STTR Transfer	-3832		
Adjustments to Budget Years			-13180

Change Summary Explanation: Funding - FY 2010: Program is terminated after FY 2010.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604647A - Non-Line of Sight Cannon			PROJECT F58
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
F58 NON LINE OF SIGHT CANNON	133139	89545	58216		280900

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
SYSTEM ENGINEERING & PROGRAM MANAGEMENT - FY08 - Continued Preliminary Design Activities leading to Preliminary Design Review for the final threshold 30 Ton FCS NLOS-C prototypes, 2Q FY09. Initiated design and development of the P7 and P8 NLOS-C systems. Final design and integration of adding JTRS radios to the 24 ton configuration prototypes in early 2009. Continued Firing Platform testing to support an Interim Safe Service Life and Interim Safe Fatigue Life ratings for the XM324 Ultra-Light Weight Cannon and Tube in early 2009. Completed NLOS-C integration in Program Integration, Validation and Test Lab (PIVOT). Completed design efforts required to deliver 30-ton chassis configuration for the last three NLOS-C prototype vehicles in CY 2009. Continued to design the threshold configuration for the FCS Core program to support FY09 PDR.	51049		
SYSTEM ENGINEERING AND PROGRAM MANAGEMENT FY09 - Completed all NLOS-C specific design and integration activities required to support NLOS-C and MGCV PDR in 2nd quarter FY09 and also SoS PDR in 3rd Qtr FY09. PDR will cover all system and subsystems required for the integration and testing of the SDD (threshold configuration) NLOS-C prototypes for delivery in 2011. Conduct PDR of Core Threshold design and CDR of Initial Production to achieve delivery and fielding of NLOS-C to the Army Evaluation Task Force (AETF) in 2010. Begin Critical Design Activities for FCS Core NLOS-C threshold.		33224	
PROTOTYPE VEHICLE FY08 - Continued to fabricate, integrate, and began delivery of prototype NLOS-C 24 ton systems for developmental testing in CY 2008. One of the five 24 Ton NLOS-C prototypes (P1) was delivered in June 2008. The remaining four early 24 ton configurations are scheduled for delivery in March (P4), Apr. (P5), May (P3) and Sep (P6), of 2009. Improved mobility platform fabrication & assembly processes. Began Procurement of Long Lead hardware required for the three 30 Ton configurations to be delivered in April (P7), May (P8) and June (P2) of 2010.	66677		
PROTOTYPE VEHICLE FY09 - Continued fabrication, integration, and deliver four additional 24-ton prototype NLOS-C systems March (P4), April (P5), and September (P6) for developmental testing in FY09 and 10. Completed mobility integration and check-out of P1 and mission module integration and check-out of P3 in April. Remaining 30 Ton NLOS-C Platforms will be stored or disposed in the most economical fashion that supports future program initiatives		42134	
SYSTEM TEST & EVALUATION (TEST) FY08 - NLOS-C - Conducted effective full charge rate of fire and Battlefield Day rate of fire testing on the Firing Platform at YPG. Conducted Excalibur compatibility testing and design refinement on the Firing Platform. Continued Firing Platform testing to support Interim Safe Service Life and Interim Safe Fatigue Life ratings for the XM324 Ultra-Light Weight Cannon and Tube in early 2009. P1 began testing at YPG in 4Qtr FY08.	7224		
SYSTEM TEST & EVALUATION (TEST) FY09 - Began NLOS-C early prototype developmental testing at Yuma Proving Grounds for mobility, lethality, weapon accuracy, environmental, and safety. P3 testing to begin at YPG (mobility) and P5 testing at WSMR Electromagnetic Environmental Effects (E3). System Integration Lab (SIL): integration and certification for Independent Validation and		5748	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604647A - Non-Line of Sight Cannon	PROJECT F58	
Verification (IV2) integration and test. P4 will be used for integration and sub-system software/performance testing at the PE SIL in Detroit and the SIF at Minneapolis.			
MISSION SOFTWARE FY08 - Completed Build 1 Software Development and Integration Functional Qualification Test (FQTD) in 1st qtr FY08. This is the software running on the June 2008 delivery of the first early prototype Cannon.		8058	
MISSION SOFTWARE FY09 - Software: Build 2 initial drop for system integration. Software Build 2 Life Cycle Assessment (LCA) review, Build 3 Requirement Baseline Review (RBR), Build 3 begins. Modeling and Simulation: Build 3 Fire Support Equipment (FSE) available from MS&I.			5932
GFX-08- TACLINK 2000 - MODEM		131	
Termination Liability			58216
Small Business Innovative Research/Small Business Technology Transfer Programs.			2507
Total		133139	89545

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604661A FCS System of Systems Engr & Program Management	1292514	1414756	1067191	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing
0604664A FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing
0604666A FCS Spin Outs	84111	111032		Continuing	Continuing
0603639A FCS MRM	43068	40731		Continuing	Continuing
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing
0605635A - Manned Ground Vehicles			100000		100000

Comment: Comp Programs: ASTAMIDS, GSTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, JTRS-AMF, STARLite SAR/GMTI, JAVELIN, JCADS, JSLSCAD, DCGS-A, FBCB2, OneTESS, OneSAF

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604647A - Non-Line of Sight Cannon

PROJECT

F58

C. Acquisition Strategy The original FCS contract was awarded to the Lead Systems Integrator (LSI), Boeing Company, 30 May 2003 and definitized 10 Dec 2003. LSI contracted with its One Team Partner's, BAE Systems and GDLS, to execute the SDD contract to build the Non-Line of Sight Cannon. For FY 2010, NLOS-C program is being terminated after the completion of the SoS PDR and delivery of the FY09 Prototypes. The Army will determine the most cost effective means for disposal/storage/transfer of prototypes and prototype NLOS-C components.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604647A - Non-Line of Sight Cannon							PROJECT F58		
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
Mission Software	FAR	THE BOEING COMPANY,ST. LOUIS, MO - See Remarks 1, 2, 3	45548	8016	1-3Q	5932	1-3Q				59496	
Prototype Vehicle	FAR	THE BOEING COMPANY, -ST. LOUIS, MO., See Remarks 1, 2, 3	174269	66677	1-3Q	42134	1-3Q				283080	
System Engineering & Program Management	FAR	THE BOEING COMPANY,ST. LOUIS, MO -See Remarks 1, 2, 3	175408	51049	1-3Q	33224	1-3Q				259681	
System Test & Evaluation	FAR	THE BOEING COMPANY, ST. LOUIS, MO - See Remarks 1, 2, 3	7019	7224	1-3Q	5748	1-3Q				19991	
Government GFX	MIPR	PM FCS (BCT) St. Louis,MO		131	1Q						131	
Subtotal:			402244	133097		87038					622379	

Remarks: Remark 1 - Subcontractor: BAE Armament Systems Division, Minneapolis, MN
 Remark 2 - Subcontractor: BAE Ground Systems Division, Santa Clara, CA
 Remark 3 - Subcontractor: General Dynamics Land Systems, Sterling Heights, MI

All MGV common hardware and software costs are accounted for in MGV PE 0604660A, Project FC1.

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
SBIR/STTR	Direct	OSD				2507	1-2Q				2507	
Adjustment to Budget Year	Direct	ABO		42	1-2Q						42	
Subtotal:				42		2507					2549	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604647A - Non-Line of Sight Cannon	PROJECT F58
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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
Subtotal:												

Remarks: All Test and Evaluation costs for this project are included in PE 0604661A, Project FC2 SoS engineering and Program Management project.

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
Termination Liability	FAR	The Boeing Co, St. Louis,MO - See Remarks 1,2 and 3					1-4Q	58216			58216	
Subtotal:								58216			58216	

Remarks: Remark 1 - Subcontractor: BAE Armament Systems Division, Minneapolis, MN
 Remark 2 - Subcontractor: BAE Ground Systems Division, Santa Clara, CA
 Remark 3 - Subcontractor: General Dynamics Land Systems, Sterling Heights, MI

All government system engineering, program management and termination expenses are included in PE 0604661A, Project FC2 SoS Engineering and Program Management Project.

Project Total Cost:	402244	133139		89545		58216					683144
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604647A - Non-Line of Sight Cannon

PROJECT
F58

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) FCS SoS Critical Reviews-PDR								▲ 1 PDR																								
(2) NLOS-C Critical Reviews - PDR					▲ 2 NLOS-C PDR																											
MGV Common Critical Reviews - PDR								■ MGV Common PDR																								
NLOS-C Early Prototype Deliveries								■ NLOS-C Early Prototypes																								
NLOS-C Early Prototype Testing								■ NLOS-C Early Test																								

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604647A - Non-Line of Sight Cannon					PROJECT F58	
<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>
FCS SoS Critical Reviews-PDR		3Q						
NLOS-C Critical Reviews - PDR		2Q						
MGV Common Critical Reviews - PDR		2Q						
NLOS-C Early Prototype Deliveries	3Q - 4Q	1Q - 4Q						
NLOS-C Early Prototype Testing	4Q	1Q - 4Q						

The schedule reflected in this R-Form is based on preliminary analysis of the available budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change the program schedule.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC1 FCS MANNED GRD VEHICLES & COMMON GRD VEHICLE	635846	782664	368557		1787067

A. Mission Description and Budget Item Justification: This program supports development of Manned Ground Vehicles (MGVs) (exclusive of the Non-Line of Sight-Cannon (NLOS-C) specific mission equipment). The following common MGV subsystem developments are also included, (NLOS-C common subsystems): armor, suspension, structures, defensive armament system, signature management, Nuclear, Biological, and Chemical, vetronics, power and energy (includes hybrid electric drive), auxiliary systems and hit avoidance system. Also included in this project is mission specific equipment for the following platforms: Infantry Combat Vehicle (ICV), Mounted Combat System (MCS), Non-Line of Sight Mortar (NLOS-M), Command and Control Vehicle (C2V), Reconnaissance and Surveillance Vehicle (RSV), Field Recovery and Maintenance Vehicle (FRMV), and the Medical Vehicle (MV).

The ICV is a highly lethal, survivable, transportable, networked combat vehicle designed around the 9-man infantry squad. The ICV provides mobility for 11 personnel (2 man crew and 9-man infantry squad) on the battlefield, and protects the squad through self-defense and supporting fires. The ICV delivers the dismounted force to the close battle with an unprecedented situational awareness/situational understanding (SA/SU) and enroute mission planning due to leap-ahead technologies. The ICV is equipped with a 30mm auto cannon and a coax 7.62 machine gun to support infantry Soldiers. The 30mm programmable air burst round has the capability to destroy the dismounted enemy in the open, in trenches, crouched down behind a wall and inside buildings. The remotely operated turret maximizes soldier protection to improve crew survivability from a direct attack.

The RSV features a suite of advanced sensors (which are developed under PE 0604665A) to detect, locate, track, classify, and automatically identify targets from increased standoff ranges under all climatic conditions, day or night. Included in this suite are a mast-mounted, long-range electro-optic infrared sensor, an emitter mapping sensor for radio frequency intercept and direction finding, remote chemical detection, and a multifunction RF sensor. The RSV carries 6 Soldiers (2 common crew and 4 scouts).

The C2V provides the tools for commanders and staffs to command and control various elements of the FCS BCT. Via mission workstations and a common warfighter-machine interface, C2Vs contain the interfaces that allow commanders and their staffs to perform tasks such as fusing friendly, enemy, civilian, weather and terrain situations and distributing this information via a common operating picture. The C2V carries 6 Soldiers (2 common crew and 4 mission crew).

The Mounted Combat System (MCS) provides offensive maneuver to close with and destroy enemy forces. The Mounted Combat System delivers precision fires at a rapid rate to destroy multiple targets at standoff ranges quickly and complements the fires of other systems in the FCS BCT. It is capable of providing direct support to the dismounted infantry in an assault, defeating bunkers, and breaching walls during the tactical assault. The Mounted Combat System can engage targets from Beyond Line of Sight (BLOS), which allows the FBCT the ability to stand-off from the enemy's lethality envelope, allowing the Mounted Combat System to be more lethal, at greater ranges.

The NLOS-M is the short-to-mid-range indirect fire support component within the FCS BCT. It will provide networked, responsive and sustained indirect fire support to the combined arms maneuver battalion in the FCS BCT. It fires 120mm munitions that include special purpose capabilities to provide a variety of fires on demand including precision guided munitions. NLOS-M will provide close support and destructive fires for tactical standoff engagement during offensive and defensive operations in concert with line-of-sight, beyond-line-of-sight, and external and joint capabilities in combat scenarios spanning the spectrum of ground combat and threats.

The MV is a highly mobile, survivable, networked medical vehicle designed around the combat medics and physicians. The MV quickly and safely evacuates wounded soldiers from the battlefield and provides advanced trauma life support within 1 hour to critically injured Soldiers. The MV serves as the primary medical system within the BCT and will have two versions (MV-Evacuation (MV-E) and MV-Treatment (MV-T)). The MV-E allows trauma specialists, maneuvering with combat forces, to be closer to the casualty's point-of-injury and is used for medical evacuation. The MV-T enhances the ability to provide Advanced Trauma Management (ATM)/Advanced Trauma Life Support (ATLS) treatments and procedures forward for more rapid casualty interventions and clearance of the battlespace.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - System Development and Demonstration

0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle

The FRMV is a highly survivable, mobile, networked combat recovery and maintenance vehicle designed around combat repair mechanics. The FRMV enables recovery and maintenance operations to keep pace with other combat platforms within the FCS BCT. The Brigade Support Battalion (BSB) maintainers will be organized into Combat Repair Teams (CRT) supported by FRMVs. These CRTs will perform in-depth Battlefield Damage Assessment and Repair (BDAR) and unscheduled field-level maintenance requirements including lift, welding, cutting, and heating of materials.

MGV Common subsystems include developmental and engineering efforts for the detailed design and integration of common components and sub-systems into a common chassis configuration applicable to the entire fleet of MGV combat vehicles. Major subsystems included in the common chassis design are; Hit Avoidance System (HAS), Propulsion (Hybrid Electric Drive with a High Power Density Diesel Engine), active dampening suspension with band track, Common Crew Station (CCS), Close Combat Armament System (CCAS), hull structure and armor, chassis auxiliary, Vehicle Electronics (Vetronics) and Power Distribution.

The FCS MGV Core Program of Record is terminated in FY 2010. Costs within this program reflect anticipated completion of MGV and support of SoS PDRs and associated activities through the end of FY09. Stop Work contractual direction will be initiated after the Defense Acquisition Executive provides formal direction. Contractual Termination will occur upon an enacted FY 2010 DoD budget and is currently planned for the beginning of FY10. Restart of new Combat Vehicle Program will be captured in PE 0605625A, Project FC8. The accomplishments, funding, and schedule reflected in this justification are based on preliminary analysis of the new direction and reduced program budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change planned accomplishments, funding requirements, and program schedule.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	592254	774257	785575
Current BES/President's Budget (FY 2010)	635846	782664	368557
Total Adjustments	43592	8407	-417018
Congressional Program Reductions		-2593	
Congressional Recissions			
Congressional Increases		11000	
Reprogrammings	59963		
SBIR/STTR Transfer	-16571		
Adjustments to Budget Years	200		-417018

Change Summary Explanation: Funding: FY10 adjustments reflects: Termination of MGV engineering, prototypes and test activities.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle			PROJECT FC1
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC1 FCS MANNED GRD VEHICLES & COMMON GRD VEHICLE	635846	782664	368557		1787067

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
CONTRACTOR INFANTRY COMBAT VEHICLE (ICV) FY08 - Engineering & Program Management - Continued ICV preliminary design activities in the areas of integrated vehicle, turret, and mission equipment in preparation for the 2nd qtr FY09 ICV Preliminary Design Review (PDR). Continued multimedia slip ring (MMSR) component maturation plan, and conducted ICV MMSR Critical Design Review (CDR). Conducted Gun Turret Drive System (GTDS), 30mm ammunition handling system (AHS), and M240 remote operating kit (ROK) system functional reviews (SFR), preliminary design reviews (PDR) and critical design reviews (CDR).	16156		
CONTRACTOR INFANTRY COMBAT VEHICLE (ICV) FY09 - Engineering & Program Management - Conducted ICV PDR in 2nd qtr FY09 in preparation for FCS SoS PDR in 3rd qtr FY09. Refine the ICV preliminary design of the integrated vehicle, turret, and mission equipment. Conduct ICV turret design work to include the turret structure, slip ring, ammunition handling system, armament, and fire control subsystems. Conduct ICV mission equipment design work to include design of the mission module structure, infantry squad compartment, squad situational awareness, equipment stowage, ramp, and infantryman interfaces.		35367	
CONTRACTOR INFANTRY COMBAT VEHICLE (ICV) FY08 - Prototypes - Initiated multimedia slip ring prototype brassboard development activities. Awarded the M240 machine gun remote operating kit (ROK) to Advanced Integrated Systems, Santa Barbara, CA. Awarded the 30mm Ammunition Handling System (AHS) to Meggitt Inc, Irvine CA. Awarded the MK44 gun system subcontract to Alliant Techsystems Inc. ATK Gun Systems, Mesa AZ. Initiated GTDS, 30mm AHS, and M240 ROK prototype brassboard development activities.	9582		
CONTRACTOR INFANTRY COMBAT VEHICLE (ICV)- FY09 - Prototypes - Accept delivery of MMSR, GTDS, M240 ROK, and 30 mm AHS prototype hardware brassboards, and integrate these subsystems into the ICV turret test stand and system integration lab (SIL) activities. Begin ICV prototype assembly and fabrication activities for the ICV mission equipment and turret .		6179	
CONTRACTOR INFANTRY COMBAT VEHICLE (ICV) FY09 - Test - Fabricate the turret firing test stand in the SIL and subsequently conduct initial turret dry fire test at contractor test site.		235	
CONTRACTOR INFANTRY COMBAT VEHICLE (ICV) FY08 - Software - Continued ICV Software Build 2 development activities and conducted the Software Build 2 Life Cycle Objective (LCO) review. ICV Build 2 software provides common fire control for MK44 and coax guns, weapon and Line of Sight (LOS) control, ramp and mission equipment control, and support of multiple ICV variant types (RS/PL/WS/CC) as well as integration of common chassis capabilities for vehicle propulsion, power distribution and control, suspension, environment control, crew station interface, and hit avoidance.	2839		
CONTRACTOR INFANTRY COMBAT VEHICLE (ICV) FY09 - Software - Continued ICV Software Build 2 and conducted the		4717	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle		FC1
Software Build 2 Life Cycle Objective in 1st qtr FY09. Initiate Software Build 3 development activities while conducting Build 3 LCO. Modeling and Simulation: Integrate Build 3 into modeling, simulation and integration (MS&I) activities. ICV Build 3 software provides complete subsystem fault management, recovery and reporting, and support for Embedded Training (Live, Virtual, Constructive Training Capability) as well as integration of common chassis capabilities for hit avoidance enhancements, and close combat armament system.			
CONTRACTOR MOUNTED COMBAT SYSTEM (MCS) FY08 - Engineering & Program Management - Continued preliminary design activities and prepared artifacts for Preliminary Design Review (PDR). Matured and allocated the MCS requirements and functional baselines into draft. Allocated baseline to support subsystem preliminary designs. Conducted focused design iterations to mature the design and achieve balance between requirements, cost, and weight. Developed trade studies and conducted discussions with Army to facilitate the convergence between requirements and the preliminary design.	24644		
CONTRACTOR MOUNTED COMBAT SYSTEM (MCS) FY09 - Engineering & Program Management - Complete the design of the Firing Test Rig (FTR) chassis. FTR is a test asset, which will mature the technology of key MCS fire control technologies. Conducted Preliminary Design Review (PDR) in 2nd qtr FY09 and enter critical design development phase. PDR will confirm alignment between the MCS requirements, functional, allocated, and emerging product baselines and ensure the preliminary design meets the Army's MCS requirements. Supporting this review will be consistency between requirement, architectures, performance analyses and interfaces into the design. PDR review will ensure that identified technical risks have acceptable mitigation plans in place to proceed into detailed design.		32072	
CONTRACTOR MOUNTED COMBAT SYSTEM (MCS) FY08 - Prototypes - Ordered long-lead materials to include Aluminum, Electric Gun Turret Drives (EGTD), crew workstations, Weapon Control Units, and Dynamic Muzzle Reference Sensors (DMRS) for MCS prototypes P21 through P27. P21 is first MCS prototype. MGVT prototypes are now numbered to reduce confusion. The MCS prototypes will be numbered (P21-P27).	37250		
CONTRACTOR MOUNTED COMBAT SYSTEM (MCS) FY09 - Prototypes - Receive Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) sensor and Integrated Computer System (ICS) emulators. Receive MCS P21 Electric Gun Turret Drives (EGTD), Load Locks, and Weapon Control Unit (WCU). Order long lead Common Sub-systems to include Core Vetronics, Suspension, Propulsion, and Environmental Control System (ECS). Began turret and chassis integration and assembly the of the first MCS Prototype, (P21). MGVT prototypes are now numbered (P21-P27).		23196	
CONTRACTOR MOUNTED COMBAT SYSTEM (MCS) FY08 - Test - Delivered XM360 Primary Weapon Assembly (PWA), Ammunition Handling System (AHS), and Fire Control sub-systems and integrated them into MCS Firing Platform. This is a test asset and not included in MCS 7 prototypes. Started 5-month dynamic testing of the Firing Platform on Tank-Automotive Research and Development Center's (TARDEC) Turret Motion Based Simulator (TMBS). This testing matured the design, demonstrated system integration in a relevant environment, and reduced design time and risk. Demonstrated Technology Readiness Level (TRL) 6 of Ammunition Data Link (ADL) for use with Mid-Range Munitions (MRM), Dynamic Muzzle Reference Sensor (DMRS), Advanced Fire Inhibit System (AFIS), high voltage Electric Gun Turret Drive (EGTD), and Ammunition Handling System (AHS) as a result of Firing Fixture Testing. Fired over 750 rounds in support of XM360 Safety Test 1 and 2 at Aberdeen Proving Grounds (APG).	976		
CONTRACTOR MOUNTED COMBAT SYSTEM (MCS) FY09 - Test - Complete 5 month dynamic testing of Firing Platform on TARDEC's Turret Motion Based Simulator (TMBS). Shoot over 200 Line-of Sight (LOS) rounds during 3-month live fire testing of Firing Platform at Aberdeen Proving Grounds. Order materials and begin FTR chassis fabrication. Fire 500 rounds in XM360 Safety Tests #4 and #5 at Aberdeen Proving Grounds and obtain XM360 Interim Safety Release.		870	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle		FC1
CONTRACTOR MOUNTED COMBAT SYSTEM (MCS) - FY08 - Software - Build 2 developments: Completed Build 2 Requirement Baseline Review (RBR) Life Cycle Objective (LCO) Review. Modeling and Simulation: Build 2 FSE available from MS&I. System Integration Lab: SW/HW Integration (Phase 1 Software Emulator Drop, Phase 2 FSE Build 3 available from MS&I). MCS Build 2 software provides MCS fire control (Line of Sight (LOS)) engagements including primary weapon control, ballistics computation, ammunition handling, and firing as well as integration of common chassis capabilities for vehicle propulsion, power distribution and control, suspension, environment control, crew station interface, and hit avoidance.		2765	
CONTRACTOR MOUNTED COMBAT SYSTEM (MCS) - FY09 - Software - Build 2 continues and completes Build 2 Life Cycle Architecture Review. Build 3 begins and complete Build 3 Requirement Baseline Review. Modeling and Simulation: Build 3 FSE available from MS&I.			3679
CONTRACTOR NLOS-M - FY08 - Engineering & Program Management - Completed Modeling & Simulation Build 2 IV2. Mortar Tube & Breech Increment 1 configuration available for mortar firing platform tests. Thermally optimized Increment 1 Mortar Tube and Breech Design established for procurement based upon completed FY08 Phase II Tests. Continued preliminary design activities for 2nd qtr FY09 PDR. Incremental Design Review (IDR) 3. Draft PDR Artifact submissions on track for Sept'08 in support of FY09 PDR.		18558	
CONTRACTOR NLOS-M - FY09 - Engineering & Program Management - Begin detailed design of the Ammunition Handling (AHS), Gun Mount, Gun Pointing, Structures and Twist Capsule/Slip Ring Subsystems. Detailed Design. Primary Weapon Detailed Design is ongoing. Ammunition Handling and Primary Weapon will complete Detailed Design. The NLOS-M Mission Module (MM) and MGV Preliminary Design Review (PDR) complete 1st and 2nd quarter FY09.			11068
CONTRACTOR NLOS-M - FY08 - Prototype - Phase 2 firing platform updated to include a Round Detection Device, threshold level IBARS breech components and round placement equipment. Long lead procurement of the Firing Platform included ammunition handling magazines, shuttles and motors. Prototype Firing Vehicle initiated. The numbering sequence for NLOS-M Prototypes is P41 - P42.		2107	
CONTRACTOR NLOS-M - FY09 - Prototypes -. IA&C of the Mortar Firing Platform (MFP) was completed and delivered to Camp Ripley MN I the 2nd Qtr of FY09. Mortar Firing Platform (MFP) 3 shipped to Camp Ripley during 2nd Qtr FY09 for Phase III testing. Fabrication of MFP 4 begins and completed. IA&C of MFP 4 begins. MFP 4 will be chassis mounted allowing the unit to be fired at maximum range and rates			2365
CONTRACTOR NLOS-M - FY08 - Test - Firing platform tests completed on the test stand at Camp Ripley. Phase 2 firing platform updated and fired 569 rounds at Camp Ripley. Slip Ring Component Maturation Platform (CMP) tests completed. CMP testing completed after delay expired.		690	
CONTRACTOR NLOS-M - FY09 - Test - Beginning in 2Q FY09, testing of the MFP (3) begins to determine solution for debris management, platform checkout, maximum range demo, and Multiple Rounds Simultaneous Impact (MRSI) demo. Fabrication of MFP 4 begins and completed. Reliability Enhancement Testing (RET) begins 3rd quarter of FY09 conducted at the Systems Integration Facility (SIF) in Minneapolis, MN. The objective of Phase III testing is to continue the development of the Army's first breech loaded Mortar. Phase III testing will validate the improvements made to components as a result of Phase II testing. Improvements to the In-Bore Air Regulating System (IBARS), the Automated Mortar Cleaning & Cooling System (AMCS), the firing pin assembly, and the breech have been incorporated in the hardware for Phase III testing.			768
CONTRACTOR NLOS-M - FY08 - Software - Build 2 continues. Build 2 software provides basic Direct and Indirect Fires capability for the Mortar, and interoperability with FCS Battle Command. Mortar Software Simulation provided for System of Systems analysis and		2221	

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle	FC1
demonstration. Completed Life Cycle Objective (LCO). Reviewed first two of six Software Engineering cycles (2.2 and 2.3) completed. NLOS-M Build 2 software provides indirect fire (non-line of sight) mission operation, inventory management and resupply, near crest management, and state and capability management, as well as integration of common chassis capabilities for vehicle propulsion, power distribution and control, suspension, environment control, crew station interface, and hit avoidance.		
CONTRACTOR NLOS-M - FY09 - Software - Build 2 initial drop for system integration. Software Build 2 Life Cycle Assessment (LCA) review, Build 3 Requirement Baseline Review (RBR), Build 3 begins. Modeling and Simulation: Build 3 Fire Support Equipment (FSE) available from MS&I. NLOS-M Build 3 software provides Line of Sight (LOS) fire mission operations, complete subsystem fault management, recovery and reporting, and support for Embedded Training (Live, Virtual, Constructive Training Capability) as well as integration of common chassis capabilities for hit avoidance enhancements, and close combat armament system.		2673
CONTRACTOR COMMAND & CONTROL VEHICLE (C2V) FY08 - Engineering & Program Management - Developed preliminary design for the C2V mission workstation and controls. Prepared Preliminary Design Review (PDR) artifacts for the C2V mission module review in Nov 08 and vehicle level PDR in 2nd Qtr FY09. Completed C2V requirements compliance assessment. Documented C2V Human Factors Engineering/MANPRINT report.	14924	
CONTRACTOR COMMAND & CONTROL VEHICLE (C2V) FY09 - Engineering & Program Management - Conducted C2V preliminary design review, 1st Qtr FY09. Prepare artifacts and mature C2V design for Critical Design Review (CDR) in FY10. Finalize C2V Interface Control Documents (ICDs) and Critical Item Development Specification (CIDS).		16818
CONTRACTOR COMMAND & CONTROL VEHICLE (C2V) FY08 - Prototype - Established C2V System Integration Lab (SIL) for phase 1 integration and testing of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) hardware. Populated SIL with C2V subcomponents, surrogates, or emulators and other subsystems as available (GPCS, EO CEEU, and Sensor Suite Hardware & Pre-CDR Software). The C2V Prototypes are numbered P91 - P95.	559	
CONTRACTOR COMMAND & CONTROL VEHICLE (C2V) FY09 - Prototypes - Develop prototype mission workstation/controls hardware. Hardware includes displays, hand controllers, seats, keyboards, and mounting hardware for displays. Receive C4ISR hardware (WIN-T, ANS, SREO) and Integrated Computer System (ICS Type 1 and 1A) emulators.		1821
CONTRACTOR COMMAND & CONTROL VEHICLE (C2V) FY08 - Test - Completed phase 1 C2V rooftop deconfliction testing at Electronic Proving Grounds (EPG), Ft. Huachuca, AZ and publish results for use in Modeling and Simulation (M&S) efforts on all MGCV platforms. MGCV Rooftops are densely packaged with Antennas, Sensors, Weapons, and Survivability system placements which could cause physical, functional, and electromagnetic conflicts. In addition, there is a potential for co-site interference between MGCVs when in close proximity. The three phased Rooftop Deconfliction testing at EPG, Ft. Huachuca is designed for early and ongoing assessments of component interaction for design improvements. The objective is to incrementally add new antennas and sensors as they become available and mature to increase fidelity of the overall testing to reduce co-site interference and influence integrated design of all MGCV vehicles.	58	
CONTRACTOR COMMAND & CONTROL VEHICLE (C2V) FY09 - Test - Perform C2V rooftop deconfliction phase 2 testing at EPG, Ft. Huachuca, AZ using more mature communications equipment than was used in Phase 1. Test results will provide data to ensure that antenna placement on the C2V is optimized and that any electromagnetic conflicts are mitigated. Results will also provide modeling information for antenna placement and mitigation measures applicable to other MGCVs.		100
CONTRACTOR COMMAND & CONTROL VEHICLE (C2V) FY08 - Software - Initiated work on development of C2V Software Requirements Specification, Developed C2V software architecture and began C2V software development and integration in support of	1067	

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BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle		FC1
MGV Software Build 2.0. Created C2V vehicle simulation model for M&S and provided to System of Systems Integration Laboratory (SOSIL) for integration and verification. C2V Build 2 software provides platform assignment, mission workstation and mission workstation entry, as well as integration of common chassis capabilities for vehicle propulsion, power distribution and control, suspension, environment control, crew station interface, and hit avoidance.			
CONTRACTOR COMMAND & CONTROL VEHICLE (C2V) FY09 - Software - Complete and integrate Software Build 2.0. Start effort on Software Build 3.0. Continue integration of latest release of common/C4ISR software/hardware in the C2V. C2V Build 3 software provides complete subsystem fault management, recovery and reporting, and support for Embedded Training (Live, Virtual, Constructive Training Capability) as well as integration of common chassis capabilities for hit avoidance enhancements, and close combat armament system.		1273	
CONTRACTOR RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV) FY08 - Engineering & Program Management - Developed preliminary design for the RSV mission workstation and controls. Prepared Preliminary Design Review (PDR) artifacts for the RSV mission module review in 1st Qtr FY09 and common vehicle level PDR in 2nd Qtr FY09. Provided requirements to BAE for ICV/RSV MK44 turret for subsystem development. Completed RSV requirements compliance assessment. Documented RSV Human Factors Engineering/MANPRINT report.		14789	
CONTRACTOR RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV) FY09 - Engineering & Program Management - Conducted RSV mission module review in 1st Qtr FY09 and RSV preliminary design review, 2nd Qtr FY09. Prepare artifacts and mature RSV design for Critical Design Review (CDR), 2nd Qtr FY10. Finalize RSV Interface Control Documents (ICDs) and Critical Item Development Specification (CIDS).		18977	
CONTRACTOR RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV) FY08 - Prototypes - Established RSV Systems Integration Lab (SIL) for phase 1 integration and testing of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) hardware in anticipation of prototype fabrication. Populated SIL with RSV subcomponents, surrogates, or emulators and other subsystems as available (GPCS, EO CEEU, and Sensor Suite Hardware & Pre-CDR Software).		2141	
CONTRACTOR RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV) FY09 - Prototypes - Procure prototype mission workstation/controls hardware. Hardware includes displays, hand controllers, seats, keyboards, and mounting hardware for displays. Receive C4ISR sensors (EMS, LREO, MFRF, and BTID), Integrated Computer System (ICS) emulators, WIN-T, and ANS. Order material for Armor structure, chassis structure, ECS, fuels subsystem, mission structure, NBC System, SIGMAN Subsystem, MK44/M240 Coax, and Turret Structure. Order long lead materiel for propulsion system and suspension system in preparation for RSV prototype builds. Begin Hull Fabrication of two RSV Prototypes (P31-P32).		1073	
CONTRACTOR RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV) FY08 - Test - Began Phase 1 RSV rooftop deconfliction testing at Electronic Proving Grounds (EPG), Ft. Huachuca, AZ, 4th Qtr FY08. MGV Rooftops are densely packaged with Antennas, Sensors, Weapons, and Survivability system placements which could cause physical, functional, and electromagnetic conflicts. In addition, there is a potential for co-site interference between MGVs when in close proximity. The three phased Rooftop Deconfliction testing at EPG, Ft. Huachuca is designed for early and ongoing assessments of component interaction for design improvements. The objective is to incrementally add new antennas and sensors as they become available and mature to increase fidelity of the overall testing to reduce co-site interference and influence integrated design of all MGV vehicles.		70	
CONTRACTOR RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV) FY09 - Test - Completed Phase I RSV Rooftop Deconfliction Test at Electronic Proving Grounds (EPG) (Nov 08), and publish results for use in Modeling and Simulation (M&S) efforts		97	

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle	FC1
on all MGVS platforms. Perform RSV rooftop deconfliction Phase 2 testing at EPG, Ft. Huachuca, AZ, 4th Qtr, FY09.		
CONTRACTOR RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV) FY08 - Software -Initiated work on development of RSV Software Requirements Specification, Developed RSV software architecture and began RSV software development and integration in support of MGVS Software Build 2.0. Created RSV vehicle model for M&S and provided to System of Systems Integration Laboratory (SOSIL) for integration and verification phase II. RSV Build 2 software provides common fire control for MK-44 and coax guns, reconnaissance platform assignment, mast operation, operation and control, and mission/commander workstation arbitration, as well as integration of common chassis capabilities for vehicle propulsion, power distribution and control, suspension, environment control, crew station interface, and hit avoidance.	144	
CONTRACTOR RECONNAISSANCE & SURVEILLANCE VEHICLE (RSV) FY09 - Software - Continue integration of latest release of Common/C4ISR software/hardware. Complete development and continue integration of MGVS Software Build 2.0. Start development effort on MGVS Software Build 3.0. RSV Build 2 software provides common fire control for MK-44 and coax guns, reconnaissance platform assignment, mast operation, operation and control, and mission/commander workstation arbitration, as well as integration of common chassis capabilities for vehicle propulsion, power distribution and control, suspension, environment control, crew station interface, and hit avoidance. RSV Build 3 software provides complete subsystem fault management, recovery and reporting, and support for Embedded Training (Live, Virtual, Constructive Training Capability) as well as integration of common chassis capabilities for hit avoidance enhancements, and close combat armament system.		1295
CONTRACTOR FIELD RECOVERY & MAINTENANCE VEHICLE (FRMV) - FY08 - Design and Development - Evaluated alternate crane platform designs and optimized the FRMV suspension system for stability during maintenance and recovery operations. Optimized the FRMV weight for towing conditions and the FRMV towing capacity in varying terrain and environmental conditions. Finalized the FRMV towing design for propulsion, suspension and braking. Conducted crane actuator and recovery winch SFRs and PDRs. Continued preliminary design activities in preparation for 2nd qtr FY09 PDR. Awarded crane actuator, recovery winch and hoist winch sub-contracts.	7856	
CONTRACTOR FIELD RECOVERY & MAINTENANCE VEHICLE (FRMV) - FY09 - Engineering & Program Management - Conduct hoist winch PDR and CDR. Conduct crane actuator and recovery winch CDRs. Conducted FRMV PDR in 2nd qtr FY09 in preparation for an FRMV Critical Design Review (CDR) in 2nd qtr FY10. Refine the FRMV vehicle design in the areas on integrated design, structure, armor, lifting crane platform, recovery system, mission crew system, and maintenance systems. Integrate FRMV subsystem hardware with software in the FRMV system integration lab, and coordinate sensor and communication systems hardware and software deliveries.		7108
CONTRACTOR FIELD RECOVERY & MAINTENANCE VEHICLE (FRMV) - FY08 - Prototype - Initiated FRMV crane test stand development activities. Conducted crane boom actuator, recovery winch, and hoist winch component development prototype activities. The FRMV Prototypes are numbered P51 - P52.	4568	
CONTRACTOR FIELD RECOVERY & MAINTENANCE VEHICLE (FRMV) - FY09 - Prototype - Accept delivery of crane actuator (1 brassboard and 1 prototype), recovery winch (1 brassboard and 2 prototypes) and hoist winch (1 brassboard and 2 prototypes). Fabricate and assemble FRMV crane test stand utilizing brassboard hardware. Initiate FRMV sub-system testing using the FRMV crane test stand. Initiate procurement of unique mission equipment raw material, to include welder, cutter & heating equipment that will be stored on the FRMV and used in recovery and maintenance operations.		3976
CONTRACTOR FIELD RECOVERY & MAINTENANCE VEHICLE (FRMV) - FY08 - Software - Continued FRMV Software Build 2	1805	

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5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle	FC1
development activities and conducted the Build 2 Life Cycle Objective (LCO). FRMV Build 2 software provides crane boom and base control, hoist and recovery winch controls, and stabilizer control, as well as integration of common chassis capabilities for vehicle propulsion, power distribution and control, suspension, environment control, crew station interface, and hit avoidance.		
CONTRACTOR FIELD RECOVERY & MAINTENANCE VEHICLE (FRMV) - FY09 - Software - Continue Software Build 2, and initiate Software Build 3 development activities while conducting Build 3 Life Cycle Objective (LCO). Modeling and Simulation: Integrate Build 3 into MS&I activities and begin integrated system model (ISM) update. FRMV Build 3 software provides dismounted operation, remote diagnostics and software reprogramming, complete subsystem fault management, recovery and reporting, and support for Embedded Training (Live, Virtual, Constructive Training Capability) as well as integration of common chassis capabilities for hit avoidance enhancements, and close combat armament system.		1462
CONTRACTOR MEDICAL VEHICLE (MV-E/T) - FY08 - Engineering & Program Management - Conducted subsystem evaluations using the MV-E and MV-T mock-ups. Continued preliminary design activities assessing overall design and functionality of the MV mission area to include evaluating the litter lift handling system, treatment table, medic work station and placement of medical equipment in preparation for a 2nd qtr FY09 PDR. Fabricated MV-Treatment mock-up for the evaluation of treatment table options, blood refrigerator options, deployable shelter options, and medical equipment sets/patient movement items stowage design options. Started process of down selection of MV-T Shelter, and evaluated treatment tables.	5192	
CONTRACTOR MEDICAL VEHICLE (MV-E/T) - FY09 - Engineering & Program Management - Conducted MV PDR in 2nd qtr FY09 in preparation for FCS SoS PDR in 3rd qtr FY09. Continue the development maturation of MV integrated design, structure, litter lift handling system, patient stabilization system, medical monitoring equipment, on-board oxygen concentrator, treatment table, blood refrigerator, and shelter. Continue integration of medical equipment sets and patient movement item into MV mission module. Initiate MV SIL activities.		4123
CONTRACTOR MEDICAL VEHICLE (MV-E/T) - FY09 - Prototypes - Initiate integration activities for the MV-E (P71) & MV-T (P81) prototype fabrication of two prototypes. Initiate the development of the litter lift handling system, shelter, treatment table, medical monitoring station, oxygen concentrator, and blood refrigerator prototypes.		500
CONTRACTOR MEDICAL VEHICLE (MV-E/T) - FY09 - Test - Conduct MV litter lift handling system, treatment table, shelter subsystem testing. Conduct MV prototype test planning activities.		29
CONTRACTOR MEDICAL VEHICLE (MV-E/T) - FY08 - Software - Continued MV Software Build 2 development activities and conducted the Build 2 Life Cycle Objective (LCO). MV Build 2 software provides patient monitoring capability, ramp control and mission area light operation as well as integration of common chassis capabilities for vehicle propulsion, power distribution and control, suspension, environment control, crew station interface, and hit avoidance.	1781	
CONTRACTOR MEDICAL VEHICLE (MV-E/T) - FY09 - Software - Continue Software Build 2, conduct Software Build 2 LCA, and initiate Software Build 3 development activities while conducting Build 3 Life Cycle Objective (LCO). Modeling and Simulation: Integrate Build 3 into MS&I activities and begin ISM update. MV Build 3 software provides Automatic Network Reporting (ANR) locks, complete subsystem fault management, recovery and reporting, and support for Embedded Training (Live, Virtual, Constructive Training Capability) as well as integration of common chassis capabilities for hit avoidance enhancements.		1742
CONTRACTOR Common Crew Station - Supplier Costs for Integration, assembly, test, and checkout to produce common Crew Systems end-items and display for crew/mission stations. Supplier's Design & development costs for Crew Station Hardware IAW Manned Ground Vehicle (MGV) Product Structure Hierarchy. Does not include integration onto associated vehicles. FY08 - Procured	18205	15235

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle	FC1	
Crew Station Displays. FY09 - Award contracts for common crew station and major components included video distribution and processing unit, intercom adapter, control panels, and seating.			
CONTRACTOR Common Vetronics (Vehicle Electronics) - Supplier Costs to develop/procure Vehicle Electronics (Vetronics) end-items common to one or more vehicle variants. Supplier Costs for Integration, assembly, test, and checkout for common Vetronics components. Hardware and supporting components of the common Vetronics end-items. Does not include integration onto associated vehicles. FY08 - Delivered Core Vetronics power distribution / control systems for INCR0 MGV Prototypes. FY09 - Deliver Core Vetronics power distribution / control systems for IPC MGV Prototypes, award Servo Motor Controller Type VII Contract.	35268	55517	
CONTRACTOR Common Survivability Suite - Includes Defensive Armament, Light Weight Armor, Countermeasures, Signature Management, Software, Survivability Sensors, Survivability Processor, Nuclear, Biological, Chemical detection, filtration subsystem and Subsystem IAT&C. Efforts to design, develop, procure, and deliver defensive armament FY08 - Awarded CCAS Remote Weapon System subcontract. Procured Laser Warning Receiver Sensor, Initiated LRCM Interceptor subcomponent designs. Verified automatic fire extinguishing system. Conducted Design Verification Test for APS, SRCM. Developed preliminary concepts in program plans for mine kits to meet Mine Resistant Armor Protected (MRAP) threat. Tested Long Range Counter Measure interceptor subcomponent designs. FY09 - Continue LRCM interceptor subcomponent designs. Conduct APS vulnerability test. Continue Hit Avoidance System (HAS) detail design analysis and assessment. Award Multifunction Countermeasure SDD contract. Award Passive Threat Warner (PTW) SDD contract. Complete APS Design Verification Phase I (Technology Readiness Level 6). APS hardware/software Integration and Verification begins. Support Highly Accelerated Life Testing (HALT) and Initial Nuclear Radiation (INR) testing. Complete B1 Threshold Armor and U1 Mine Kit Technology Readiness Level 6 demonstration. Development CCAS Remote Weapon Station. Initiate double pin band track mine testing.	31429	59839	
CONTRACTOR Common Traction/Suspension - Supplier costs for common vehicle Traction / Suspension subsystem end-items. These items will be developed or procured by the Primary Vehicle manufacturer for integration into the Primary Vehicle. Supplier Costs for Integration, assembly, test, and checkout for common Traction / Suspension end-items. This is the engineering, analysis and administration effort to integrate the components into the sub-assemblies, labs, test cells, emulators, simulators, final end item(s) and modeling. The cost of labor to fabricate and assemble sub-assemblies, labs, test cells, emulators, simulators, final end item(s) and modeling. This includes receiving and in-process inspection associated with the assembly. This includes any special tools required for assembly. All testing and performance checking. This includes the cost of test equipment. All labor and travel related to any delivery and set up of the end item and labor for Vehicle Subsystem Validation. Does not involve integration onto associated vehicles. FY08 Conducted light weight band track durability test. Delivered light weight band track and in arm hydro-pneumatic suspension systems for integration onto the NLOS-C P1, P3, P4 and P5 vehicles. FY09 - Integrate and verify active suspension performance on P-4 (Plus). Continue band track test including double pin and continuous loop.	22642	15435	
CONTRACTOR Common Powertrain - This is the engineering, analysis to integrate the components into the sub-assemblies, labs, test cells, emulators, simulators, final end item(s) and modeling. Supplier's recurring and non-recurring Prototype Hardware costs for the Common Powertrain subsystem. Supplier Costs for Integration, assembly, test, test equipment and checkout for common Powertrain end-items. This includes receiving and in-process inspection associated with the assembly. This includes any special tools required for assembly. All labor and travel related to any delivery and set up of the end item and labor for Vehicle Subsystem Validation. Does not involve integration onto associated vehicles. FY08 - Delivered Propulsion/Hybrid Electric Drive components, Environmental Cooling test. Upgraded/procured propulsion components, such as TDS & band track for the NLOS-C P vehicle prototypes. Initiated design of upgraded traction drive system. Demonstrated engine/generator full power output. FY09 -Continue to deliver and support integration of Propulsion Hybrid Electric Drive components into NLOS-C P prototype vehicles.	85200	83079	

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle	FC1	
CONTRACTOR Common Structure - Vehicle platforms share many structure elements which are developed by the Vehicle suppliers as "Common Subsystems" with design and development costs collected here. Common structure elements will be built, checked out, and then later integrated into the Mission Equipped vehicle. Supplier effort to design, develop, procure, and deliver the Common Hull structure end-items. Supplier effort to design, develop, procure, and deliver Common Base Armor end-items. FY08 - Initiated CBRN destructive and non-destructive material test. Delivered fully functional Chassis structure. Completed component deliveries for P1, P3-6 and continued to support Integration, Assembly and Checkout (IAC). Performed environmental/ballistic test on B1 threshold armor Coupons/panels integrated on a representative hull structure. MGV armor designs refined; (the ARMY develops basic recipe and program then refines the final design for production of MGV specific armor components/panels/etc). FY09 Structure - Begin component deliveries for NLOS Cannon P7,8,2 and FTR, and continue to support Integration. Assembly and Checkout (IAC) of these vehicles. Assemble, and machine hull raw materials. Procure appendages and first hull structure material available.	15744	28463	
CONTRACTOR Common Vehicle Utility - Common Vehicle Utility Subsystems are engineered systems that are part of multiple vehicles. Examples are Hydraulic systems, fuel systems, fire suppression systems, Environmental Control systems, and lighting. Supplier costs for design, development or procurement of these Common "Chassis Auxiliary" systems. Effort to design, develop, procure, and deliver the environmental control system end-item(s). Complete objective designs and procure for all SDD prototypes.	18486	17553	
CONTRACTOR Common Vehicle Software - Embedded Software that is required to support operation of Manned Vehicles that is not specifically included in a particular Common Subsystem or Mission Software package. For MGV, this includes software for mode and state control, system arbitration, operator displays, vehicle performance sensors (Speed, Oil Pressure, Fuel level, etc.) that is common to all MGV's. Mission specific software is rolled up under each Mission platform. This element will also contain costs for Modeling and Simulation effort associated with this Software Subsystem (if any) that is not specifically attributable to a specific Build. FY08 - Began User design interface for Inc 1 SW build 2. Supported Build 1 & 2 S/W release. Completed build 1 S/W development/integration and Build 2 Life Cycle Objective (LCO). FY09 - Build 2 TRR, Build 3 Requirements Baseline Review (RBR) and LCO. Modeling & Simulation: Build 1 complete, Build 2 ongoing, Build 3 begins (FSE from MS&I). Integration and Verification: begin SEIT SIL integration and test. NBC SIL IV2 complete with NBC IV2 complete, begin SEIT SIL integration and test. HAS Controller and Hit Avoidance Countermeasure Controller software Build 2 ongoing. MGV Active Protection System hardware/software Integration and verification begins. SOSIL SIM/ IV2 MV model update.	8135	8971	
CONTRACTOR Common Support Equipment - Collection point for Supplier effort that includes design and development of Support Equipment end-items Common to multiple platforms, or Support Equipment products. Cost to support testing and evaluation of the components and subsystems resides within the subsystem IPTs PM/SE/PPP effort. Coordinate with LSI management in development of and compliance with UA SoS Training Requirements for any such equipment. FY09 - Common Support Equipment Design.	2696	8313	
CONTRACTOR Common Dismounted Control Device - Supplier's cost to design, develop, build, test and maintain the Hardware for the Distributed Control Device (DCD) for control of Unmanned vehicles. Cost of Hardware for the Distributed Control Device (formerly known as the OCU).	7667	25494	
CONTRACTOR Common Platform Integration - The overall management effort within the supplier organizations to manage the MUPV System Engineering, Integration, Assembly, Test & Checkout, Project Management and Logistics Management work. Supplier costs to support LSI's efforts to Conduct performance and design analyses in the context of the FoS MUPV systems to maintain baseline performance, functional, and logical integration; and to perform system performance analyses and trade studies. Supplier costs to establish and manage the system architectures and requirements including interfaces in order to ensure that Common Subsystems, Mission Equipment, and other components of the Primary Vehicle are integrated into an acceptable unit deliverable to LSI for SoS integration and	216895	251859	

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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle		PROJECT FC1
testing prior to delivery to the customer. Supplier's management effort collected here will be directed in support of the LSI's effort to ensure functional, physical, and logical integration of each unique system developed including the distributed network, common equipment, and mission equipment. Costs for subcontractor management teams in place to oversee design, development, integration, test, and check out of Common Subsystem end-items, Mission Equipment items, and Primary Vehicle items into the delivered vehicle variants, and to support the LSI in all program planning and management efforts as required.			
GFX FY08 - FY08 - Active Protection System (APS) SME Support, APS Live Fire Motion Based Simulator study, Fragment Impact Test Study; FY09 -APS SME Support, ARDEC IM Explosive Fill Test, ARL/SLAD HA Support.		737	2908
Armor Development - Develop unique facilities required for ARL Armor development.			2000
XM307 AP Development Ammo - FY10 requirement terminated in accordance with SECDEF guidance to restart the MGV program.			2497
Termination Liability			368557
Small Business Innovative Research/Small Business Technology Transfer Programs			21918
Total		635846	782664

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604661A FCS System of Systems Engr & Program Management	1292514	1414756	1067191	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing
0604664A FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing
0604647A Non Line of Sight Cannon	133139	89545	58216	Continuing	Continuing
0604666A FCS Spin Outs	84111	111032		Continuing	Continuing
0603639A FCS MRM	43068	40731		Continuing	Continuing
0605625A Manned Ground Vehicle			100000	Continuing	Continuing
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing

Comment: Comment: Associated Comp Programs:
 ASTAMIDS, GSTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, JTRS-AMF, STARLite SAR/GMTI, RRD, JAVELIN, JCADS, JSLSCAD, DCGS-A, FBCB2, OneTESS, OneSAF

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BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle

PROJECT

FC1

C. Acquisition Strategy The Army awarded the original FCS Contract was awarded to the Boeing Company, 30 May 2003 and definitized 10 Dec 2003. LSI contracted with its One Team Partner's, BAE Systems and General Dynamic Land Systems to execute the SDD contract to build the MGV's. The Manned Ground Vehicle family consist of (9) vehicle platforms which will be produced cooperatively by BAE and GD corporations. During FY09, FCS will complete the systems of Systems platform Preliminary Design Review (PDRs). The MGV portion of the SDD contract will be terminated after completion of all SoS PDR activities. The contract prototype and component assets will be disposed/stored in an orderly and cost efficient manner. The combat vehicle program in FY 2010 will be initiated a new contract and new PE 0605625.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle								PROJECT FC1	
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
INFANTRY CARRIER VEHICLE (ICV)	FAR	THE BOEING COMPANY - ST. LOUIS, MO, see remark 2	56736	28576	1-3Q	46498	1-3Q				131810	
MOUNTED COMBAT SYSTEMS (MCS)	FAR	THE BOEING COMPANY - ST. LOUIS, MO, see remark 1	232950	65636	1-3Q	59816	1-3Q				358402	
NON-LINE OF SIGHT MORTAR (NLOS-M)	FAR	THE BOEING COMPANY - ST. LOUIS, MO, see remark 3	57041	23575	1-3Q	16873	1-3Q				97489	
Common Vehicle Components	FAR	THE BOEING COMPANY - ST. LOUIS, MO, see remark 1,2,3	939865	462168	1-3Q	569761	1-3Q				1971794	
COMMAND & CONTROL VEHICLE (C2V)	FAR	THE BOEING COMPANY - ST. LOUIS, MO, see remark 1	75625	16608	1-3Q	20011	1-3Q				112244	
RECONNAISSANCE & SURVEILLANCE VEHICLE	FAR	THE BOEING COMPANY - ST. LOUIS, MO, see remark 1	76631	17144	1-3Q	21441	1-3Q				115216	
Medical Vehicle (MV)	FAR	THE BOEING COMPANY - ST. LOUIS, MO, see remark 3	17631	6973	1-3Q	6394	1-3Q				30998	
FCS RECOVERY & MAINT VEH (FRMV)	FAR	THE BOEING COMPANY - ST. LOUIS, MO, see remark 2	29896	14229	1-3Q	12547	1-3Q				56672	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
5 - System Development and Demonstration			0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle								FC1	
GFX and other	Direct	PM FCS(BCT), St. Louis, MO	45941	737	1-3Q	2908	1-3Q				49586	
Armor Development	Direct					2000					2000	
XM307 AP Development Ammo	Direct					2497	1-3Q				2497	
Adjustment	Direct			200	1-2Q						200	
Subtotal:			1532316	635846		760746					2928908	

Remarks: Remark #1 - Subcontractor: General Dynamics, Sterling Heights, MI; award date Dec 2003
 Remark #2 - Subcontractor: BAE - Ground Systems Division, Santa Clara, CA; award date Dec 2003
 Remark #3 - Subcontractor: BAE - Armament Systems Division, Minneapolis, MN; award date Dec 2003

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
SBIR/STTR	Direct	OSD				21918	1-3Q				21918	
Subtotal:						21918					21918	

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: All Test and Evaluation costs for this project are included in PE 0604661A, Project FC2 SoS Engineering and Program Management project.

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
Termination Liability	FAR	The Boeing Co. - St. Louis, MO, see Remarks						368557	1-4Q		368557	
Subtotal:								368557			368557	

Remarks: Subcontractor: General Dynamics, Sterling Heights, MI; award date Dec 2003

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle				PROJECT FC1			
Subcontractor: BAE - Ground Systems Division, Santa Clara, CA; award date Dec 2003 Subcontractor: BAE - Armament Systems Division, Minneapolis, MN; award date Dec 2003								
Project Total Cost:	1532316	635846	782664	368557		3319383		

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle

PROJECT
FC1

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) FCS SoS Critical Reviews-PDR								▲ 1																								
MGV Common System-Level Reviews - PDR								■ PDR																								
(2) NLOS-M System-Level Reviews - PDR								▲ 2																								
(3) ICV System-Level Reviews - PDR								▲ 3																								
(4) MCS System-Level Reviews - PDR								▲ 4																								
(5) RSV System-Level Reviews - PDR								▲ 5																								
(6) FRMV System-Level Reviews - PDR								▲ 6																								
(7) C2V System-Level Reviews - PDR								▲ 7																								
(8) MV E/T System-Level Reviews - PDR								▲ 8																								
Hit Avoidance System System-Level Reviews - PDR								■ HAS PDR																								

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604660A - FCS Manned Grd Vehicles & Common Grd Vehicle						FC1	
<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>	
FCS SoS Critical Reviews-PDR		3Q							
MGV Common System-Level Reviews - PDR		2Q							
NLOS-M System-Level Reviews - PDR		2Q							
ICV System-Level Reviews - PDR		2Q							
MCS System-Level Reviews - PDR		2Q							
RSV System-Level Reviews - PDR		1Q							
FRMV System-Level Reviews - PDR		2Q							
C2V System-Level Reviews - PDR		1Q							
MV E/T System-Level Reviews - PDR		2Q							
Hit Avoidance System System-Level Reviews - PDR		2Q							

The schedule reflected in this R-Form is based on preliminary analysis of the available budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change the program schedule.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - System Development and Demonstration		0604661A - FCS Systems of Systems Engr & Program Mgmt				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
FC2 FCS SYSTEM OF SYSTEMS ENGR & PROGRAM MGMT	1292514	1414756	1067191	Continuing	Continuing	

A. Mission Description and Budget Item Justification: This program includes contractor efforts and analysis associated with System of System (SoS) engineering analysis and integration, logistics, training, SoS test, fee, and program business management. This project also includes the following government effort: Title 10 contract oversight, SoS engineering, SoS test, modeling and simulation, government furnished equipment, and program management. This project includes support to other DOD agencies for joint programs and collaboration efforts with FCS and associated Complementary Programs. Beginning in FY 2010, this program includes all system engineering, test, logistics, training and program management cost associated with Early-IBCT and Threshold-IBCT development.

In FY08 and FY09, system level PDRs were conducted which will culminate in the SoS PDR scheduled for May 09. The SoS PDR will complete all engineering efforts associated with the establishing the FCS functional baseline for 14 +1 systems. After SoS PDR closeout, additional system engineering effort will be completed for the first two increments of FCS capability (E-IBCT and T-IBCT). Development for these increments will include requirements decomposition and allocation, specification and interface development, architecture development, design and analysis, and verification/validation of prototypes, along with the associated technical reviews (e.g. PDR, CDR).

Contractor SoS Engineering - Conduct technical reviews, top level trade studies, and architectural design of the FCS BCT, E-IBCT/T-IBCT, including requirements decomposition, requirements flow down to platforms, development of specifications, interface definitions, configuration management oversight, specialty engineering, and the analysis and verification of integrated force effectiveness.

Contractor Program Management-Execute the full range of program management functions, including the development of processes and tools, Earned Value Management, Risk, software development, etc. used to manage the FCS incremental program (to include over 600 subcontractors/partners) to achieve the SoS program requirements within the available dollars and schedules.

Test and Evaluation - Includes contractor and government test and analysis to verify the performance of each increment. This work validates the specifications and verifies that the specifications meet the applicable requirements document (ORD or CPD) and operational and organizational requirements. Component and platform level developmental testing is included in the respective platform program elements.

Contractor Logistics includes the development of the "factory to foxhole" products and services required to design, develop, assemble, integrate, and test the supportability processes. This includes: validating maneuver logistics; Performance Based Logistics (PBL), ensuring data collection for logistics decision support system software is adequate to support logistics modeling verification and validation; maximizing commonality of hardware and software to reduce the lifecycle costs and logistical footprint; provides integration of supportability including diagnostics functions and conducts logistics technical reviews at the system, vehicle, and component levels; increased Reliability Availability Maintainability Test (RAM-T) goals; and Pit-Stop Engineering designs for maintenance.

Training - Includes contractor analysis to support incremental training. Includes the design and development, engineering, integration, and testing of unique training devices,

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - System Development and Demonstration

0604661A - FCS Systems of Systems Engr & Program Mgmt

training systems engineering, training products, training support packages, and training integration. This mission assures that the training system is designed as an integral part of the overall incremental design to meet program and KPP requirements. Embedded training development for MGVs will not be pursued in the current contract after the program restructure.

Government Support Costs-Includes funding for government personnel for labor, travel, training, supplies, and other support costs (support contractors, Automated Data Processing (ADP), communications, supplies, and equipment). Supports other services for Joint Programs, Multinational Project Arrangements, and collaborative efforts. Includes the procurement of Government Furnished Equipment/Items/Data (GFX) for the LSI. GFX is used when procurement through the Government is less expensive than through the LSI. Includes Government engineering support and analysis for the New Combat Vehicle Program.

The FCS program has been changed due to restructuring of the MGV portion of the FCS program and the refocusing of the FCS program to spin out FCS technologies faster to the IBCT. The accomplishments, funding, and schedule reflected in this budget justification are based on preliminary analysis of the new direction and reduced program budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change planned accomplishments, funding requirements, and program schedule. The budget justification program schedule reflects the current FCS program. The funding and accomplishments are a top-level attempt to incorporate the new direction to refocus the FCS program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604661A - FCS Systems of Systems Engr & Program Mgmt		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	1497321	1413945	1874987
Current BES/President's Budget (FY 2010)	1292514	1414756	1067191
Total Adjustments	-204807	811	-807796
Congressional Program Reductions		-4689	
Congressional Recissions			
Congressional Increases		5500	
Reprogrammings	-163398		
SBIR/STTR Transfer	-41896		
Adjustments to Budget Years	487		-807796

Change Summary Explanation: FY 2010: the MGV component of the FCS Program is terminated.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604661A - FCS Systems of Systems Engr & Program Mgmt			PROJECT FC2
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC2 FCS SYSTEM OF SYSTEMS ENGR & PROGRAM MGMT	1292514	1414756	1067191	Continuing	Continuing

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
CONTRACTOR PROGRAM MANAGEMENT - Implement processes, models, tools & management structure to integrate all subcontractor partners into one team to meet cost, schedules, and technical performance requirements in the contract to include program overview, Earned Value Management, briefings, technology reviews, reports, program risk, subcontract management, data, operation management, contract management, procurement and acquisition management along with Small and Minority Business Integration, SDD Affordability/CAIV/ Life Cycle Management and development of program baseline & Integrated Master Schedule. FY08 & FY09 supported FCS Core and Common Spin Out; FY10 includes Program Management for the Incremental Programs.	162279	87173	89248
GOVERNMENT - SYSTEM ENGINEERING & PROGRAM MANAGEMENT - SYSTEM ENGINEERING: Participate and ensure the government and soldiers best interest/values are considered in the following: System of System (SoS) reviews, trade studies, architectural management, requirements decomposition, requirements flow down, development of specifications, interface definitions, configuration management oversight, specialty engineering, the analysis and verification of integrated force effectiveness, Software Management, Risk Management, Modeling and Simulation Management, Performance Assurance Management, Product and producibility assurance, Integration & Verification Management, Technology Management and Experimentation. In addition, in FY10, includes the system engineering and analysis required to support the New Combat Vehicle Program, T-IBCT architecture and requirements development, and E-IBCT operation assessment analysis. Begin preparation for the PDR for the T-IBCT. PROGRAM MANAGEMENT: Provide integrated program management (i.e. planning, directing, tools and controlling functions), for all development activities to include data and supplier management, program control, government training, procurement and contracts management, operations management for incremental IBCT and new combat vehicle development. Provide Congressional Title 10 oversight, cost analysis and management, budget development, justification and tracking, Earned Value Management, Integrated Master Schedule development and management, Complementary Program management and operations management associated with contractor management. Also includes TRADOC support for requirements analysis, AoA support, and Milestone reviews.	107511	125991	135436
CONTRACTOR SoS Engineering & Integration FY08 - Conducted SoS Engineering Maturity Review 1 (EM1), Integration Phase 1 Assessment Anchor Point, Engineering Integration 2 Planning Anchor Point as well as the SW Build 2 Planning Checkpoint. In support of these reviews, continued development and maturation of the SoS Architecture with a release of the Single Integrated Model v4.x. Updated and maintained the program technical baseline consisting of releasing the next version of the SoS Specification and Prime Item Development Specifications. Managed execution of the System Level Preliminary Design Reviews (PDR's) for Multi-purpose Utility MULE variants (Transport, Countermine, ARV-A(L)) and Autonomous Navigation System (ANS). Managed execution of Capability Maturity 1, Integration and Verification Phase 1 (IV1) execution consisting of integrating SW build 2, SoSCOE and Prime Item models and simulations into the program SILs and executing the Integrated Mission Test. During IV1 execution, data gathering, reduction and	430106		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604661A - FCS Systems of Systems Engr & Program Mgmt		FC2
assessment were conducted. Additionally, planned for IV Phase 2, with the maintenance and update of the SoS Integration Plan. Updated the Integrated Analysis Plan and executed assessments in the areas of areas of KPP achievability, MANPRINT, Manpower Estimate, Human Systems Integration, Safety and force effectiveness for SoS PDR. Safety Assessment and MANPRINT analysis reports completed and released for SO1 (FDT&E, TFT, LUT), IMT1 and Experiment 2.1. Updated the NEPA Assessment and completed ESOH Evaluation. Updated, maintained and released the Design Concept Baseline and release the System of Systems/System Design Description (SSDD). Began transforming SO from HBCT to E-IBCT to include converting SO ORD to SO CDD & CPD and technical baseline.			
CONTRACTOR SoS Engineering & Integration FY09 - Conduct the SoS Preliminary Design Review (SoS PDR), Engineering Integration 3 Definition Anchor Point and Engineering Integration 3 Readiness Anchor Point. Continue development and maturation of the SoS Architecture. Update and maintain program technical baseline consisting of releasing the next version of the SoS Specification and Prime Item Development Specifications. Develop requested test plan for Experiment 3.0 (execution occurs in 2009 finishing in 2010). The SoS Engineering Iterations (EI) will be updated for EI2 and EI3. Manage execution of System Level Integrated Product Teams Preliminary and Critical Design Reviews (PDR & CDR). Update the Integrated Analysis Plan and execute assessments in the areas of KPP achievability, MANPRINT, Manpower Estimate, Human Systems Integration, Safety, Information Assurance and force effectiveness for SoS PDR. Safety Assessment and MANPRINT analysis reports along with an update of the Programmatic NEPA Assessment and a Programmatic ESOH Evaluation will be completed for SO and core program. Update, maintain and release the Design Concept Baseline and release the System of Systems/System Design Description. Completed adjudication of SO CDD & CPD along with continued maturation of SO technical baseline for integration of SO SoS TFT/FDT&E/LUT and prepare for SO MS C in FY10.		240479	
CONTRACTOR SoS Engineering & Integration FY10 - Continue builds of Brigade Combat Team Software with Build 2 Final (B2F) and MS C decision for Low Rate of Initial Production (LRIP) for the E-IBCT. Manage the execution of the System Level Critical Design Reviews (CDR) for Class I & IV Unmanned Air Vehicles (UAV), Common Controller, Small Unmanned Ground Vehicle (SUGV), MULE Variants, and the T-IBCT network. Conduct the T-IBCT system of system level design review. Update the Integrated Analysis Plan and execute assessments in the areas of areas of KPP achievability, MANPRINT, Manpower Estimate, Human Systems Integration, Safety, Information Assurance and force effectiveness for SoS PDR. Update Program NEPA Assessment and complete a Programmatic ESOH Evaluation. Prepare and execute the E-IBCT Operational Assessment. Integrate Ground Soldier Ensemble and JTRS NSA certified radio into the IBCT Network. Includes architecture development, design engineering, test and program planning to include incorporation of cross domain guard. Conduct Production Readiness Review to include major suppliers. Conduct Industrial Capability Assessment. Insert engineering changes to correct faults detected from FY 09 LUT. Support FY 10 OA testing.			244293
CONTRACTOR SoS TEST FY08 - Completed SO1 Test Readiness Review for TFT. Conducted Technical Field Test Report. Developed and conducted Test Participant Training in support of IMT1. Completed IMT Test Readiness Review. Completed IMT SoSCOE Scalability and Discovery Test Runs for Record and assessed test results. Completed IP2 IPTP. Developed Draft IV2 TFT Detailed Test Plan. Delivered Test Resources Requirements Document. Develop IV2 IMT Detailed Test Plan. Delivered Test Resources Requirements Document. Completed LSI Input to FCS TEMP in prep for PM Update for FCS SoS PDR. Completed Interim Update to ITEP. Supported JEFX08 and FCS Experiment 2. Completed Integration Verification 1 Integrated Mission Tests, SO Tactical Field Test/ Force Development Test & Evaluation/Preliminary Limited User Test (SO TFT/FDTE/PLUT), Experiment 2.		27923	
CONTRACTOR SoS TEST FY09 - Planned Accomplishments Develop IMT1 Master Procedures Set. Begin Preparation for the Test Infrastructure (HW, SW, Participants, and Facilities) to support IMT 2 and TFT2. Early planning to support SSEI development of Integrated phase. Complete Update to ITEP supports CR changes to FCS program. Begin development of TEMP update to include annexes for Spin Out Early to the IBCT. Support CTO & T&E WIPT issues resolution, BCT SW Build 2 Early Distributed Qualification Test (B2E DSQT), Integrated Verification 1 Integrated Mission Test 1 (IV1 IMT1).			9713

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604661A - FCS Systems of Systems Engr & Program Mgmt	FC2
CONTRACTOR SoS TEST FY10 - Plan and execute developmental testing of the new form factor U/T-UGS, Range Extension Relay (RER) updated Network Integration Kit (NIK) - formerly B-kit, updated SUGV, and Class I Block. Plan and conduct two Technical Field Tests in a classified network environment. Provide support to the Operational Assessment conducted as an excursion to the GMR LUT.		39083
GOVERNMENT - SYSTEM TEST & EVALUATION (STE) FY08 - MGV testing focused on the NLOS-C System Demonstrator and Firing Platform testing and NLOS-M Firing Platform and Tube proofing. MGV Top Deck Deconfliction/Co-site testing at EPG continued for C2V and RSV development and MGV modeling efforts. Supported MCS armament proof and safety testing as well as the Firing Platform testing on the TARDEC Turret Based Motion Simulator. Electromagnetic Environmental Effects / Initial Nuclear Radiation (E3/INR) testing was conducted at WSMR on Common components and NLOS-C Subsystems. Automate Fire Extinguisher System (AFES) testing and NLOS-C/M compartment testing was conducted at APG, and MGV CBRN materials testing at Dugway Proving Ground (DPG). NLOS-C SDD Early Prototype testing was initiated with Firing Tests on Prototype P1 and Mobility Testing on Prototype P3. Continued developmental testing of the Full Spectrum (HAS) Short Range and Long Range Counter measure effort. Supported Test ammunition requirements for all FCS firing tests. Provided ATEC range support for the LSI C4IT field test events and Class 1 UAV experiment flight test. Provided DREN connectivity between the LSI and OTP SILs. ATEC provided 25 MY of SME support to the LSI and surge engineering support as required to support test. Funded the development and modifications of modeling and simulation test tools. These tools included stimulators and data collection and analysis tools to test during IP2 field events. Funded the support costs of the Common Control Nodes and WSMR and APG. These facilities are program test facilities used in support of system of system tests events.	81152	
GOVERNMENT - SYSTEM TEST & EVALUATION (STE) FY09 - MGV testing will focus on the NLOS-C SDD prototype testing at YPG, WSMR and APG. This includes Firing Tests on P1, Automotive test on P3, Improved Mobility/RAM test on P4, E3, Safety, Mobility, Firing test on P5, Safety and RAM test on P6, and Reliability test on P7 as well as the continuation of the NLOS-C Firing Platform. Testing. NLOS-M Firing Platform and Proof testing will continue as well as the continuation of MGV Top Deck Deconfliction/Co-site testing at EPG on the RSV and the NLOS-C. NLOS-C/M compartment testing will continue as will Automate Fire Extinguisher System (AFES) testing at APG, MGV CBRN materials testing at DPG MGV Band track testing will also continue at YPG and Armor development testing to include structure testing and coupons will occur at ARL/APG. HAS/APS will also continue thought FY09 as will the APS Countermeasure Munitions testing. MCS testing will continue with the firing of the MSC Firing Platform at APG, MCS Armament safety and qualification testing at APG and MCS Ammunition Compatibility testing. Supports Test ammunition requirements for all FCS firing and ammunition tests. DREN connectivity between the LSI and OTP SILs will continue. ATEC will again provide 42 MY SME support to the LSI and surge engineering support as required to support tests. Continues testing of armor recipes. Initiates Class IV UAV Army/Navy cooperative E3 testing. Funds the development and modifications of modeling and simulation test tools for future test events. These tools include test event design tools as well as test data collection capabilities. Additionally these tools include stimulators used to test FCS systems. Funds the operational and maintenance costs of the Common Control Nodes and WSMR and APG. These facilities are program test facilities used in support of system of system tests events.		99702
GOVERNMENT - SYSTEM TEST & EVALUATION (STE) FY10 - Full Spectrum Hit Avoidance Systems procured in FY09 will be tested in FY10 for support of the New Combat Vehicle Program. Conduct a simulation based test in support of E-IBCT development at the WSMR Common Control Node. FY10 funding provides for range support for E-IBCT platform testing, two E-IBCT Technical Field Tests and the Operational Assessment. ATEC will provide SME support to the contractor and surge engineering support as required to support specific E-IBCT test events. Funds the development and modification of modeling and simulation test tools for future test events.		75650

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604661A - FCS Systems of Systems Engr & Program Mgmt		FC2
<p>These tools include test event design tools as well as test data collection capabilities. Funds the operational and maintenance and hardware (HW) refresh costs of the Common Control Nodes and WSMR and APG. Funds for infrastructure and test facilities that will support the E-IBCT testing.</p>			
<p>GOVERNMENT - MODELING & SIMULATION (M&S) FY08 - Continued development of Government models and simulations in support of the Future Combat Systems Synthetic Environment (FSE) which is integrated by the LSI. FSE is the simulation environment utilized in Integrated Mission Test 1. This development included modifications to One SAF Objective system (OOS) as the core FSE simulation, the development of digital terrain databases, modifications to the RDECOM MATREX simulation federation, as well as the modifications of the Ocean, Atmosphere, Space and Environmental Services (OASES) weather server. Funded the continued development of the 3CE Cross Command Distributed Network capabilities between FCS, ATEC, and RDECOM. This effort managed the use and reuse of individual command simulations to facilitate distributed integration and testing, thus reducing time and cost of material development and test. FY08 funded the development of future simulations required for IP2 and IP3 Integrated Mission Tests. These simulations included the effects of communications in an urban environment as well as the inclusion of urban terrain into the FSE.</p>	2850		
<p>GOVERNMENT - MODELING & SIMULATION (M&S) FY09 - Continues funding of the Cross Command Collaboration Effort (3CE). Goals include the identification of requirements and design, develop, and integrate technologies and data related to user common areas of interest through FY13 that support FCS Program and user needs, with emphasis on IP2. Enables a multi-level secure network backbone; maintains a persistent and secure 3CE network (peering points); continues M&S systems process to develop common M&S and data architecture for IP2 and IP3. Support to IP2 laboratory events: Continues enhancements of the Communications Effects Server (CES) to support Quality of Service testing. Provides funding for FCS unique enhancements of OneSAF to support: FCS Unit-level behavior modeling; Tactical Network Gateway; FCS Battle Command stimulation; ability to command and control the SAF at the Company and Battalion levels; continues the integration of representations of insurgents and the impact of urban terrain, building interiors, and competing urban radio frequencies into OneSAF and the CES.</p>		10164	
<p>GOVERNMENT - MODELING & SIMULATION (M&S) FY10 - Continues funding of the Cross Command Collaboration Effort (3CE). In addition to funding persistent 3CE capabilities described in FY09, emphasis will be on support to T-IBCT M&S development to support developmental testing. Provides funding for FCS unique enhancements of OneSAF to support: adaptation to T-IBCT releases of FCS Battle Command; updated representations of FCS equipment based upon evolving platform CDR design baseline.</p>			11490
<p>CONTRACTOR TRAINING Specs and Products FY08 - Delivered individual and collective task analyses (1,500+). Continued training inputs and support to FCS Systems PDRs for all platforms and the Network/Battle Command. Continued Key Performance Parameter (KPP) #6 (Training) trace, development, and execution. Defined and recommended the interfaces necessary to incorporate appropriate in-lieu-of systems supportability requirements and information technology applications IAW the Supportability Strategy. Continued integration of Training software with Warfighter Machine Interface (WMI), along with development of interface requirements specifications. Updated and Delivered: Training Management Plan, Training Data Products Report, Training Support Packages, Training Facilities Survey Report. Developed and delivered 17 Interactive Multimedia Instruction (IMI) Training Support Packages (TSPs) for Individual Training and 25 Simulation-based Collective TSPs. Continued integration of Embedded Training software and products in the Training Systems Integration Lab (SIL). Continued integration of Training software with Warfighter Machine Interface (WMI) leading to FCS Engineering Iteration 2. Developed Training Common Component Build 2 Drop 1 (engineering release). Delivered Individual Task Lists in support of System PDRs. Delivered Final Task Analysis Report (DI-026) in support of System CDRs. Continued Key Performance Parameter (KPP) #6 (Training) trace, development, and execution. Completed Training support to SO1 Tech Field Test/Limited User Test (Apr 08-Jul 08). Provided FCS SME oversight of TCC Software Architecture and Software development.. Integrated TCC capabilities horizontally across PEO STRI baseline program functionality.</p>	57410		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604661A - FCS Systems of Systems Engr & Program Mgmt	FC2
CONTRACTOR TRAINING Specs and Products FY09 - Continue development of individual and collective tasks analyses to support design implications of Embedded Training. Develop of interface requirement specifications and begin preparation of interface design specifications. Update and Deliver: Training Management Plan, Training Data Products Report, Training Support Packages, Training Facilities Survey Report. One Team Partners continue to develop and update Embedded Training capability and products for the FCS program: Training (Instructional) Support Packages (TSPs), Interactive Multi-media Instruction (IMI), Embedded Training software. Complete Platform PDR and SoSPDR architecture products. Deliver Individual Task Lists in support of System PDRs (CI IV UAS, MG, CC, A/GPCS). Deliver Final Task Analysis Report (DI-026) and TSP Development Plan (initial DI-027) in support of System CDRs (CI IV UAS, ANS, MULE, CC, A/GPCS. GSI). Continue Key Performance Parameter (KPP) #6 (Training) trace, development, and execution. Continue integration of Training software with Warfighter Machine Interface (WMI). Deliver TCC Build 2 Engineering Release (Apr 09) and TCC Build 2 Final (Sep 09). Provides updates to current force TADSS such as CCTT, SE Core, Gaming, and other TADSS as necessary to provide continuity to the IBCT. In conjunction with DAE direction, Embedded Training efforts for MG will be curtailed after FY09.	16507	
CONTRACTOR TRAINING Specs and Products FY10 - Continue development of individual and collective Training Support Packages (TSPs) to support IBCT. Develop and deliver of interface design specifications. Determine if any Embedded Training requirement is cost effective for the T-IBCT. Provides further updates to current force TADSS such as CCTT, SE Core, Gaming, and other TADSS as necessary to provide continuity to the T-IBCT. Begin Initial planning for T-IBCT training plan.		59117
CONTRACTOR - SUPPORTABILITY / LOGISTICS FY08/09- Provide test support for equipment testing and demonstrations for SoS and FoS supportability performance verification. Validate Maneuver Sustainment, PBL, and other applicable support concepts during testing, demonstrations, and validations. Ensure sensor collection of data for logistics decision support system software is adequate to support logistics modeling verification and validation efforts as well as operational PBL. Define, Develop & Integrate the following Manned / Unmanned Platform Vehicle (MUPV) Systems requirements. Ensure Supportability architectures and requirements are implemented during design, development, fabrication and test of Vehicle Systems to achieve Transportability, Deployability and Operational Availability. Conduct Logistics Planning, Modeling and Simulations to mitigate risk and verify reductions in FCS Logistics Footprint while increasing Readiness & Availability. Identify the logistics test requirements for the soldier or warfighter level health tests (originating from the ORD), and the requirements for integration testing with multiple systems and platforms as well as the system of system level testing. Provide and administer a TSP capable of sustaining test and evaluation efforts. Plan for the conduct of maintenance and provision of repair parts, tools, test fixtures, and facilities. Provide technical support to all logistics 1) demonstrations and simulations and 2) system verification, validation, and integration tests to ensure that requirements for RAM-T and supportability are met. Provide support for Verification & Validation of IETMs, prognostics diagnostic equipment, data collection, and instrumentation. Provide analysis develop requirements for integration and test of Current Force spiral testing. Maintenance Plan, Readiness report to SU, Sustainment request Handling, Class (I, III, V, IX) supply & Distribution Status.	1327	344
CONTRACTOR - SUPPORTABILITY / LOGISTICS FY10- Provide test support for equipment testing and demonstrations for E-IBCT supportability performance verification. Ensure sensor collection of data for logistics decision support system software is adequate to support logistics modeling verification and validation efforts as well as operational PBL. Define, develop & integrate the unmanned platform systems requirements. Ensure Supportability architectures and requirements are implemented during design, development, fabrication and test of vehicle systems to achieve Transportability, Deployability and Operational Availability. Conduct Logistics Planning, Modeling and Simulations to mitigate risk and minimize FCS E-IBCT Logistics Footprint while increasing Readiness & Availability. Identify the logistics test requirements for the soldier. Provide and administer a Test Support Package capable of sustaining test and evaluation efforts. This will include coordination of spare parts, FSRs and labor to keep prototypes functioning during testing		3676

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
5 - System Development and Demonstration	0604661A - FCS Systems of Systems Engr & Program Mgmt	FC2		
and Logistics demo. Plan for the conduct of maintenance and provision of repair parts, tools, test fixtures, and facilities. Provide support for Verification & Validation of ETMs, diagnostic equipment, data collection, and instrumentation. Maintenance Plan, Readiness report to SU, sustainment request handling, Class (I, III,V,IX) supply & Distribution Status. It will also include the fielding planning along with support planning for the FCS technologies in the IBCT. It will also include development of all milestone C required Supportability documentation. Begin Initial planning for T-IBCT and new combat vehicle supportability plans.				
SMALL BUSINESS TECHNOLOGY INSERTION - Congressionally directed activities for small businesses to conduct high risk/high reward component and technology development for inclusion into the FCS program to enhance technology readiness by using the best of industry to reduce TRL risk. Fee portion of the \$20M Congressional Earmarked includes in Contractor Fee Line. In addition to the \$17.4M the LSi has actually include another \$3M of effort in their SOS Engr effort to reduce TRL risk through small business.	17391			
CONTRACTOR FEE - This includes both the LSI incentive, 7.5% and fixed fee, 7.5%.	345533	280673		266106
Government Other - Includes support of non-PM government support offices that provide technical expertise (PEO C3T, TRADOC, UAMBL, ARL, FFID, etc). This also includes other technical support contracts like the Sandia Labs - FCS Integrated Support Team (FIST), (MITRE), Software Steering Committee from University South California and University of Maryland which also reviews LSI software performance. logistics products, network requirements and capabilities. It includes all electronic hardware and software required for government personnel (computers, Blackberry, software, internet and ACE software agreements). CIO and Security management within the PM. Tech base insertion into the FCS program to reduce program TRL Risk. TRADOC support of analysis to support spinout and the future new combat vehicle system.	47534	136332		126766
GOVERNMENT GFX- FY08 - FY10 - Continue Technical Management Integration support to the Training IPT throughout the development of the Training Common Components (TCC) effort between PEO STRI and PM FCS (BCT). PEO STRI SMEs develop strategies to transition TCCs from FCS training IPT to One Team Partners (Warfighter Machine Interface (WMI) and Battle Command), with long term plans for continued baseline program support to FCS by PEO STRI. Continue development of TCC Software Architecture and Software. Deliver Build 3 Early to FCS Training IPT and to LSI in Jul 10. Fully integrate TCCs with Warfighter Machine Interfaces and applications running as a single SOSCOE application. Continue Live/Virtual/Constructive interoperability between Live and Constructive training capabilities for an integrated WMI solution. Provide Government oversight of additional TCC construction and Live/Constructive Integration. Provided M2, MK19 and the M240 ammunition required for LSI testing Support Model and SIM updates to support JEFX08 and Experiment 2.	11498	15088		6750
Spin Out Development Efforts in FY09 - This effort will support the Spin Out to IBCT effort. This Spin out unique effort is required to finish the expanded software to provide more network capabilities to the current force than originally planned. This requires additional architecture and design work not budgeted for. In addition the support of the NLOS-LS (FSR and spare parts) at the AETF was not included in the original budget due to an additional test being added. In addition a NLOS-LS control cell is required for IBCT control of the NLOS-LS. Based on lessons learned during last year's Spin out to HBCT, FFID and TRADOC require additional funding to support analysis and support of the training for the Spin out to the IBCT.		14641		
NLOS-LS Development Efforts in FY09 - This effort will support the design, engineering and software efforts to support new National Security Agency (NSA) mandated Data Storage Devices (DSD); NDA certifiable JTRS-SFF-J (Small Form Factor) surrogate radio. Currently the NLOS-LS uses a surrogate radio in the Spin Out Configuration and this additional funding will support integration of the JTRS radio along with several new testing efforts required for radio and NLOS-LS certification. Will also support the newest version of Battle Command and SOSCOE integration.		51500		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604661A - FCS Systems of Systems Engr & Program Mgmt		PROJECT FC2
Unmanned Ground Vehicle Development Efforts in FY09 - This effort will allow the Program to incorporate additional speed capability for the MULE variant.		4300	
Unattended Ground Sensor Development Efforts in FY09 - This effort will incorporate UGS new design requirements which will reduce the Procurement and Sustainment cost associated with the production and fielding of the Unattended Ground Sensors.		3600	
FCS Network Development Efforts in FY-09 - This effort will enable the network software efforts to meet the program schedule. These adjustments are based on completed definition of software functionality and requirements to support software builds 2 early and build 2 final. Dollars represent efforts of 12 subcontractors and the prime to integrate 5.5 million effective software lines of code (ESLOC) and associated C4ISR and vehicle hardware into a fighting system.		279000	
Termination Liability			9576
Small Business Innovative Research/Small Business Technology Transfer Programs.		39549	
Total	1292514	1414756	1067191

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS MGV Manned Ground Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing
0604664A FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing
0604647A Non Line of Sight - Cannon	133139	89545	58216	Continuing	Continuing
0604666A FCS Spin Outs	84111	111032		Continuing	Continuing
0603639A FCS MRM	43068	40731		Continuing	Continuing
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing
0605625A Manned Gound Vehicles			100000	Continuing	Continuing

Comment: Comp Programs:

ASTAMIDS, GSTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, JTRS-AMF, STARLite SAR/GMTI, JAVELIN, JCADS, JSLSCAD, DCGS-A, FBCB2, OneTESS, OneSAF

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604661A - FCS Systems of Systems Engr & Program Mgmt

PROJECT

FC2

C. Acquisition Strategy The original FCS Contract was awarded to the Boeing Company, 30 May 2003 and definitized 10 Dec 2003. The LSI is responsible to PM FCS BCT to provide the following: Systems Engineering and Program Management, System Tests and Evaluation, Modeling and Simulation, Training, Contractor Program Management, Contractor System Requirements and Integration, Contractor Training Products, Contractor System of Systems Test, Distributing and Contractor Fee.

During FY09 the System of System Engineering and Program Management provides primary support to the Systems of Systems platform Preliminary Design Reviews (PDRs). Based on new direction the MGV portion of the program and FCS BCT SoS will be curtailed after the SoS PDR. E-IBCT and T-IBCT SoS engineering will continue using the current contractual arrangement. A new contractual arrangement (new contractors) will be created to support the new combat vehicle program. The SoS engineering will transition over time from the contractor to the government.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604661A - FCS Systems of Systems Engr & Program Mgmt							FC2		
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
Contractor SEPM	FAR	The Boeing Company-ST. LOUIS, MO, see remark 4		162279	1-3Q	87173	1-3Q	89248	1-3Q		338700	
Contractor System Requirements and Integration	FAR	The Boeing Company-ST. LOUIS, MO, see remark 4		430106	1-3Q	240479	1-3Q	244293	1-3Q		914878	
Contractor Training Products	FAR	The Boeing Company-ST. LOUIS, MO, see remarks 1-4		57410	1-3Q	16507	1-3Q	59117	1-3Q		133034	
Contract Fee	FAR	The Boeing Company-ST. LOUIS, MO		345533	1-3Q	280673	1-3Q	266106	1-3Q		892312	
Contractor- Small Business Technology Insertion	FAR	The Boeing Company-ST. LOUIS, MO		17391	1-3Q						17391	
Spin Out Efforts	Direct	ABO				14641	1-2Q				14641	
NLOS-LS Efforts	Direct	ABO				51500	1-2Q				51500	
UGV Development Efforts		ABO				4300	1-2Q				4300	
UGS Development Efforts		ABO				3600	1-2Q				3600	
Network Development Efforts		ABO				279000	1-2Q				279000	
Subtotal:				1012719		977873		658764			2649356	
Remarks: Remark 1: Subcontractor: Computer Science Corp. Federal Sector Defense Group, Fsls Church, VA. Remark 2: Subcontractor: Dynamics Research Corp. Systems Division, Andover, MD. Remark 3: Subcontractor: Northrop Grumman, Info Tech, Def Enterprise Solutions Div, Mclean, VA. Remark 4: Subcontractor: SAIC Corp., San Diego, CA												
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
Government SEPM	Direct	PM FCS(BCT) - St Louis, MO		107511	1-3Q	125991	1-3Q	135436	1-3Q		368938	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604661A - FCS Systems of Systems Engr & Program Mgmt							FC2		
Government GFX	Direct	PM FCS(BCT) - St Louis, MO		11011	1-3Q	15088	1-3Q	6750	1-3Q		32849	
Government - Other Support	Direct	PM FCS(BCT), St. Louis, MO		47534	2-3Q	136332	2-3Q	126766	2-3Q		310632	
SBIR/STTR	Direct	OSD				39549	1-2Q				39549	
Adjustment to Budget Year:	Direct	ABO		487	1-2Q						487	
Subtotal:				166543		316960		268952			752455	

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
Contractor - SoS Test	FAR	The Boeing Company - St. Louis, MO		27923	1-3Q	9713	1-3Q	39083	1-3Q		76719	
Government STE	Direct	PM FCS(BCT), St. Louis, MO , see remarks 1-3		81152	1-3Q	99702	1-3Q	75650	1-3Q		256504	
Government - Modeling and Simulation	Direct	PM FCS(BCT), St. Louis, MO		2850	2-3Q	10164	2-3Q	11490	2-3Q		24504	
Supportability Log	Direct	PM FCS(BCT), St. Louis, MO		1327	1-3Q	344	1-3Q	3676	1-3Q		5347	
Subtotal:				113252		119923		129899			363074	

Remarks: Remark 1. Subcontractor, Netversant Co., Baltimore, MD
 Remark 2. Subcontractor, 3D Research, Huntsville, AL
 Remark 3. Subcontractor, Jacobs/Sverdrup, Aberdeen, MD

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
Termination Liability	FAR	The Boeing Company, St. Louis, MO						9576	1-4Q		9576	
Subtotal:								9576			9576	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604661A - FCS Systems of Systems Engr & Program Mgmt				PROJECT FC2			
Project Total Cost:		1292514	1414756	1067191		3774461		














Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604661A - FCS Systems of Systems Engr & Program Mgmt

PROJECT
FC2

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) FCS SoS Critical Reviews-PDR					PDR 																											
UAS PDRs																																
(2) Class I PDR									Class I PDR 																							
(3) Class IV PDR									Class IV PDR 																							
UGV PDRs																																
(4) SUGV Block 1 PDR									SUGV PDR 																							
(5) ARV A(L) PDR					ARV A(L) PDR 																											
(6) ANS PDR, (7) CDR					ANS PDR 				CDR 																							
E-IBCT Major Activities																																
(8) E-IBCT LUT									LUT 																							
E-IBCT OA																	OA 															
E-IBCT IOTE																	IOTE 															
(9) E-IBCT FUE																					IOC 											
(10) Threshold IBCT (T-IBCT) PDR, (11) CDR									PDR 								CDR 															
T-IBCT Major Activities																																



Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604661A - FCS Systems of Systems Engr & Program Mgmt

PROJECT
FC2

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
T-IBCT Projected Delivery																																
T-IBCT TFT/LUT																					 IQT-EDIT											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604661A - FCS Systems of Systems Engr & Program Mgmt	PROJECT FC2
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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>
FCS SoS Critical Reviews-PDR		3Q						
UAS PDRs								
Class I PDR		1Q						
Class IV PDR		1Q						
UGV PDRs								
SUGV Block 1 PDR		1Q						
ARV A(L) PDR	2Q							
ANS PDR	1Q							
CDR		3Q						
E-IBCT Major Activities								
E-IBCT LUT		4Q						
E-IBCT OA			4Q					
E-IBCT IOTE				3Q - 4Q				
E-IBCT FUE				4Q				
Threshold IBCT (T-IBCT) PDR			2Q					
CDR				4Q				
T-IBCT Major Activities								
T-IBCT Projected Delivery					2Q - 3Q			
T-IBCT TFT/LUT					3Q - 4Q	1Q		

The schedule reflected in this R-Form is based on preliminary analysis of the available budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change the program schedule.

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		May 2009	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604661A - FCS Systems of Systems Engr & Program Mgmt	FC2	
Funding in \$000			
Program	FY 2008	FY 2009	FY 2010
Other Termination	755700	637100	620000
Special Termination	427600	415800	387500
Total Termination Liability Funding:	1183300	1052900	1007500
<p>Remarks: The SDD Contract contains FAR 52.232-22, Limitation of Funds, and FAR 52.249-6, Termination (Cost-Reimbursement) clauses to define allowable termination costs. The above costs are estimated to cover contract performance and termination liability incurred. Special Termination Cost (STC) clause is approved and included in LSI's FAR contract. STC are not included in the program budget. If the contract is terminated, the government will pay for the following prime and subcontractor costs:</p> <ul style="list-style-type: none"> - Severance Pay, as provided in FAR 31.205-6(g) - Reasonable costs continuing after termination, as provided in FAR 31.205-42(b) - Settlement of expenses, as provided in FAR 31.205-42(g), and - Costs of return of field service personnel from sites, as provided in FAR 31.205-35 and FAR 31.205-46(c) <p>Other termination is currently not covered by the Government. Therefore, due to Limitation of Funds clause in the FAR, the LSI must retain funding to cover the full other termination costs in case of termination. Those costs governed by FAR part 31 include prime and subcontractor costs for:</p> <ul style="list-style-type: none"> - Allowable Fee - Cost incurred, but not billed to the FAR contract - Non-cancelable commitments - Unexpired leases - Alteration/restorations required by leases - Loss of useful value of capital property <p>Full termination liability is a combination of the above Special Termination Cost and Other Termination Costs.</p> <p>This termination liability value represents contract values prior to any contract actions based on new direction.</p>			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - System Development and Demonstration		0604662A - FCS Reconnaissance (UAV) Platforms				
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
FC3 FCS RECONNAISSANCE (UAV) PLATFORMS	42772	57190	68701	Continuing	Continuing	

A. Mission Description and Budget Item Justification: The XM 156 Class I system for System Development and Demonstration (SDD) consists of an air vehicle with a 10 HP heavy fuel engine, a combined EO/IR/LD/LRF sensor pod, and a common controller with a set of ancillary equipment. The Class I UAV provides the dismounted soldier Reconnaissance, Surveillance, and Target Acquisition (RSTA) and has the ability to hover and stare at military operations on rural and urban terrain. The Class I provides imagery data in order to recognize personnel and provide targeting information to the FCS network during day and night operations and in adverse weather conditions from as high as 1000 feet above ground level. Weighing less than 41 pounds, the air vehicle operates in complex urban and rural terrains with a vertical take-off and landing capability. The Class I system is carried in two custom MOLLEs and is air droppable with soldier. The Class I program will integrate and test the following sensors and software developed as part of Project FC6, PE 0604665A: EO/IR/LD/LRF sensor and all of SoSCOE and Battle Command Software. The Chief of Staff, Army (CSA) has directed the FCS program to incorporate the Class I (Block 0) UAV into the Early-Infantry Brigade Combat Team (E-IBCT) increment in order to expedite providing this additional ISR capability to the soldier starting in 2011. The Class I (Block 0) capability will consist of a smaller airframe than the threshold FCS Class I with a current force EO sensor and an IR sensor and a gasoline based propulsion system. This technology will be incorporated into the Class I SDD UAV with an airframe featuring an EO/IR/LD/LRF sensor and a heavy fuel based propulsion system. The Class I solution for the Threshold-Infantry Brigade Command Team (T-IBCT) will be the threshold compliant system, to include the larger airframe and the EO/IR with the laser target designator.

The XM157 Class IV UAV has a range and endurance appropriate for the brigade mission. Class IV supports the BCT Commander with communications relay, long endurance persistent stare, and wide area surveillance over 75km radius. Unique missions include Wide Band Communications Relay; standoff radiological detection; and minefield detection. Additionally, Class IV has the payloads to enhance the RSTA capability by cross-cueing multiple sensors. It operates at survivable altitudes at standoff range day and night and during adverse weather. The Class IV is a joint effort with the Navy's VTUAV Fire Scout program. The CL IV uses a two phase assembly process. Phase I Integration corresponds to approximately 90% of the complete assembly, includes major components airframe, engine, and wiring harness. Phase II Integration adds the unique avionics and payloads completing the FCS Class IV UAV. The FCS unique equipment includes: 1) Type IV Integrated Computer System (ICS); 2) Joint Tactical Radio System (JTRS) Handheld, Manpack, Small Form Fit (HMS SFF-J); 3) Warfighter's Information Network - Tactical (WIN-T) JC4ISR radio; 4) ASTAMIDS EO/IR/LRF/LD/CM payload; 5) STARLite SAR/GMTI payload; 6) System Survivability Suite (SSS); 7) JTRS - Airborne, Maritime and Fixed (AMF) Communications Relay Package (CRP). The Class IV program will integrate and test the following sensors and software: developed as part of Project FC6 PE 0604665A - Type IV Integrate Computer System (ICS), Warfighter's Information Network - Tactical (WIN-T) JC4ISR radio, EO/IR/LRF/LD/CM payload, System Survivability Suite (SSS); ASTAMIDS; JTRS - JTRS-GM, JTRS HMS, SAR/GMTI Payload. The Class IV UAV is included in the T-IBCT increment.

The UAV program has been changed due to restructuring of the MGCV portion of the FCS program and the refocusing of the FCS program to spin out FCS technologies faster to the IBCT. The accomplishments, funding, and schedule reflected in this justification are based on preliminary analysis of the new direction and reduced program budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change planned accomplishments, funding requirements, and program schedule. The schedule reflects the current FCS program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604662A - FCS Reconnaissance (UAV) Platforms		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	43388	34379	14296
Current BES/President's Budget (FY 2010)	42772	57190	68701
Total Adjustments	-616	22811	54405
Congressional Program Reductions		-189	
Congressional Recissions			
Congressional Increases		23000	
Reprogrammings	500		
SBIR/STTR Transfer	-1214		
Adjustments to Budget Years	98		54405

Change Summary Explanation: Funding - FY10: \$54.405M increase due to: 1) Army procuring Class I earlier than planned in FY08 to support SO, 2) Army delayed Class I work from FY08 to FY10 due to no additional FY08 funds, 3) Increase to cost due to loss of efficiency from delays noted from FY08 to FY10, 4) Increase Class IV effort to meet T-IBCT schedule.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604662A - FCS Reconnaissance (UAV) Platforms			PROJECT FC3	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
FC3 FCS RECONNAISSANCE (UAV) PLATFORMS	42772	57190	68701	Continuing	Continuing	

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
UAV Class I Engineering & Program Mgt FY08 - Began design effort to support the Class I preliminary design review (PDR) scheduled for 1st qtr FY09. Conducted the 10 horsepower Heavy Fuel Engine (HFE) critical design review (CDR) 2nd qtr FY 08. Completed integration of Laser Designation capability for Class I into the program design.	15702		
UAV Class I Engineering & Program Mgt FY09 - Conduct Class I PDR 1st qtr FY09. Begin design effort required to support the Class I critical design review scheduled for 4th qtr FY10. Approximately 500 drawings are estimated to be required; forty drawings were completed.		23149	
UAV Class I Engineering & Program Mgt FY10 - Conduct Class I critical design review 4th qtr FY10. A total number of 500 drawings are estimated to be complete, 400 drawings are estimated to be released by CDR. Begin planning efforts to support T-IBCT. Conduct Class I critical design review 4th qtr FY10. Approximately 500 drawings are estimated to be require, 400 drawings are estimated to be released by CDR. Begin planning efforts to support T-IBCT.			13705
UAV Class I Prototype Development FY08 - Began Early Air Vehicle Integration in the Class I System Integration Lab (SIL) for hardware and software development of Electro Optical Infra-Red Laser Designator Range Finder (EO/IR/LD/LRF) sensor control and air vehicle flight controls. Continued Early Risk Reduction testing of HFE. Provided prototypes to begin Early Air Vehicle Integration in the Class I SIL for hardware and software development of EO/IR/LD/LRF sensor control and air vehicle flight controls.	2040		
UAV Class I Prototype Development FY09 - Begin manufacturing and fabrication of 4 engines and airframes for Engineering Development Assets (EDAs) where EDAs are to be used to conduct initial Class I risk reduction testing.		1396	
UAV Class I Prototype Development FY10 - Deliver 4 engines and airframes for EDAs, where the EDAs are to be used to conduct initial Class I risk reduction testing and early environmental risk reduction testing. EDAs will be delivered to Honeywell Upgrade 11 Class I Block 0 Systems with Digital Data Link (DDL) (C2 and video) radios.			525
UAV Class I Test FY08 - Executed Experiment 2.1 and documented the operation of the Class I surrogate (MAV system) utilizing a JTRS surrogate (SLICE) radio link and the Soldier Radio Waveform (SRW). Participated in Joint Expeditionary Force Experiment (JEFX)/Experiment 2.1 to determine value of manned/unmanned teaming with Apache AH-64 D and UAV Class IV Surrogate, disseminating stream videos over future networks.	8105		
UAV Class I Test FY09 - Continue Class I system integration in the Class I system integration laboratory to support software development for EO/IR/LD/LRF sensor control, air vehicle flight controls, heavy fuel engine integration and executing mission sets, in order to meet threshold requirements.		4639	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604662A - FCS Reconnaissance (UAV) Platforms		FC3
UAV Class I Test FY10 - Begin Class I risk reduction testing with 4 EDAs to include early environmental testing. Conduct 1st Risk Reduction Flight in 1st qtr FY10 (Tethered Flight with Airframe & Heavy Fuel Engine). Continue Class I system integration in the Class I system integration laboratory to support software development for EO/IR/LD/LRF sensor control, air vehicle flight controls, heavy fuel engine integration, executing mission sets, and to support risk reduction testing of EDAs in order to meet threshold requirements.			8970
UAV Class I Software Development FY08 - Began Early Air Vehicle Integration in the Class I System Integration Lab for software development of Electro Optical Infra-Red Laser Designator Range Finder (EO/IR/LD/LRF) sensor control and air vehicle flight controls.	853		
UAV Class I Software Development FY09 - Complete Class I system integration in the Class I System Integration Lab for software development of EO/IR/LD/LRF sensor control and air vehicle flight controls.		1837	
UAV Class I Software Development FY10 - Perform test-fix-test in the Class I system integration lab for EO/IR/LD/LRF sensor control and air vehicle flight control software.			1496
GFX- Developed the mission kit for the Class IV Surrogate and install in UH-1 flight test to achieve Air Worthiness approval. The Class IV Surrogate capabilities include a day camera providing Intelligence, Surveillance and Reconnaissance (ISR) to Highband Networking Waveform (HNW) and Tactical Common Data Link (TCDL) transport layers allowing the opportunity to experiment with Manned/Unmanned Teams. Also provided Airborne network thickening via comms relay for HNW, Wideband Networking Waveforms (WNW), and Soldier Radio Waveforms (SRW). Completion of the Apache participation in the Joint Expeditionary Force Experiment (JEFX) 2.1 which integrates Soldier Radio Waveform (SRW) and the H264 video card onto an AH-64D.	629		
UAV Class IV Engineering and Program Mgt FY08 - Began planning for PDR. Supported Source Selection activities for Synthetic Aperture Radar (SAR) payload for Class IV. Continued Integration Phase 2 activities to include Engineering Iteration 2. Supported System of System logistics and training. Accepted delivery of Class IV Simulation Build to SoSIL. A total of 686 drawings are estimated for the Class IV program. A total of 592 are completed to date, 94 drawings remain to be completed.	8309		
UAV Class IV Engineering and Program Mgt FY09 - Conducted the Class IV UAVS Preliminary Design Review in Dec 2008. Conduct Joint Executive Steering group meetings on Common Air Vehicle with Navy to ensure cost effective decisions in E3 and structures. Plan and initiate the efforts needed to complete the CDR effort in FY10. Develop weight and endurance improvement plans to meet ORD requirements. Manage interfaces between Class IV and STARLite SAR/GMTI, and ASTAMIDS programs. Remaining open drawings will capture design changes associated with endurance improvements, transportability changes, ICS redesign, and parallel Complementary Program changes. Complete drawings will make up part of the LRIP Technical Data Package. Final design changes will be approved at CDR.		12490	
UAV Class IV Engineering and Program Mgt FY10 - Conduct Class IV CDR beginning 1st qtr FY10. Complete remaining Class IV 94 drawings. Final design changes will be approved at CDR. FY10 Engineering activities include NG SIL integration of the Integrated Computer System, JTRS radios, and BC 2F software. NGC Phase II Integration activities (FCS hardware installation in prototypes) begin in FY10. Begin planning efforts to support T-IBCT.			17048
UAV Class IV Prototype Development FY08 - Accepted delivery of Army/Navy common airframes A6-A8. Completed Phase 1 assembly install common Army/Navy components of SDD for Air Vehicles #A3-A5.	1082		
UAV Class IV Prototype Development FY09 - Complete Phase 1 assembly (install common Army/Navy components) of Air Vehicles A6-A8. Accept delivery of emulator and brass board Air Platform Communications Systems (APCS) Hardware for initial integration into FCS SILs.		1183	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)	May 2009
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BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604662A - FCS Reconnaissance (UAV) Platforms	PROJECT FC3
UAV Class IV Prototype Development FY10 - Begin Phase 2 Assembly (installation of FCS-unique mission equipment) of SDD air vehicles A1-A4; complete assembly of A1 and A2. Launch Control Unit (LCU) #1 will be delivered.		3510
UAV Class IV Test FY08 - Concluded Army-Navy Rotor Hub Fatigue Test. Conducted vendor level component and subsystem delta testing for Electromagnetic Environmental Effects.	4379	
UAV Class IV Test FY09 - Joint Navy/Army Common System Level E3 Testing on Navy platform. Main rotor hub fatigue testing (envelope expansion to Army usage) conducted by RTTC using loaned Navy and Schweizer developed test hardware (Navy structures personnel participating). Begin integration of Build 2 Final Engineering Release SW into NGC SIL for IQT.		7824
UAV Class IV Test FY10 - Begin detailed test planning in FY10 for IQT, including: system-level Electromagnetic Environmental Effects (E3), transportability/mobility, and climatic testing, and flight testing of the basic air vehicle, STARLite SAR/GMTI, ASTAMIDS, AiTR, and Comms Relay Package. Conduct hardware and software system integration. Perform Functional Qualification Testing (FQT) with Battle Command Build 2 Final engineering release ending 3rd Qtr FY10. Conclude vendor level component and subsystem Electromagnetic Environmental Effects (E3) testing.		16518
UAV Class IV Software Development FY08 - Accepted delivery of Class IV Simulation S/W Build 1 to SoSIL. Began Class IV Simulation S/W Build 2 (incorporate BC B2F operational code, ASI ASTAMDS and STARLite SAR/GMT simulation updates, air vehicle updates based on flight test data, and limited dynamic weather/terrain updates). Begin Operational Flight Test (OFT) Software Build 2.	1673	
UAV Class IV Software Development FY09 - Complete development of Class IV Simulation S/W Build 2. Begin development of Class IV Simulation S/W Build 3 (incorporate BC B3E and B3F operational code, ASI simulation updates as required, air vehicle updates based on flight test data, and enhanced dynamic weather/terrain updates). Continue development of Operational Flight Software Build 2.		3070
UAV Class IV Software Development FY10 - Accept delivery of Battle Command Build 2 Final engineering release 3rd Qtr FY10. Continue development of Northrop Grumman Corporation operational flight software Build 3. Continue development of (NGC) Simulation S/W Build 3.		6929
Small Business Innovative Research/Small Business Technology Transfer Programs		1602
Total	42772	57190

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604661A FCS System of Systems Engr & Program Management	1292514	1414756	1067191	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing
0604664A FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE				PROJECT	
5 - System Development and Demonstration	0604662A - FCS Reconnaissance (UAV) Platforms				FC3	
0604647A Non Line of Sight - Cannon	133139	89545	58216	Continuing	Continuing	
0604666A FCS Spin Outs	84111	111032		Continuing	Continuing	
0603639A FCS MRM	43068	40731		Continuing	Continuing	
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing	
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing	
0605625A FCS Manned Ground Vehicles			100000	Continuing	Continuing	

Comment: Comp Programs: ASTAMIDS, GSTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, JTRS-AMF, STARLite SAR/GMTI, JAVELIN, JCADS, JSLSCAD, DCGS-A, FBCB2, OneTESS, OneSAF

C. Acquisition Strategy The original FCS Contract was awarded to the Boeing Company 30 May 2003 and definitized 10 Dec 2003. Boeing has contracted with various One Team Partners as follows: Honeywell (NM) and Northrop Grumman (CA). The Class I UAV (non-threshold) will be included in the initial Spin Out to the IBCT. As the program transitions to an incremental development approach, the above will continue to be provided by Boeing to the E-IBCT and T-IBCT.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604662A - FCS Reconnaissance (UAV) Platforms							FC3		
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
Class I	FAR	Boeing Co., St. Louis, MO See Remark 1		26700	1-3Q	31021	1-3Q	24696	1-3Q	Cont.	Cont.	
Class IV	FAR	Boeing Co., St. Louis, MO See Remark 2		15345	1-3Q	24567	1-3Q	44005	1-3Q	Cont.	Cont.	
GFX	MIPR	PM FCS (BCT), ST Louis,MO		629	1-3Q						629	
Congressional Add for FCS Reconnaissance Platforms	Direct				1-2Q						2500	
Subtotal:				42674		55588		68701		Cont.	Cont.	
Remarks: Remark 1: Subcontractor: Honeywell International, Inc - Albuquerque, New Mexico Remark 2: Subcontractor: Northrop Grumman Unmanned Systems - San Diego, CA												
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
SBIR/STTR	Direct	OSD				1602	2-3Q				1602	
Adjustment to budget years	Direct	ABO		98	1Q						98	
Subtotal:				98		1602					1700	
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: All Test and Evaluation costs for this project are included in 0604661 FC2 SoS Engineering and Program Management project.												
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 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604662A - FCS Reconnaissance (UAV) Platforms							PROJECT FC3		
	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
Subtotal:												

Remarks: All Management Services costs for this project are included in 0604661 FC2 SoS Engineering and Program Management project.

Project Total Cost:		42772		57190		68701		Cont.	Cont.	
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604662A - FCS Reconnaissance (UAV) Platforms

PROJECT
FC3

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) FCS SoS PDR								▲ PDR																												
(2) E-IBCT SoS CDR								▲ CDR																												
(3) T-IBCT SoS PDR								▲ PDR																												
(4) T-IBCT SoS CDR												▲ CDR																								
(5) Class I Block 0 PDR							▲ Block 0 PDR																													
(6) Class I Block 0 CDR								▲ Block 0 CDR																												
Class I Block 0 Prototypes															■																					
Class I Block 0 IQT																																				
(7) Class I Block 0 UAV Airworthiness Approval																																				
(8) Class I Threshold - PDR								▲ Class I(T) PDR																												
(9) Class I Threshold - CDR																																				
(10) Class I Threshold Prototype Deliveries (10)																																				
Class I Threshold Qualification Testing (IQT)																																				
(11) Class I Threshold Airworthiness Approval																																				

(12) Class IV UAV Critical Reviews - PDR
 0604662A (FC3)
 FCS RECONNAISSANCE (UAV) PLATFORMS

▲
 Class IV PDR

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT																														
5 - System Development and Demonstration		0604662A - FCS Reconnaissance (UAV) Platforms																FC3																														
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																
(13) Class IV UAV Critical Reviews - CDR									▲ ¹³ Class IV CDR																																							
Class IV UAV Prototype Deliveries (8)																	■																															
Class IV UAV Initial Qualification Testing (IQT)																									■																							
(14) Class IV UAV Airworthiness Approval																																	▲ ¹⁴ Class IV Airworthiness															

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604662A - FCS Reconnaissance (UAV) Platforms						PROJECT FC3	
<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>	
FCS SoS PDR		3Q							
E-IBCT SoS CDR		4Q							
T-IBCT SoS PDR		3Q							
T-IBCT SoS CDR			3Q						
Class I Block 0 PDR	3Q								
Class I Block 0 CDR		3Q							
Class I Block 0 Prototypes			1Q - 2Q						
Class I Block 0 IQT		2Q - 4Q	1Q						
Class I Block 0 UAV Airworthiness Approval			3Q						
Class I Threshold - PDR		1Q							
Class I Threshold - CDR			4Q						
Class I Threshold Prototype Deliveries (10)					1Q				
Class I Threshold Qualification Testing (IQT)					1Q - 4Q				
Class I Threshold Airworthiness Approval						1Q			
Class IV UAV Critical Reviews - PDR		1Q							
Class IV UAV Critical Reviews - CDR			1Q						
Class IV UAV Prototype Deliveries (8)				2Q - 4Q	1Q				
Class IV UAV Initial Qualification Testing (IQT)				2Q - 4Q	1Q - 3Q				
Class IV UAV Airworthiness Approval					4Q				

The schedule reflected in this R-Form is based on preliminary analysis of the available budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change the program schedule.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604663A - FCS Unmanned Ground Vehicles			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC4 FCS UNMANNED GROUND VEHICLES	78826	102976	125616	Continuing	Continuing

A. Mission Description and Budget Item Justification: There are three products covered by the Unmanned Ground Vehicle (UGV) Program Element: the family of Multifunction Utility/Logistics Equipment (MULE) platforms, the Small Unmanned Ground Vehicle (SUGV) platform, and the Autonomous Navigation System (ANS).

Multifunction Utility/Logistics Equipment (MULE) vehicle is a 3.5-ton UGV that will support dismounted and mounted operations. The MULE consists of three major components: Common Mobility Platform, Autonomous Navigation System (ANS), and three mission equipment packages (MEPs)/variants. The MULE has 3 variants sharing the common mobility platform; MULE-Transport (MULE-T), MULE-Countermines (MULE-CM), and the Armed Robotics Vehicle-Assault-Light, (ARV-A (L)). The MULE-T will carry 1,900 lbs of equipment and rucksacks for two dismounted infantry squads with the mobility needed to follow squads in complex terrain. Beginning in FY 2010, the MULE-T platform will be deleted from the FCS program. The MULE-CM will provide the capability to detect, mark, and neutralize individual anti-tank mines by integrating a mine detection mission equipment package from the Ground Standoff Mine Detection System (GSTAMIDS) program to support force mobility. The ARV-A (L) is a mobility platform with an integrated weapons and target acquisition package to support the dismounted infantry and mounted operations possessing the capability to locate and destroy enemy platforms and positions. The MULE platforms are CH-47 transportable and designed to maintain hard surface road-speeds of up to 65 KPH. The ARV-A (L) and MULE-CM will be fielded as part of the Threshold-Infantry Brigade Combat Team (T-IBCT).

Small Unmanned Ground Vehicle (SUGV), designated as the XM-1216, is a lightweight, man-portable, DC powered UGV capable of conducting Military Operations in Urban Terrain (MOUT) to include tunnels, sewers, and caves. The SUGV provides an unmanned capability for those missions that are manpower intensive or high-risk such as Urban Intelligence, Surveillance, and Reconnaissance (ISR) missions in a MOUT environment and Chemical/Toxic Materials reconnaissance missions without exposing soldiers directly to the hazard. Weighing 32 pounds, it is capable of carrying up to 4 lbs of payload weight. The SUGV will have the following capabilities: tether payload, manipulator arm, Chemical, Biological, Radiological, Nuclear (CBRN) capabilities and the potential for integrating future technologies for Sense Through the Wall (STTW) and Mine/Unexploded Ordnance (UXO)/Improvised Explosive Device (IED) detection ability. It can operate up to 6 hours on a single charge.

The Army has included the non-threshold SUGV (Block 1) configuration into FCS Increment E-IBCT. Currently, SUGV technologies do not meet FCS threshold requirement, but the Army believes that the current level of technology will still greatly enhance our Soldiers capabilities on the battlefield. The SUGV (Block 1) features a FCS chassis with the COTS sensor head and radio (not full FCS threshold capability). The procurement and fabrication of the SUGV prototypes for testing were purchased as part of this development effort in FY08. Fully compliant threshold SUGV will be included in FCS Increment T-IBCT.

Autonomous Navigation System (ANS) is the mission payload package that will be integrated on the MULE to provide robotic semiautonomous capability and the MGVT to support indirect driving. ANS provides Global Positioning System (GPS)/Inertial Navigation System (INS) for core navigation, targeting support and timing. The ANS primary system components are: LADAR Imaging Perception Module (LIPM), Imaging Perception Module (IPM), Millimeter Wave Radar (MMWR), GPS/INS, Precision Timing Module, and the ANS Computer System (ACS). ANS provides the sensors and software processing for unmanned operations for day, night all weather conditions and the platform mobility control for on/off roads, cross country and complex terrain. MMWR provides tracking in rain, smoke, or fog along with an early warning for approaching vehicles with high closing rates. ACS provides SoSCOE interface, path planning, video processing, hardware sensor processing, object processing and speed and curvature

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - System Development and Demonstration

0604663A - FCS Unmanned Ground Vehicles

commands. The ANS software development baseline is a phased approach consisting of three builds. Build 1 supports simulation and early prototypes using external waypoints at limited speeds. Build 2 supports emulator and prototype operational hardware to support entry into Mule IQT in 2013. Build 3 will meet all ANS threshold requirements for platform speed, terrain types and operational modes: semiautonomous and leader-follower. ANS for unmanned platforms will be incorporated into T-IBCT. Beginning in FY10, the ANS effort associated with MGV integration is to be deleted from the FCS program.

The MULE will include the following C4ISR systems: Joint Tactical Radio System (JTRS)/Ground Mobile Radio (GMR) radios, Integrated Computer System (ICS), Combat Identification, Medium Range EO/IR sensor and the Acoustic sensor. The SUGV will incorporate the following C4ISR systems: HMS radios, ICS, EO/IR sensor, Laser Target Designator (LTD) and Chemical, Radiological & Nuclear (CBRN) sensor. These are funded by PE 0604665A FC6 (Networks).

The UGV program has been changed due to the restructuring of the MGV portion of the FCS program and the refocusing of the FCS program to spin out FCS technologies faster to the IBCT. The accomplishments, funding, and schedule reflected in this budget justification are based on preliminary analysis of the new direction and reduced program budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change planned accomplishments, funding requirements, and program schedule. The program schedule reflects the current FCS program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604663A - FCS Unmanned Ground Vehicles		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	90091	96918	64744
Current BES/President's Budget (FY 2010)	78826	102976	125616
Total Adjustments	-11265	6058	60872
Congressional Program Reductions		-342	
Congressional Recissions			
Congressional Increases		6400	
Reprogrammings	-8744		
SBIR/STTR Transfer	-2521		
Adjustments to Budget Years			60872

Change Summary Explanation: Funding: FY 10 - The increase of \$61M in FY10 is caused by 1) Army procuring SUGV earlier than planned in FY08 to support SO, 2) Army delayed SUGV work from FY08 to FY10 due to no additional FY08 funds, 3) Increase to cost due to loss of efficiency from delays noted from FY08 to FY10.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604663A - FCS Unmanned Ground Vehicles			PROJECT FC4	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
FC4 FCS UNMANNED GROUND VEHICLES	78826	102976	125616	Continuing	Continuing	

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
MULE Engineering & Program Mgt FY08 - Completed MULE system Preliminary Design Review (PDR) December 2007. Began CDR design activities in January 2008. Completed Prime Item Development Specifications (PIDS), containing 2068 RIDS for all three variants, requirements flow-down, and released all four subsystem Configuration Item Development Specifications. Completed system level ARV-A(L) timelines and error budgets. Completed system architecture design and behavioral analysis. Completed M240 Remote Operating Kit (ROK) CDR. Reviewed and approved 318 PDR artifacts and burned down all 2822 action items. Identified cost reduction initiatives to meet Average Unit Production Cost (AUPC) targets. Completed 32 trade studies. Completed preliminary structural, thermal, and dynamic analyses. Completed MULE subsystem Preliminary Design Reviews (PDRs) except thermal management. Began detail design activities. Provided Design Producibility analysis to support trade studies.	13852		
MULE Engineering & Program Mgt FY09 - Continue preparation for CDRs, including 938 drawings, on MULE-Transport, MULE-Countermine, and ARV-A (L). Drawings include 434 drawings for the Common Mobility Platform, 75 for the MULE-T, 280 for ARV-A(L), and 144 for the MULE-C. Complete MULE Subsystem CDRs. Tweel Testing with Engineering Evaluation Unit (EEU). Complete Manufacturing Plan and Prototyping Facilities upgrade. Complete Producibility Assessments for the chassis, equipment bay, Mission Equipment Packages (MEPs), Power Distribution management System (PDMS), Vehicle Management System (VMS), cabling, connectors, and harnesses. Engineering and Manufacturing Readiness Level (EMRL) 2 assessment of production planning maturation activities to support CDR, and development of Production Plans for vehicle integrator and major subtier suppliers to include schedules and capacity planning. Identify Key Characteristics. Implemented Cost Reduction Initiatives such as Lean, Structured Improvement Activities (SIA), Process Failure Modes and Effects Analysis (PFMEA), and producibility trades to improve affordability. Update Make or Buy Plan and identify long lead material and equipment. Initiate design of special inspection and test equipment. Complete Thermal Management System PDR. Complete final structural, thermal, and dynamic analyses. Release hardware detailed drawing package with 938 drawings. Progress detailed design toward 2nd QTR FY10 CDR. Design Verification Testing. Complete Design Producibility analysis and incorporation into trade studies.		20700	
MULE Engineering & Program Mgt FY10 - Conduct CDRs on MULE-Transport, MULE-Countermine, and ARV-A (L) and burn down action item list. Implement manufacturing plan. Complete Engineering and Manufacturing Readiness Level (EMRL) 2 assessments and update Industrial Capabilities Assessment (ICA) to support CDR. Prototype Pilot line development to include work instruction development, and acceptance test procedure development. Continue implementation of cost reduction initiatives such as Lean, Structured Improvement Activities (SIA), Process Failure Modes and Effects Analysis (PFMEA), and manufacturing yield improvements. Implement upgrades from design verification testing. Finalize production flow and facilitate Assembly, Integration, and Test (AI&T) areas for prototypes. Production planning maturation activities to support Production Readiness Reviews/Engineering and Manufacturing Readiness Level (EMRL) 3 assessments. Complete vehicle final assembly top level drawings and any remaining detail part drawings.			29892

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604663A - FCS Unmanned Ground Vehicles	FC4	
Complete tooling and test equipment design, fabrication, and proofing. Begin planning efforts to support T-IBCT.			
MULE Prototype FY08 - Delivered one Engineering Evaluation Unit (EEU) to conduct proof of principle testing and analysis.	14221		
MULE Prototype FY09 - Began Long Lead Items procurement of subsystems (engine and suspension) to support FY10 build and delivery of 16 prototypes including 5 MULE-T, 5 MULE-CM, and 6 ARV-A(L). Complete chassis and electrical harness mockup activities. Conduct MULE/ANS integration software and hardware risk reduction on Engineering Development Unit (EEU). Begin final integration and checkout of common mobility platform (chassis). Conduct Tweel design risk reduction on EEU.		11554	
MULE Prototype FY10 - Continue procurement of prototype hardware and services to support build of 5 MULE-CM, and 6 ARV-A(L) prototypes. Based on SecDef guidance, MULE-T prototypes will be deleted, but hardware procured in prior years will be used as spare parts during testing. Complete fabrication of detail parts. Complete fabrication of special test equipment. Receive initial subsystem deliverables. Integration includes BAE Power and Propulsion System, Advanced Integrated Systems Remote Operating Kit, and Millen Works suspension. Conduct final integration and checkout of common mobility platform (chassis) and begin integration and assembly of first Integrated Qualification Test (IQT) vehicle.			19974
MULE Test FY08 - Six M240 Machine guns (Government Furnished Equipment (GFE)) were delivered to Lockheed on October 22, 2007. Completed M240 Test Firings and Javelin mechanical interface tests. Completed Draft Verification and Integration Plan (VIP). Completed Draft Master Test Plan (MTP) for Integrated Qualification Test (IQT).	3656		
MULE Test FY09 - Continue test planning to support FY11 IQT. Complete Javelin initial integration testing to support final weapon system design of Javelin Vehicle Launcher (JVL). Begin Hardware In The Loop (HWIL) testing to support Build 2 software. Conduct Firing test, temperature, vibration and high humidity on ballistic panels. Conduct cable submersion testing, Centralized Controller (CC) development testing, and TWEEL performance testing.		5321	
MULE Test FY10- Prepare subsystem Acceptance Test Plans (ATPs). Conduct development testing of detail parts and Line Replaceable Units (LRUs). Complete subsystem qualification testing. Begin horizontal integration of C4ISR, ANS & CC software in HWIL.			12471
MULE Software Development FY08 - Prepared to conduct Life Cycle Objectives (LCO) and Life Cycle Architecture (LCA) for Build 2 Software in 2008. Continued development and integration of Build 2 Software. Prepared Software Artifacts to support Critical Design Review (CDR) scheduled for 1st qtr, FY10. Completed Virtual Simulation (VSIM) for Integrated Mission Test (IMT) 1. Began testing IMT1 in System of Systems Integration Laboratory (SoSIL).	3618		
MULE Software Development FY09 - Complete software development for manual sensor control, mine neutralization and executing vehicle mission plans for prototype integration. Complete ARV-A (L) simulation interim Technical Readiness Review (iTRR) and interim Functional Qualification Test (iFQT) for Integrated Mission Test (IMT) 1 and delivery to SoSIL. Begin HWIL integration and performance testing in May 2009. Begin Integration Verification (IV) 2 VSIM integration in May 2009. Continue regression testing to support software and simulation deliveries. Begin software development to support HWIL testing and delivery of 16 prototypes beginning June 2011. Conduct LCO and LCA for Build 2 software. Build 2 addresses: Power up and Initialization; Command Maneuver Plan (Validate/Resume/Suspense/Terminate); Command /Control (Fast Brake/Initiate Manual Control/Maneuver/Terminate/Articulation); Shutdown; Control Driving/Pose Change; Load Mission Plan; Manage Mode Transition; Monitor Health Data/Supply Data/System Usage Data. Begin requirement definition for Build 3.		3821	
MULE Software Development FY10 - Complete virtual simulation for IMT to support T-IBCT. FQT for Build 2 Software. Begin support to IMT testing. Continue requirement definition and development for Build 3 and conduct LCO and LCA. Build 3 addresses: Control Mine Search Operations; Control Arm/Safe Weapon/Check Fire; Manage CBRN Data; Control End Engagement; Manage Javelin			5633

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604663A - FCS Unmanned Ground Vehicles	FC4
Video; Weapon Aim/Firing/Selection; Sensor Alignment; Meteorological Data; Deconflict Fires; Situation Awareness; Low Latency EO/IR Laser Range Finder; Laser Designation/Target Tracking; Anti Tamper and Counter-Measures Deployment.		
SUGV Engineering & Program Mgt FY08 - SUGV Preliminary Design Review (PDR) was conducted in 4th QTR FY08. The PDR involved development and review of PDR artifacts to include system design, software development, and interface design documents. Took delivery of the SUGV Prime Item Development Specification (PIDS) in FY08. Completed identification of cost reduction initiatives to meet AUPC targets. Began integration and design activities for the Electro-Optic Infrared (EOIR) sensors, the Embedded Tactical Engagement Simulation System (E-TESS) training sensors and the Ground Platform Communication System (GPCS) for the SUGV. Began development of the Interface Control Drawings (ICDs) for the ICS Type VIII, common payload port, GPCS, and payloads to include the Laser Target Designator (LTD) and Chemical/Radiological/Nuclear (CRN) detector.	12127	
SUGV Engineering & Program Mgt FY09 - Continue SUGV design effort leading up to the SUGV Critical Design Review (CDR) in 2nd qtr FY10. Develop design and program artifacts to support the CDR to insure that the SUGV CDR design meets the PIDs requirements. Continue the effort to integrate the EOIR and other components into the SUGV design prior to the CDR. Quantity of drawings is expected to exceed 300 drawings. Conduct Engineering and Manufacturing Readiness Level (EMRL) 2 assessment of production planning maturation activities for the SUGV system to support CDR and development of Production Plans to include schedules and capacity planning. Implementation of Cost Reduction Initiatives such as Lean and producibility trades to meet AUPC targets. Complete design of the SUGV system leading up to the SUGV CDR in 2nd qtr FY10 to include completing the E-TESS sensor design and completion of all ICDs. Contracts for the LTD and CRN will be put in place to begin payload development. Design Verification Testing planning will be initiated. Complete Design Producibility analysis and incorporation into trade studies. Develop engineering changes to support lessons learned from field testing with SUGV Block 1 units.		10086
SUGV Engineering & Program Mgt FY10 - Prepare for and conduct the SUGV CDR, scheduled for 2nd QTR FY10. Continue to develop design and program artifacts to support the CDR. Evaluate artifacts to insure that the SUGV CDR design meets the PIDs requirements. Completion of EMRL level 2 assessments to support CDR. Develop the Prototype Production Pilot line. Continue implementation of cost reduction initiatives such as Lean Manufacturing and manufacturing yield improvements. Production planning maturation activities to support Production Readiness Review/Engineering and Manufacturing Readiness Level (EMRL) 3 assessments. All design engineering activities will be completed in FY10. Implement "fixes" that are identified during CDR and initial testing to improve the platform. Begin planning efforts to support T-IBCT.		10883
SUGV Prototype FY08 - Completed Pre-Prototype Development, Build and Testing. The Pre-prototype SUGVs are Early Developmental Assets (EDAs). The pre-prototypes (EDAs) are developed in three rounds. Each "Round" consists of pre-prototype vehicles. Round 1 - Designed, built and tested major sub assemblies (flippers, neck, head, etc.). Round 2 - Combined major sub assemblies from Round 1 to form the complete robot and performed capability and environmental testing. Round 3 - Integrated improvements generated from Round 2 testing and requirements changes and re-tested to full specification. FY08 completed the development, build, and test of Pre-prototype Round 3.	1330	
SUGV Prototype FY 10 - Upgrade and refurbish the 22 prototypes that were provided to the AETF and Aberdeen Test Center (ATC) in FY09. Refurbishment includes upgrades to software, repairing broken parts, and test/checkout to make sure the units are functional.		511
SUGV Test FY08 - Conducted early capability testing on the Round 3 prototype systems. This testing included initial fording test, battery endurance testing, and mobility control software.	781	
SUGV Test FY09 - Continue internal testing of SUGV components leading up to the CDR in 2nd qtr FY10. These components include		741

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604663A - FCS Unmanned Ground Vehicles		FC4
drive motors, circuit cards, head and neck assembly, Manipulator Arm and the Fiber Optic Tether payloads. Also test the new functionality and design upgrades associated with PDR closeout.			
SUGV Test FY10 - E-IBCT will undergo a MSC event in 1QFY10. Follow-on IQT testing will be conducted after a successful MSC to insure that the changes made to the systems after the FY09 testing and integrated into the 15 follow-on units delivered to Ft. Bliss are working as expected. Conduct initial testing of the SUGV integrated system prior to releasing the 6 prototypes for IQT testing. This testing will be functionality testing to insure that all the components are integrated properly and communicate properly prior to entering IQT testing and will be conducted at an iRobot facility. Test planning will begin for the IQT testing to be conducted in FY11 and FY12.			493
SUGV Software Development FY08 - Developed integrated SUGV Platform Simulations. Updated Simulations for SUGV Build 1 to SoSIL. Began requirements Definition for Software Build 2. Conducted LCO review for Build 2 Software. Capabilities included in this build of software includes vehicle states and modes, battery management, tether/spooler control, laser target designator, manipulator arm, and payload control. Also included health and status monitoring.		554	
SUGV Software Development FY09 - Continue development of the Build 2 software for SUGV. Conduct LCA review for Build 2 Software. Build 2 Test Readiness Review (TRR) will be conducted in 4th qtr FY09. Build 2 simulation software will be delivered in 4th qtr FY09. Begin integration of Build 2 Final (B2F) software with SUGV prototypes. Build 2 Final (B2F) capabilities include: power up and initialization, configure SUGV Network Elements, establish SUGV Control, control Integrated SUGV Maneuver, Flippers, Head Neck and pose change, Mode Transition/basic maintenance, Basic manual EO/IR, Imagery collection and begin requirement definition for Software Build 3. Begin requirement definition for Build 3.			486
SUGV Software Development FY10 - SUGV E-IBCT will utilize software developed by iRobot for the E-IBCT program. This software will be used until the T-IBCT software (Build 2/3) is developed and integrated into the SUGV Spinout program to support the NSA certified radio and associated waveform. Build 2 emulation/operational software will be delivered and integrated. FQT Software Build 2. Testing with the C4 components will take place to insure that the software/hardware is integrated/functioning properly. The SUGV software will be integrated into prototypes in early 4th qtr FY10 and 1st qtr FY11. Conduct LCO and LCA for Software Build 3. Build 3 Early capabilities include: Control Laser Designation/Laser Range Finder, Manage CBRN data, Control SUGV Manipulator Arm Operations, Control SUGV Audio Operations, Handoff Control, Render Useless, Manage SUGV Assignments.			1105
ANS Engineering & Program Mgt FY08 - Conducted PDR November 15, 2007. Over 180 artifacts and data items were submitted and reviewed. Successful closeout achieved less than four months later. Began CDR design activities in November 2007. Continued update of requirements for both MULE and MGv flow-downs. Continued Interface Control Documentation efforts between ANS and GPS/INS, MULE and MGv. Identified cost reduction initiatives to meet Average Unit Production Cost (AUPC) targets. Began EMRL 2 production planning maturation activities to support CDR, development of Production Plans and to include schedules. Selected GPS/INS vendor. Weight management team/plan developed. Conducted concept studies on different IPM camera types and configurations, integrated MULE-ANS armor concepts and integrated MULE/ANS cooling concepts studied.		9371	
ANS Engineering & Program Mgt FY09 - Continue analysis and modifications resulting from evolving requirement changes. Continue to conduct weight reduction initiative to address size, weight and power allocation challenges. Tailored GPS/INS strategy to compensate for budget shortfalls. Finalize coordination of ICD efforts. Expect over 190 artifacts and data items to be submitted for the CDR review. Approximately 250 drawings with an average of four revisions each are anticipated for the system. Finalize Make/Buy plan and identify Long Lead items. Implement design changes from EDU testing. Identify key Characteristics. Implement Cost reduction initiatives such as Lean and producibility trades to meet AUPC targets. EMRL level 2 assessments and ICA update to support CDR. Facilitate final integration and test site for prototype Pilot line development. Complete thermal and armor analyses. Release hardware detailed drawing			14855

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604663A - FCS Unmanned Ground Vehicles	FC4
package containing 250 drawings.		
ANS Engineering & Program Mgt FY10 - ANS CDR planned for 1st qtr FY10. Complete final assembly and detail part drawing release and revision of the remaining 250 drawings. Begin planning efforts to support T-IBCT. Complete Physical Configuration Audit (PCA) of all prototype hardware components. Continue implementation of cost reduction initiatives such as Lean and manufacturing yield improvements. Finalize coordination of ICD efforts including Part II ICDs and complete review of 94 artifacts and 29 data items in preparation for CDR. Continue production planning maturation activities to support PRR/EMRL Level 3 assessments and updates to the ICA. Begin tooling design, fabrication and proofing.		11373
ANS Prototype FY08 - Engineering Design Unit (EDU) development began with a pre-prototype of the Imaging Perception Module (IPM), LADAR and ANS Computer System (ANS) subsystems.	8413	
ANS Prototype FY09 - Begin ANS Emulator deliveries. Began prototype long lead item procurement. A total of fourteen emulators are to be produced: five ANS emulators without cameras are to be delivered to the MGVSIL, six ANS emulators without cameras to the MULE SIL, and three ANS emulators with (18) cameras to be delivered to the MGVSIL. Seventy GPS/INS Phase II units to be procured as long lead items per GPS/INS CIDS requirements necessary for MULE and MGVSILs.		12486
ANS Prototype FY10 - Continue long lead time procurement of hardware and begin fabrication/assembly to support prototype builds for delivery in FY11. ANS will deliver eleven ANS prototype sets (IPMs, LIPMs, GPS/INS, and ACS) for MULE in FY11. Implement Manufacturing Plan for ACS, IPM, and LIPM enclosures; internal cabling; and integration of long lead items. Conduct assembly, integration and developmental testing of detail parts.		4318
ANS Test FY08 - Conducted ANS Robotic Convoy Experiment Phase IIa at WSMR which addressed high speed obstacle avoidance, high speed teleoperation, and lane following using map registration data. Conducted hardware environmental testing (thermal cycling, shock and vibration testing of component parts). Supported Robotic Vehicle Control Architecture (RVCA) testing and integration of an ANS prototype on the TARDEC (Crusher) platform. Completed Verification and Integration Plan (VIP). Conducted MULE/ANS integration testing on the Mule EEU test bed.	2579	
ANS Test FY09 - Conduct ANS Robotic Convoy Experiments IIb and IIc at WSMR to incorporate algorithm updates, leader-follower activities with up to three vehicles, continuous operations, night time human detection exercises, negative obstacle detection experiments, and negotiations of slopes and hills. Support TARDEC's RVCA soldier-operated testing of ANS equipment/software on surrogate platform. Begin ANS Integration and Test on Emulators.		6019
ANS Test FY10 - ANS Emulator/Prototype tests begin. Begin ANS hardware and software integration on MULE prototypes. Begin contractor testing of prototype components and systems. Initiate planning and support for the IQT scheduled in FY11.		14443
ANS Software Development FY08 - Provided Software Build I System Integration Lab (SIL) Test Support. Completed testing and delivery of Software Build 1C. Conducted preparation, development, integration and test for ANS Engineering Phase (EP) 10 through 12 of Build 2 ANS Software Development. Updated and delivered ANS Simulation to MULE. Build 2 Life Cycle Objective (LCO) complete. Build 2 Life Cycle Architecture (LCA) document submittals begun. Completed testing and delivery of Software Build 1D.	8324	
ANS Software Development FY09 - Begin production and delivery of three ANS Emulators plus 18 cameras for the Infantry Carrier Vehicle (ICV) SIL, Mounted Combat System (MCS) SIL, and the Non-Line of Sight-Cannon (NLOS-C). Produce and begin delivery of 12 ANS Emulators without cameras for the MULE Transport SIL, Command and Control Vehicle (C2V) SIL, FCS Recovery and Maintenance Vehicle (FRMV) SIL, the Medical Vehicle (MV) SIL, the NLOS Mortar (NLOS-M) SIL, and the Reconnaissance Scout Vehicle (RSV) SIL. Completing plan to change Build 2 focus from Simulation to Operational. Plan to complete Build 2 Operational		14023

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604663A - FCS Unmanned Ground Vehicles	PROJECT FC4
requirements analysis and design and conduct Build 2 Operational LCA in 2nd Qtr. Will start Build 2 Operational design and complete Build 2 SIM design and conduct Build 2 Simulation LCA in 3rd Qtr. Start Build 2 Simulation construction in 3rd Qtr. The ANS Build 2 addresses: Basic power up and self test; Simple/basis PS-MRS report status; GPS/INS encryption key entry; Initial render useless emulation; Navigation state reporting; Remote operations; Blind waypoint following; Obstacles avoidance; Obstacles negotiation and Follow Vehicle leader.		
ANS Software Development FY10 - Build 3 LCA document submittals to begin 1st qtr. Build 3 Test Readiness Review (Simulation and Operational) planned for 4th qtr. ANS Emulator deliveries complete. Complete Build 2 Simulation construction. Build 2 Simulation Test Readiness Review (TRR) scheduled for 2nd Qtr. Build 2 Simulation FQT scheduled for 3rd Qtr. Will complete Build 2 Operational design and construction with TRR and FQT scheduled for 4th Qtr. Plan to complete Build 3 Operational requirements analysis and submit Build 3 Operational LCO documents in 2nd Qtr, and LCA documents in 3rd Qtr. Will start Build 3 Operational Construction 3rd Qtr. The ANS Build 3 addresses: Follow Dismounted Soldier; Nights ops (autonomous); Complex terrain; Use of prior geospatial terrain data; L1F/SDM/SU/PS-MRS interfaces; Use of COP updates; Degraded ops; Safe road ops; Render useless and Maintenance. Continue delivery of ANS emulators.		
Small Business Innovative Research/Small Business Technology Transfer Programs		2884
Total		78826 102976 125616

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604661A FCS System of Systems Engr & Program Management	1292514	1414756	1067191	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604664A FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing
0604647A Non Line of Sight - Cannon	133139	89545	58216	Continuing	Continuing
0604666A FCS Spin Outs	84111	111032		Continuing	Continuing
0603639A FCS MRM	43068	40731		Continuing	Continuing
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing
0605625A - Manned Ground Vehicles			100000	Continuing	Continuing

Comment: Comp Programs:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604663A - FCS Unmanned Ground Vehicles

PROJECT

FC4

ASTAMIDS, GSTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, JTRS-AMF, STARLite SAR/GMTI, JAVELIN, JCADS, JSLSCAD, DCGS-A, FBCB2, OneTESS, OneSAF

C. Acquisition Strategy The original FCS Contract was awarded to the Lead Systems Integrator, Boeing Company 30 May 2003 and definitized, 10 Dec 2003. The LSI contracted with its One Team Partners, Lockheed Martin Missiles, to produce the Multifunction Utility/Logistics and Equipment Countermeasure and Transport MULE-T and Armed Robotic Vehicle - Assault (light) (ARV-A (L)), iRobot Corporation, Burlington (MA) producing the Small Unmanned Ground Vehicle (SUGV), and General Dynamics Robotics Systems, Westminster (MD) producing the Autonomous Navigation System (ANS). The non threshold SUGV (Block 1) will be included in the initial Spin Out to the IBCT. The MULE-T effort will be terminated as part of the program restructuring in FY10.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604663A - FCS Unmanned Ground Vehicles							FC4		
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
Small Unmanned Ground Vehicle (SUGV)	FAR	The Boeing Company, St Louis, MO see remark 1		14792	1-3Q	11313	1-3Q	12992	1-3Q		39097	
Autonomous Navigation System - Software	FAR	The Boeing Company, St Louis, MO see remark 3		28662	1-3Q	47383	1-3Q	44654	1-3Q		120699	
MULE	FAR	The Boeing Company, St Louis, MO see remark 2		35347	1-3Q	41396	1-3Q	67970	1-3Q		144713	
Subtotal:				78801		100092		125616			304509	

Remarks: Remark 1: Subcontractor: iRobot Corp. - Burlington, MA
 Remark 2: Subcontractor: Lockheed Martin Missile and Fire Control - Grand Prairie, TX
 Remark 3: Subcontractor: General Dynamics Robotic Systems - Westminster, MD

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
SBIR/STTR	Direct	OSD				2884	1-2Q				2884	
Adjustments to budget Year:	Direct	ABO		25	1-2Q						25	
Subtotal:				25		2884					2909	

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: All Test & Evaluation costs for this project are included in 0604661 FC2 SoS Engineering and Program Management project.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604663A - FCS Unmanned Ground Vehicles							FC4		
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: All Management Services costs for this project are included in 0604661 FC2 SoS Engineering and Program Management project.												
Project Total Cost:				78826		102976		125616			307418	

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604663A - FCS Unmanned Ground Vehicles

PROJECT
FC4

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) FCS SoS PDR																																
(2) E-IBCT SoS CDR									▲ PDR																							
(3) T-IBCT SoS PDR									▲ CDR																							
(4) T-IBCT SoS CDR									▲ PDR																							
(5) SUGV Block 1 Prototype Deliveries									▲ SUGV Blk 1 Prototypes																							
SUGV Block 1 DT Testing @ APG									■																							
SUGV Block 1 TFT/FDTE/LUT									■																							
(6) SUGV Threshold PDR									▲ SUGV Blk 1 TFT/FDTE/LUT																							
(7) SUGV Threshold CDR									▲ SUGV (T) PDR																							
(8) SUGV Threshold Prototype Build/Delivery													▲ SUGV(T) CDR																			
SUGV Threshold IQT													▲ SUGV(T) IQT Prototypes																			
SUGV Threshold TFT/FDTE/ LUT													■																			
(9) ARV A(L)/MULE-CM PDR	▲ ARV A(L)/MULE-CM PDR																															
(10) ARV A(L)/MULE-CM CDR									▲ ARV A(L)/MULE-CM CDR																							
ARV A(L)/MULE-CM Prototype BUILD/Deliveries													■																			

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604663A - FCS Unmanned Ground Vehicles

PROJECT
FC4

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				
ARV A(L)/MULE-CM IQT																																				
ARV A(L)/MULE-CM TFT/FDTE/LUT																																				
(11) ANS PDR																																				
(12) ANS Critical Reviews - CDR																																				
ANS Prototype Build/Delivery																																				

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604663A - FCS Unmanned Ground Vehicles

PROJECT
FC4

<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>
FCS SoS PDR		3Q						
E-IBCT SoS CDR		4Q						
T-IBCT SoS PDR		3Q						
T-IBCT SoS CDR			3Q					
SUGV Block 1 Prototype Deliveries		3Q						
SUGV Block 1 DT Testing @ APG		1Q - 3Q						
SUGV Block 1 TFT/FDTE/LUT		3Q - 4Q						
SUGV Threshold PDR		1Q						
SUGV Threshold CDR			2Q					
SUGV Threshold Prototype Build/Delivery				3Q - 4Q				
SUGV Threshold IQT				3Q - 4Q	1Q - 3Q			
SUGV Threshold TFT/FDTE/ LUT					3Q - 4Q	1Q - 2Q		
ARV A(L)/MULE-CM PDR	1Q							
ARV A(L)/MULE-CM CDR			3Q					
ARV A(L)/MULE-CM Prototype BUILD/Deliveries					1Q - 3Q			
ARV A(L)/MULE-CM IQT					1Q - 4Q	1Q - 2Q		
ARV A(L)/MULE-CM TFT/FDTE/LUT					4Q	1Q - 2Q		
ANS PDR	1Q							
ANS Critical Reviews - CDR			1Q					
ANS Prototype Build/Delivery			4Q	1Q - 3Q				

The schedule reflected in this R-Form is based on preliminary analysis of the available budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change the program schedule.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604664A - FCS Unattended Ground Sensors			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC5 FCS UNATTENDED GROUND SENSORS	22007	17011	26919	Continuing	Continuing

A. Mission Description and Budget Item Justification: The FCS BCT Unattended Ground Sensors (UGS) program is divided into two major configurations of sensing systems: URBAN-UGS (U-UGS), also known as Urban Military Operations in Urban Terrain (MOUT) Advanced Sensor System (UMASS); and TACTICAL-UGS (T-UGS), which includes Intelligence, Surveillance and Reconnaissance (ISR)-UGS and Chemical, Biological, Radiological and Nuclear (CBRN)-UGS. U-UGS - Will provide a low cost, network-enabled reporting system for Situational Awareness (SA) and force protection in an urban setting, as well as residual protection for cleared areas of urban MOUT environments. The U-UGS system can support BCT operations by monitoring urban choke points such as rooms, halls, attics, basements, sewers, culverts, tunnels, caves, and alleyways. They can be hand-emplaced by Soldiers or robotic vehicles either inside or outside buildings and structures. When a platoon or squad clears a building, U-UGS are left behind to perform surveillance that would otherwise require dedicated soldiers.

The U-UGS system provides a self-organizing wireless network that consists of three configuration items; personnel detect sensors, imaging sensors, and gateways:

1. Personnel Detect Sensors provide dual mode, passive infrared and RF microwave motion sensing for "trip-wire" detection of intruders.
2. Imaging Sensors provide electro-optical visual imaging with a near-infrared illuminator for operation in full darkness.
3. Gateways organize and manage the sensor network, and communicate sensor data to FCS C2 Joint Tactical Radio System (JTRS) systems and to the local dismounts.

T-UGS - Tactical-UGS (T-UGS) includes Intelligence, Surveillance and Reconnaissance (ISR)-UGS and Chemical, Biological, Radiological and Nuclear (CBRN)-UGS. The UGS (T-UGS) are designed for remote tactical operations in open spaces, at road choke points, avenues of approach, etc, and are designed to be emplaced by hand or by remote deployment methods. T-UGS provides ISR and CBRN awareness to the FCS (BCT) areas not covered by manned/unmanned ground/air vehicles. Packaging the common form factor enables simplified scalability and upgrade paths for future technology insertion, while the distributed sensing capability enhances mission flexibility and system versatility. The T-UGS system consists of five configuration items (nodes), each containing a unique set of sensing capabilities, and sharing a common hardware form factor.

1. The T-UGS ISR sensor node provides for vehicle and personnel detection capabilities via seismic, acoustic and magnetic sensors. Seismic sensors are the primary means of personnel detection. The principal means of vehicle detection and tracking are the acoustic bearing sensors. The ISR-UGS will be modular and composed of tailorable sensor groups using multiple ground-sensing technologies. Multiple sensors support precision location and simultaneous tracking of multiple targets.
2. When confirmed as a valid target of interest, Electro Optical/Infrared (EO/IR) sensor nodes will autonomously capture multiple images of the target.
3. The CBRN node provides for chemical, biological, radiological, and nuclear sensing and reporting capabilities.
4. The Hazard/Clear Lane Marker (H/CLM) nodes are deployed to mark hazardous keep-out zones, or to define cleared lanes through hazardous areas such as minefields.
5. The final component of the T-UGS system is the Long-Haul gateway node that provides radio communications and integration into the FCS network.

T-UGS and U-UGS are both included in the E-IBCT and T-IBCT.

The UGS program has been changed due to restructuring of the MGVP portion of the FCS program and the refocusing of the FCS program to spin out FCS technologies faster to the IBCT. The accomplishments, funding, and schedule reflected in this justification are based on preliminary analysis of the new direction and reduced program budget. Upon

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - System Development and Demonstration

0604664A - FCS Unattended Ground Sensors

further resolution and detailed planning, adjustments may occur which could potentially change planned accomplishments, funding requirements, and program schedule. The budget justification program schedule reflects the current FCS program. The funding and accomplishments are a top-level attempt to incorporate the reconfused FCS program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604664A - FCS Unattended Ground Sensors		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	10929	12967	18968
Current BES/President's Budget (FY 2010)	22007	17011	26919
Total Adjustments	11078	4044	7951
Congressional Program Reductions		-56	
Congressional Recissions			
Congressional Increases		4100	
Reprogrammings	11377		
SBIR/STTR Transfer	-306		
Adjustments to Budget Years	7		7951

Change Summary Explanation: Funding - Increase in FY10 budget due to incorporation of new T-UGS, U-UGS production cost saving design.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604664A - FCS Unattended Ground Sensors			PROJECT FC5	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
FC5 FCS UNATTENDED GROUND SENSORS	22007	17011	26919	Continuing	Continuing	

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
UGS System Engineering & Program Mgt. FY08 - Completed and released Thresholds PIDS. Provided technical support to Technical Field Test (TFT) & LUT test at Joint Expeditionary Force Experiment (JEFX) 08. Updated Future UGS Low Rate Initial Production (LRIP) Design by changing Mobile Subscriber Radio Terminal (MSRT) radio into a JTRS Handheld Manpack & Small form fit (HMS). Conducted affordability initiatives to attempt to lower production costs. Also redesigning deck shape and material to lower production costs and make emplacement easier. Defined and Captured U-UGS Requirements; Preliminary Design Base CI; Preliminary Design Fixed Camera; Preliminary Design Radio Enclosure & Antenna; Preliminary Spike Design; Preliminary U-UGS Short Haul (SH) Module Design.	14049		
UGS System Engineering & Program Mgt. FY09 - Design of New Form Factor T-UGS, consist of more producible configuration (Less Production Costs). New Radio, New Seismic Spike. Integrate New Form Factor into Battle Command Network.		14750	
UGS System Engineering & Program Mgt. FY10 - Oversee delivery of prototypes Test and Analysis of New Form Factor UGS (to include radio, spike, acoustic sensor, etc.) and U-UGS gateway. Overseeing all test for T-UGS. Begin planning efforts to support T-IBCT.			25814
UGS Test FY08 - Preliminary Design Base Configuration Item; Long Haul Radio Risk Reduction Tests; Engineering Short Haul Radio Performance System Test Plan; UGS Short Haul Module Engineering Design, Build, and Test.	5993		
UGS Test FY09 - Procurement for Base Engineering Build; Base Configuration Item Engineering Tests; Electro Optical Combat Intelligence Engineering Tests; Engineering Radio Configuration Item Engineering Test; Seismic Engineering Tests; Engineering Short Haul Radio Performance System Test; Engineering Long Haul Radio Performance System Test; Hardware/Software Lab Integration Test; T-UGS Endurance Test; Engineering Performance Test-Developmental Performance (DP1); Engineering Long Haul/Short Haul Radio Performance Test; Operations Qualifications Test; T-UGS System Environmental Quality Tests.		1635	
UGS Test FY10 - U-UGS SW Quality Test; U-UGS System Environmental Quality Test; U-UGS System Performance Quality Test; T-UGS System Environmental Quality Test; T-UGS System Performance Quality DP3; T-UGS Operations Qualification Tests.			645
UGS Prototypes FY08-Delivered 10 T-UGS and 16 U-UGS for Spin Out Testing. (These prototypes will be used in the Core Program, thus charged to Core Program.)	1965		
UGS Prototypes FY09-FY10: Improvement to T-UGS and U-UGS, based on E-IBCT Testing. Refurbishment of the current E-IBCT assets in order to support the Army's Operational Assessment OA.		150	460
Small Business Innovative Research/Small Business Technology Transfer Programs		476	
Total	22007	17011	26919

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604664A - FCS Unattended Ground Sensors

PROJECT
FC5

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604661A FCS System of Systems Engr & Program Management	1292514	1414756	1067191	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing
0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing
0604647A Non Line of Sight - Cannon	133139	89545	58216	Continuing	Continuing
0604666A FCS Spin Outs	84111	111032		Continuing	Continuing
0603639A FCS MRM	43068	40731		Continuing	Continuing
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing
0605625A - Manned Ground Vehicles			100000	Continuing	Continuing

Comment: Comp Programs: ASTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, STARLite SAR/GMTI, GSTAMIDS, JAVELIN, JCADS, JSLSCAD, DCGS-A, STRS-AMF, FBCB2, OneTESS, OneSAF

C. Acquisition Strategy The original FCS Contract was awarded to the Boeing Company 30 May 2003 and definitized 10 Dec 2003. Boeing has contracted with its One Team Partner, Textron Systems, Wilmington, (MA) producing the Urban Unattended Ground Sensors (U-UGS) and Tactical Unattended Ground Sensor (T-UGS). T/U UGS prototypes were delivered to the Army Evaluation Task Force (AETF) and will be included in the initial increment to the E-IBCT. As the program transitions to an incremental development approach, the above will continue to be provided by Boeing to the E-IBCT and T-IBCT.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604664A - FCS Unattended Ground Sensors							FC5		
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
Unattended Ground Sensors (UGS)	FAR	The Boeing Company - St Louis, MO See Remark 1		22000	1-3Q	16535	1-3Q	26919	1-3Q	Cont.	Cont.	
Subtotal:				22000		16535		26919		Cont.	Cont.	

Remarks: Remarks 1: Subcontractor: Textron Systems, Intelligent Battlefield System Division - Willington, MA

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
SBIR/STTR	Direct	OSD				476	1-2Q			Cont.	Cont.	
Adjustment to Budget Years	Direct	ABO		7	1-2Q					Cont.	Cont.	
Subtotal:				7		476				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
Subtotal:												

Remarks: All Test and Evaluation costs for this project are included in 0604661 FCS SoS Engineering and Program Management project.

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: All Management Services costs for this project are included in 0604661 FCS SoS Engineering and Program Management project.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604664A - FCS Unattended Ground Sensors						PROJECT FC5			
Project Total Cost:		22007		17011		26919		Cont.	Cont.	

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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604664A - FCS Unattended Ground Sensors

PROJECT
FC5

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) FCS SoS PDR							▲ 1																									
(2) E-IBCT SoS CDR							▲ 2																									
(3) T-IBCT SoS PDR							▲ 3																									
(4) T-IBCT SoS CDR											▲ 4																					
(5) T/U-UGS Original Prototype Deliveries for P-LUT	▲ 5	T/U-UGS Orig Prototypes																														
T/U-UGS Original TFT/P-LUT	■	T/U-UGS Orig TFT/P-LUT																														
(6) T-UGS New FF PDR							▲ 6																									
(7) T-UGS New FF CDR							▲ 7																									
(8) T-UGS New FF Prototypes for P-LUT2							▲ 8																									
(9) U-UGS New FF Prototypes for P-LUT2							▲ 9																									
(10) T-UGS Threshold Deliveries											▲ 10																					
(11) U-UGS Gateway Deliveries											▲ 11																					

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604664A - FCS Unattended Ground Sensors						FC5	
<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>	
FCS SoS PDR		3Q							
E-IBCT SoS CDR		4Q							
T-IBCT SoS PDR		3Q							
T-IBCT SoS CDR			3Q						
T/U-UGS Original Prototype Deliveries for P-LUT	1Q - 2Q								
T/U-UGS Original TFT/P-LUT	1Q - 2Q								
T-UGS New FF PDR		3Q							
T-UGS New FF CDR		4Q							
T-UGS New FF Prototypes for P-LUT2		4Q							
U-UGS New FF Prototypes for P-LUT2		4Q							
T-UGS Threshold Deliveries			2Q						
U-UGS Gateway Deliveries			2Q						

The schedule reflected in this budget justification is based on preliminary analysis of the available budget.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604665A - FCS Sustainment & Training R&D			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC6 FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provides the tools and capabilities necessary for a collection of systems composed of computers, sensors, and platforms linked together to achieve a single capability. This is accomplished through distributed functionality that consists of the following applications and interfaces: a distributed information management backbone, Communications; Intelligence, Surveillance and Reconnaissance (ISR); Command and Control (C2); and training and supportability. These elements are integrated and managed as the Battle Command System (BCS) software.

The information management backbone necessary for the distributed network is composed of the Integrated Computer System (ICS) and System of Systems Common Operating Environment (SoSCOE). The ICS consists of multiple computer processors, as well as network, graphics and memory cards, and is integrated with software functionality provided by a modified operating system (OS) and SoSCOE. SoSCOE serves as a middleware solution by separating software applications from the ICS hardware and OS. This isolates changes in the ICS from impacting software applications directly, reducing traditional integration and maintenance costs. It also provides services that network the collection of nodes (hardware and software applications) into a single, integrated system. SoSCOE addresses the needs of different system types, supporting real-time environments and platforms with processing and memory constraints. It also provides a suite of other services that are commonly required by BCS software applications that are loaded onto the ICS.

Application Software: 1. Communication applications include the Network Management System (NMS) which provides the management of voice, data, and video communications between multiple, mobile system platforms. The NMS manages these platforms as nodes that are changing due to availability and bandwidth limitations. 2. Integration of air and ground sensors data (images, video) into the common operational picture (COP) 3. Command and Control software provides battle command and mission execution, planning and preparation, and situational understanding, accessed through the Warfighter Machine Interface (WMI). 4. IBCT training will include training support packages, IETMs, representation of IBCT elements in current collective trainers, and embedded tactical training for appropriate platforms. Embedded training applications for MGVT platforms will no longer be developed based on DAE direction and Congressional approval in FY10. 5. Supportability applications are composed of the Platform Soldier Mission Readiness System (PS-MRS), Logistics Decision Support System (LDSS), and Logistics Data Management Services (LDMS) subsystems and are integrated into the BCS, providing distributed logistical capabilities.

Software development is executed incrementally in five two-year build cycles (Build 0-4), aligning with program requirements. Each software build is initiated by a Build Definition Checkpoint (BDC), phasing software functionality. Development teams begin the software build with either a Life Cycle Objective (LCO) review or Software Specification Review (SSR) to assess build objectives and requirements. Following the LCO, either a Life Cycle Assessment (LCA) or Preliminary Design Review (PDR) is held. This review ensures that the product build to the architecture will be able to meet all of its functional and performance requirements. Additional checkpoints are executed throughout the FCS software build to ensure both horizontal and vertical consistency. A Test Readiness Review (TRR) is held prior to Functional Qualification Test (FQT) to ensure that all lower level testing has been completed and the qualification test procedures adequately test the requirements implemented during the build. Further integration and testing between software subsystems and hardware occurs within respective Software/System Integration Labs (SIL), until all software is integrated at the SoS Integration Lab (SoSIL). A Build Assessment Checkpoint (BAC) is completed to ensure that all software was tested, delivered, and integrated.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - System Development and Demonstration

0604665A - FCS Sustainment & Training R&D

Common Network Hardware - Includes design, development and prototype procurement of common hardware (sensors, computer and common controller) required for implementation of the data network.

The ICS hardware is being commonly developed for each of the FCS platforms with the necessary computing resources, Information Assurance hardware, and Crew workstation processing to support the capabilities required of the FCS BCT. The ICS is being developed using commercial processing equipment but militarized to meet the Information Assurance requirements as well as meet the reliability needs for the harsh environments of a tactical mobile platform. With the termination of the MGV portion of the program ICS configurations will be reduced from 7 to potentially 4, to support the IBCT platforms.

In addition to the computing and communications equipment, the FCS C4ISR system includes a set of advanced common sensors that are deployed to the ground and air vehicle platforms. These sensors include the EO/IR sensor devices, the Laser Rangefinders/designators, Radars, and Acoustics sensors in common packages sized to support the needs of the remaining FCS platform. There will be approximately 10 prototype ground sensor packages developed and delivered for platform qualification and Limited User Testing. There will be approximately 20 air sensor packages including EO/IR, laser rangefinder/designators, and STARLite SAR/GMTI products delivered and integrated into the Class I and Class IV UAVs.

The network (hardware and software) has been changed due to the restructuring of the MGV portion of the FCS program and the refocusing of the FCS program to spin out FCS technologies faster to the IBCT. The accomplishments, funding, and schedule reflected in this budget justification are based on preliminary analysis of the new direction and reduced program budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change planned accomplishments, funding requirements, and program schedule. The budget justification program schedule reflects the current FCS program. The funding and accomplishments are a top-level attempt to incorporate the new direction to refocus the FCS program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604665A - FCS Sustainment & Training R&D		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	647649	539145	334085
Current BES/President's Budget (FY 2010)	724397	556301	749182
Total Adjustments	76748	17156	415097
Congressional Program Reductions		-1844	
Congressional Recissions			
Congressional Increases		19000	
Reprogrammings	94641		
SBIR/STTR Transfer	-18121		
Adjustments to Budget Years	228		415097

Change Summary Explanation: Funding - FY10 - Additional Funding is realigned to meet NSA Information Assurance Requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604665A - FCS Sustainment & Training R&D			PROJECT FC6	
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost	
FC6 FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing	

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
SOSCOE Development FY08: Completed development and pre-Formal Qualification Test (FQT) of SoSCOE Build 2.0 in support of Spin-Out. Completed FQT of SoSCOE Build 2.0 in 2Q FY08. Integrated with ICS Build 2.0 and integrated into IMT-1 and BCS B2E for SO1. SoSCOE Build 2.0 functionality includes updates to previously included services, as well as initial functionality provided for Information Assurance, Input/Output, OS Abstraction, and Software Support Services. SoSCOE Build 2.0 also includes full functionality for System Services. Approximately 60% cumulative functionality delivered based on original program software sizing estimates. Completed SoSCOE Build 2.5 Life Cycle Objectives (LCO) and Life Cycle Assessment (LCA) Reviews. Detailed Design, Code, and Unit Test completed. SoSCOE Build 2.5 will include full functionality for Information Assurance Services. Purchased and maintained COTS License Agreements for all software supplied.	95845		
SOSCOE Development FY09: FQT and release SOSCOE Build 2.5 to support FCS SW Build 2 Final. Approximately 60-70% cumulative functionality will be delivered based on original program software sizing estimates. SoSCOE Build 2.5 will include full functionality for Information Assurance Services. Begin requirements Analysis, Design, Code, and Unit Test for SoSCOE Build 3.0, leading to an engineering release delivered in 4Q FY09. The completion of SoSCOE Build 3.0 will include full functionality for Administrative, Communication, Configuration and Control, TIN, and Web Services. Purchase and maintain COTS License Agreements for all software supplied.		50200	
SOSCOE Development FY10: FQT and release SOSCOE Build 10.3 and 10.4 (new numbering system) to support T-IBCTs. Approximately 75-80% of the cumulative functionality, based on original program software sizing estimates, will be delivered in this release and will include full functionality for Administrative, Communication, Configuration and Control, and Web Services. Begin requirements Analysis, Design, Code, and Unit Test for SoSCOE Build 10.4 leading to an engineering release delivered in 4Q FY10. Purchase and maintain COTS License Agreements for all software supplied. For E-IBCT, continue the resolution of software integration issues and incorporation of cross domain guard, GSE and JTRS NSA certified radio and associated waveforms. Begin developmental planning for the T-IBCT and the new combat vehicle platform network integration.			79606
Communication Systems Software FY08 - Build 2 Early Detailed Design, Code and Unit Test completed. B2E includes initial functionality for Network Data Management (NDM)/Adaptor Management System (AMS), Security Management, and Embedded Training.	19083		
Communication Systems Software FY09: Complete Build 2 Early FQT of Network Management software 3Q FY09. Approximately 50-55% cumulative functionality delivered based on original program software sizing estimates. This included initial functionality for Network Data Management (NDM)/Adaptor Management System (AMS), Security Management, and Embedded Training. Complete Life Cycle Architecture (LCA) checkpoints for Build 2 Final 2Q FY09. Complete ER2 for Build 2 Final. NMS Build 2 Final will include		17811	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604665A - FCS Sustainment & Training R&D	FC6
functionality for Fault Management. Complete Network Management System Build 3 Early Life Cycle Objective (LCO) review 4Q FY09.		
Communication Systems Software FY10: Complete Life Cycle Architecture (LCA) checkpoints for Build 3 Early 1Q FY10. Develop and FQT software for Build 2 Final 2Q FY10. Complete Network Management System Build 3 Early and Final Life Cycle Architecture (LCA) review and Build 3 Final Life Cycle Objective (LCO) review. For E-IBCT, continue the resolution of software integration issues and incorporation of cross domain guard, GSE and JTRS NSA certified radio and associated waveforms. Begin developmental planning for the T-IBCT and the new combat vehicle platform network integration.		27000
Battle Command Software FY08: Completed Initial Build 2 Early for Warfighter Machine Interface (WMI), Mission Planning and Preparation, Situational Understanding, and Battle Management & Mission Execution to support SO1 WMI Engineering Releases for early integration and FQT delivery (3Q08) made available to Battle Command Partners.	109574	
Battle Command Software FY09 - Complete Build 2 Early FQT for Warfighter Machine Interface (WMI), Mission Planning and Preparation, Situational Understanding, and Battle Management & Mission Execution. Approximately 45-50% cumulative functionality delivered based on original program software sizing estimates. Initial start of Build 2 Final development.		63964
Battle Command Software FY10: Complete Build 2 Final FQT for Warfighter Machine Interface (WMI), Mission Planning and Preparation, Situational Understanding, and Battle Management & Mission Execution. Approximately 60-70% cumulative functionality delivered based on original program software sizing estimates. Initial Start of Build 3 Early development. For E-IBCT, continue the resolution of software integration issues and incorporation of cross domain guard, GSE and JTRS NSA certified radio and associated waveforms. Begin developmental planning for the T-IBCT and the new combat vehicle platform network integration.		71569
Networks Management FY08 - Provided requirements management, contract management, technical guidance, horizontal integration and architectural oversight of the NMS contract. FY08 - The NMS developed and released two configurations of NMS software for the B2E, B2E CVT (classified verifications test) and B2E FF (future force). The major milestones are B2E TRR, B2E, FQT, B2F, LCO, B2F, LCA. The functionality of B2E two configurations (B2E CVT, B2E FF) included: Dual Enclave Support, SO1 CVT IA Upgrades, Interface To SOSCOE RBAC, File Access Control, Digital Signatures, PKI User Authentication, Audit Logging, Password Management, Software Upgrades/Patches, (CR 300) LynxSE-based QoS Request Agent, Re-Host NMS QoS Agent On Lynx SE, (CR 278) SRW1.0c And CI Mgmt Upgrades To Planning And Management, SRW 1.0c Configuration and Monitoring Changes For GMR EDM (B- Kit) and HMS (U-UGS/T-UGS) Support, Controlled Interface Management, Start/Stop Message Flow, Status.	16403	
Network Management FY09 - Provide requirements management, contract management, technical guidance, horizontal integration and architectural oversight of the NMS contract. The NMS will complete development of B2E NMS software and start on Build 2 Final NMS software. The major milestones for FY09 are B2E TRR, B2F LCO and LCA and B3E LCO. The functionality of B2E should include: FCS Network Planning Capacity Updates, Network Planning Integrated with BC Mission Planning (PPS), Quality of Service (QoS), Bandwidth Budgets, FCS Network Mgmt Interface To BC Logistics(PS-MRS), Performance Monitoring Updates, IA access control and audit Logs, Plan and configure dual security enclaves, and password management.		18248
Networks Management FY10: Provide requirements management, contract management, technical guidance, horizontal integration and architectural oversight of the NMS contract. During this fiscal year, NMS will develop B3E NMS software and finalize delivery and FQT B2F software. Major milestones during this period are B2F FQT, B3E LCA, B3F LCO, and B3F LCA. The B2F functionality consists of: Net Planning - Planning for the Build 2 Final network architecture, Network Topology Planning, Spectrum Planning, QoS planning, admission control, traffic class, bandwidth, Network Tier planning WNW, Fault management for B2F elements, Dynamic Role		27387

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604665A - FCS Sustainment & Training R&D		FC6
Management of NMS, Spectrum planning for WNW and SRW, Interface to JTRS NMSs (JWNM 4.0 and SRW NM1.0+). For E-IBCT, continue the resolution of software integration issues and incorporation of cross domain guard, GSE and JTRS NSA certified radio and associated waveforms. Begin developmental planning for the T-IBCT and the new combat vehicle platform network integration.			
Fusion Software FY08 - Sensor Data Management (SDM) and Level One Fusion (L1F) completed FCS SW Build 2 Early SO to support SO with approximately 45-50% cumulative functionality delivered. FCS SW Build 2 Final Life Cycle Objectives (LCO) and Life Cycle Assessment (LCA) Reviews held for SDM and L1F. Detailed design and coding initiated.	21650		
Fusion Software FY09 - Completed Build 2 Early FQT for Sensor Data Management (SDM) and Level One Fusion (L1F) and currently integrating this into the E-IBCT. Initial start of FCS SW Build 2 Final including Life Cycle Assessment (LCA) Reviews held for SDM and L1F. Detailed design and coding initiated. Initial Exploitation Tools and Embedded Training functionality to be provided by L1F.		10792	
Fusion Software FY10: Complete Build 2 Final FQT for Sensor Data Management (SDM) and Level One Fusion (L1F) capturing approximately 65%-75% cumulative functionality based on original program software sizing estimates. Build 2 Final includes the completion of Kernel functionality for SDM. Begin effort for FCS SW Build 3 Early.			9923
Embedded Training Software FY08 - Performed integration with SoSCOE versions 1.5, 1.8, and 2.0. Initiated integration with WMIS. Completed FQT of Training Common Components (TCC) for FCS SW Build 2 Early. Complete Life Cycle Objective (LCO) checkpoint for TCC to support FCS SW Build 2 Final.	12736		
Embedded Training Software FY09 - Complete integration with SoSCOE 2.5. Continue integration with WMIS. Complete Life Cycle Architecture checkpoint of TCCs to support FCS SW Build 2 Final. Provide Build 2 Final (B2F) Engineering Releases in 2Q and 4Q FY09 to support early integration with FCS Manned Ground Vehicle (MGV). Due to Termination of FCS MGVs the embedded training requirement for FY10 and out was also curtailed		21152	
Contractor Logistics Products Application Integration FY08 - Completed design, code, and unit test for LDSS and PS-MRS. Completed pre-FQT to support early integration activities within the Software Integration and Test (SWIT) lab for Battle Command System (BCS) Build 2 Early. Completed FQT scheduled in 3Q FY08 to support FCS SW Build 2 Early. Approximately 20-25% logistical functionality available at the completion of Build 2 Early. Completed FCS SW Build 2 Final LCO and LCA reviews for LDSS, LDMS, and PS-MRS.	36970		
Contractor Logistics Products Application Integration FY09 - Complete design, code, and unit test for Build 2 Final LDSS, LDMS, and PS-MRS with pre-FQT in 3Q FY09. Build 2 Final FQT scheduled for 4Q FY09. Approximately 40-45% of the original program logistical functionality will be delivered by Build 2 Final, including initial Interactive Electronic Technical Manual (IETM) viewer capabilities. Complete FCS SW Build 3 Early LCO and LCA reviews for LDSS, LDMS, and PS-MRS.		1953	
Contractor Logistics Products Application Integration FY10: Complete Build 3 Early FQT in 3Q FY10 for PS-MRS and LDSS, as well as a beta-release of LDMS. Will conduct trade study to determine most cost effective means of managing PBL data (LDMS versus LIW). The completion of Build 3 Early represents approximately 55-60% logistical functionality based on the original program's software sizing estimates. For LDSS, this will include enhanced Sustainment Plan Generator, Plan Execution and Monitor, Readiness Assessor, Service Request Handler, Support Services, and interface development with Warfighter Machine Interface System (WMIS), Situational Understanding (SU) and Battle Command and Mission Execution (BCME). For PS-MRS, Build 3 Early software will include enhanced Diagnostics and Prognostics. For E-IBCT, continue the resolution of software integration issues. Begin developmental planning for the T-IBCT and the new combat vehicle platform network integration.			2629
Ground Sensors Integrator Hardware FY08 - Conducted PDR for the Ground Sensor Suite, SREO and SUGV EO/IR Sensors. Conducted CDR for SUGV EO/IR Sensor, MREO and the CEEU. 720 drawings were completed.	187831		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604665A - FCS Sustainment & Training R&D		FC6
Ground Sensors Integrator Hardware FY09: Conduct Prototype Readiness Reviews (PRR) for the following sensors: Multi function RF (MFRF), Combat ID, and SUGV EO/IR. Commence deliver the following 5 Sensor prototype hardware; CID and SUGV EO/IR. Complete 8 MFRF deliveries. Conduct CDR for the GSS. Conduct PDR for EMS and acoustic sensor. There will be approximately 1,002 drawings reviewed.		173750	
Ground Sensors Integrator Hardware FY10: Complete delivery of 5 SUGV EO/IR. Design/development efforts to support incorporation of 3rd Gen FLIR within MREO sensor package. Completion of design work on MREO light and acoustic sensors. Commence procurement of 5 MREO ("Light" with 3rd Gen FLIR) with delivery of 1 in FY10 and 4 in FY11. Commence procurement of 4 acoustic sensors. There will be approximately 400 drawings released.			223253
Air Sensor Hardware FY08 - Updated Technical Performance Measures (TPMs) based on sensor PDRs, CDRs and verification testing (CL I & IV). C4ISR SIL Integration effort started in 3Q FY08. CL IV UAV - Continued Prototype development of ASTAMIDS and EO/IR sensor into a single sensor. Continued Prototype development of Synthetic Aperture Radar (SAR) / Ground Moving Target Indicator (GMTI). Delivered 1 SAR Emulator to support initial SIL integration: Continued Hardware and Software development of the Aided Target Recognition (AiTR). Continued Software qualification tests for the Class IV AiTR software that ASI's Air Sensor Developer was developing. The testing was performed at an ASD to ASI level with LSI and government witnessing. Delivered 3 Emulators with AiTR Algorithms Embedded. C4ISR SIL Integration effort started in 1Q FY08.	16784		
Air Sensor Hardware - FY09 - CL IV UAV - Delivered 1 ASTAMIDS emulator to SIL, conducted Contractor Field Test. Deliver 1 Emulator to support initial SIL integration: Continue Software development of the Aided Target Recognition (AiTR). Continue Software qualification tests. Deliver 2 Emulators with AiTR Algorithms Embedded for SIL integration.		11376	
Air Sensor Hardware FY10: Deliver approximately 5 ASTAMIDS CL IV Sensors. Deliver 4 SAR/GMTI Sensors. Deliver 2 AiTR software packages. Deliver 3 Electro Optical Infrared (EOIR/LD) Class 1 Sensors. Evaluate alternatives for UAV threat detection.			26506
Communication Hardware (Air and Ground) - FY08: Delivered 2 Air Platform Comm Systems (APCS) Payloads to C4 SIL, and 9 to UAV IV. The APCS provided target designation, mine detection, communications extension, long endurance persistent staring, wide area surveillance, and chemical detection for the FCS BCT at the brigade level and supports manned/unmanned teaming operations with manned aviation. Delivered 1 Ground Platform Comm Systems Payloads to BAE SIL. Conducted Air Platform Comm Systems Class IV CDR. Conducted Network Systems PDR 4Q FY08. Ground Platform Comm Systems Payloads MG; CDR in FY08. Delivered 4 Ground Control Stations (GCS) to UAV. Delivered GMR and HMS EDMs Radios to UAV and SUGV SILs. Delivered 2 Ground Platform Comm Systems Payloads to C4IT, and 4 to MG.	46409		
Communication Hardware (Air and Ground) - FY09: Deliver HMS SFF-D to UAV and UGV (SUGV1). Deliver Integrated Communication Suites to C4ISR, MG, and UGV System Integration Laboratories (SILs). FY09 Networks Hardware efforts: Upgrade Radios (HMS and GMR) with SRW 1.0c. Change Surrogate Radios (MSRT and ZigBee in T-UGS and MSRTs in U-UGS) with HMS SFF-A in preparation for E-IBCT. Continue C4ISR HW Deliveries to Systems/Platforms. Complete preliminary design of Integrated Platform Communications System (IPCS) for T-IBCT. Preparation, presentation and acceptance of IPCS Critical Design Review (CDR). Begin detailed design of FCS components of T-IBCT IPCS. Begin detail design of common controller which will support UAV Class I, SUGV, ARV-L.		28800	
Communication Hardware (Air and Ground) - FY10: Complete detailed design of T-IBCT Integrated Platform Communications Systems (IPCS). Preparation, presentation and acceptance of T-IBCT IPCS Critical Design Review (CDR). Prepare test stations and conduct final integration and test acceptance T-IBCT Payloads. Deliver System Integration Lab Payloads to T-IBCT platform integrators.			28225

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	0604665A - FCS Sustainment & Training R&D	FC6
Deliver remainder of System Development and Demonstration (SDD) payloads for T-IBCT platforms to government field testing. Prepare and deliver Payload Training Support Packages. Anticipated deliveries include: GMR (IBCT SO-34), GPCS: (HMMWV-14 and SUGV -6), HMS:(SFF-D-40), APCS: (UAV-4). Refurbishment of B-Kits and upgrade of radios to support OA testing. Initial delivery of 4 common controller prototypes to begin qualification testing.		
ICS - Computer Processing, Hardware and Software FY08 - ICS Hardware: Delivered 1 ICS Type VI Brass boards (a full ICS ship set in terms of form fit & function). Delivered 2 ICS Prototypes (a Prototype is a brass board ship set that has successfully passed formal qualification testing). Retrofit 21 ICS type VI Prototypes. A Retrofit activity in place to correct some hardware deficiencies in the type VI computers delivered in support of SO1. Another retrofit in FY08 to upgrade 10 of those computers to the dual domain computer needed for the CVT in FY09. Delivered 9 ICS Type 8 Emulators. ICS Software: Completed development of the ICS Objective Operating System (OOS) Build 2.5 with SQT on Software Development Unit (SDU) to support FCS SW Build.	97768	
ICS - Computer Processing, Hardware and Software FY09: Plan to deliver 74 Software Development Units (SDU). The SDUs represent a cost-effective emulation of the ICS. They are as close in function as COTS and cost allow. The SDUs are typically used by application developers. The SDUs contain a subset of CPU cores found in the final ICS configuration. Plan to deliver 20 ICS Emulators. Emulators are defined as 19" rack mountable 1U 'pizza box' computers that approximates a complete ICS ship set, i.e. it will have roughly the same number of CPU cores found in the final deliverables. It will not have Info Assurance or Built-in-Test. The emulator is essentially a Software Development Unit that's sized equivalent to full ICS ship set. Emulators are non-form/fit, affordable commercial approximations of an ICS ship set primarily for use as a preliminary software integration test bed. ICS Type I Emulators, qty. 3; ICS Type II Emulators, qty. 7; ICS Type IV Emulators, qty. 5; ICS Type VII Emulators, qty. 5. In addition to Emulator deliveries, the ICS program will deliver 1 ea Brass Board Type VIII computers in support of the SUGV program, and 26 ea Dual Domain Prototype Type VI computers in support of the IBCT conducted at Ft. Bliss. ICS Software: Conduct Life Cycle Objective (LCO) Review for ICS Build 3.0 L5OS and RTOS. Engineering Release of ICS Build 2.5 L4OS and Build 3.0 RTOS. Functional Qualification Test (FQT) of ICS CDG to support Current Force CVT and IBCT. Delivery Build 2.5 L4OS in support of SDU and Emulator deliveries. Conduct Life Cycle Architecture (LCA) review for ICS Build 3.0 L5OS and RTOS for FCS SW Build 3 Early. ICS Build 3.0 includes full functionality for Video Graphics and Maintenance Support. Provide fully integrated ICS software architecture of Build 2.5 L4OS, Build 3.0 RTOS and Build 2.5 Future Force CDG Engineering Release to support platform IQT's. Start activities for ICS Build 3.0 to support delivery in FY10.		86986
ICS - Computer Processing, Hardware and Software FY10: Deliver approximately 15 Emulators - ICS Type IV qty 8, ICS Type VII qty 7. Deliver approximately 15 ICS Brass-boards- ICS Type IV qty 8, ICS Type VII qty 3, and ICS Type VIII qty 4. Deliver 7 additional ICS Type VIII Prototypes. Deliveries of these items are scheduled to be made to various LSI SILs, platform developers, platform integrators, and test facilities. ICS Software: Conduct Life Cycle Objective (LCO) Review for ICS Build 3.5 L5OS and RTOS. Functional Qualification Test (FQT) of ICS 3.0 L5OS and RTOS to support platform Integrated Qualification Tests (IQT). Conduct Life Cycle Architecture (LCA) review for ICS Build 3.5 L5OS and RTOS FCS SW Build 3.5 Early. Release ICS Build 3.5 L5OS and RTOS Engineering Release for integration with FCS SW Build 3.0 Final. Deliver Early Engineering Release of ICS Software Separation Kernel to provide multi-security enclave video on a single display. ICS Build 3.5 includes full Fault Management, Audit Logging, Device Driver and Bootstrap functionality. Refurbishment of B-Kits to support OA testing.		125045
Contractor C4ISR System IAT&C - FY08 - Integration of Battle Command software applications in the Software Integration Team (SWIT) to support delivery of Battle Command System (BCS) for SO1 CVT and Build 2 Engineering Iteration (EI). This included integration of WMI, SoSCOE Build 2.0 and ICS Objective Operating System (OOS) Build 2.0 with other Battle Command Applications prior to completion of the BCS Build 2 Early DSQT. C4ISR level Integration, Test Planning, Test Execution, and Test results analysis	35340	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - System Development and Demonstration	0604665A - FCS Sustainment & Training R&D		FC6
for equipment that is integrated and tested at the C4ISR level for later incorporation as a unit to another product, such as a vehicle. Integrated and tested the suite before delivering it for integration into the vehicle. Included management and integration of sensor, communication and computer hardware and software in the SIL and integration of network management, Battle Command and ISR Fusion software packages from partners into SOSCOE conducted in the SIL.			
Contractor C4ISR System IAT&C - FY09 - BCS Build 2 Early NSQT scheduled for 3Q FY09 within the SWIT. BCS Build 2 Early software delivered to C4ISR SIL for Hardware/Software integration. Cumulative integrated BCS functionality at approximately 40-45% based on original program software sizing estimates. Capabilities provided during Build 2 Early include initial Situation Refinement, Weather Services, and Embedded Training support within Situational Understanding (SU); and initial capabilities for Incoming Order Processing, Airspace Control, Unmanned Payloads Control, Unmanned Vehicle Control, and Embedded Training support within BCME. NSQT for BCS Build 2 Final scheduled for 4Q FY09. The Build 2 Final delivery will capture approximately 60-65% cumulative Battle Command functionality based on original program software sizing estimates. This includes full functionality of the Embedded Training Common Components (TCC), as well as integration of SoSCOE Build 2.5 and ICS OOS Build 2.5. T/U UGS will be integrated with the B-kit during the Formal NSIV testing. This will include T-UGS Gateways, ISR and EOIR nodes and U-UGS gateways and intrusion/EO nodes.		26266	
Contractor C4ISR System IAT&C FY10: Complete NSQT for Build 2 Final BCS software in 1Q FY10. Cumulative integrated BCS functionality at approximately 60-65% based on original program software sizing estimates. Conduct early integration of Build 3 Early BCS software subsystems, with NSQT scheduled for 1Q FY11. For E-IBCT, resolve any remaining final A and B kit integration issues along with fixing hardware/software integration issues and software problem reports.			59892
FY08 GFX: GFX supported the LSI contractor efforts. Networks GFX included: The Network Analysis Integration Laboratory (NAIL) which provided C4ISR End-to-End (E2E) Network performance analysis to include analytical capability, scalable architecture, in a live, virtual and constructive (LVC) environment. The NAIL supported the LSI with analysis and enables the FCS Program to assess FCS network capability and requirements in specification and design; identify potential network and services performance gaps and emerging technical solutions to mitigate E2E network performance related risk; and provided design recommendation in support of Network Design Reviews (PDR), System of System PDRs and BC Requirements. It also mitigated risk associated with Joint, Multi-National, and Current Force interoperability and information assurance. JEFX08: Combined live air, space, naval, and ground forces, simulation, and technology insertion into a near-seamless warfighting environment. Focused on joint air operations in a Live Fly environment demonstrating Net-centric Interoperability, Joint Networked Fires, and Networked Sensors. JEFX08 examined improved network integration and joint interoperability: Demonstrated Joint/Multinational interoperability, demonstrated Current Force to Future Force interoperability, achieved assured Global Information Grid (GIG) connectivity, established capability for evolving enterprise services, and achieved shared situational awareness and understanding. Provided hardware to support Experiments 2 and 3, C4ISR End-to-End Network, Night Vision Labs, Joint Interoperability, and Multinational Interoperability. The C4ISR LVC environment was used to conduct analysis to conduct the detailed experimental design (e.g. entity lay down, entity movements, entity behaviors, etc.) specifically regarding phase 1 of Experiment 2 (e.g. JEFX 08).	28004		
FY09-FY10 GFX: NAIL will provide an analytical capability, scalable architecture, and live, virtual and constructive (LVC) environment enabling the FCS Program to assess FCS network capability; identify network and performance gaps and technical solutions to mitigate E2E network performance related risk; and provide recommendation in support of Network Design Review (PDR) and System of System PDR. Mitigate risk associated with Joint, Multi-National, and Current Force interoperability and information assurance. Perform E2E integrated network performance and risk analysis of the FCS Network supporting IBCT, to include: end-to-end network performance, voice and video architecture; ISR effectiveness; and analysis of service level deployment architecture for BC/SOSCOE applications at the		29424	63147

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604665A - FCS Sustainment & Training R&D	PROJECT FC6
<p>upper and lower echelons targeting IBCTs. Perform LVC Integration and Experimentation: Horizontal C4ISR E2E integration and LVC field analysis of Voice, Video, TeleOps, Information Assurance, etc. with emerging versions of BC and SOSCOE deployments. Perform network performance baseline analysis with full brigade representation on LVC environment. Perform Multinational Experimentation to support bilateral interoperability of service to service interface, collaborative services, joint fires, interoperability via the Secret/Releasable DISA domain, and domain guard interoperability. Perform Joint Interoperability Experimentation and Analysis. Integration of selected FCS communications, C4ISR, unmanned air and ground systems, and Soldiers, Airmen, and Marines combined with Army and Joint lethality enablers at the battalion, company, and platoon echelons with the Joint Services at tactical level. Analysis of Service Oriented Architectures within the Army, Navy, Air Force and DISA and the effects upon the FCS (BCT) mobile ad-hoc networks.</p>		
<p>FY10 SO A-Kit Dev: FY08-09 - The efforts were funded under 0604666A Project FC7. The FY10 efforts will continue the design effort for rewiring the power distribution to support in cab control of the B-kit; continue IQT testing of the production configuration of the B-kit; start development of the modular A-Kit for different HMMWV variants; start integration of the United Battle Command (UBC) into the HMMWV; start integration of a centralized controller into the HMMWV; update B-kit start up procedures for HMMWV due to software improvements.</p>		
Small Business Innovative Research/Small Business Technology Transfer Programs		15579
Total		724397 556301 749182

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604661A FCS System of Systems Engr & Program Management	1292514	1414756	1067191	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing
0604664A FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing
0604647A Non Line of Sight - Cannon	133139	89545	58216	Continuing	Continuing
0604666A FCS Spin Outs	84111	111032		Continuing	Continuing
0603639A FCS MRM	43068	40731		Continuing	Continuing
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing
060525A - Manned Ground Vehicles			100000	Continuing	Continuing

Comment: Comp Programs: ASTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, STARLite SAR/GMTI, GSTAMIDS, JAVELIN, JCADS, JSLSCAD, DCGS-A, STRS-AMF,

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration

PE NUMBER AND TITLE

0604665A - FCS Sustainment & Training R&D

PROJECT

FC6

FBCB2, OneTESS, OneSAF

C. Acquisition Strategy The original FCS Contract was awarded to the Boeing Company 30 May 2003 and definitized 10 Dec 2003. Boeing is responsible to PM FCS to provide SoSCOE development and, through various One Team Partners, the following: Communications Systems Software, Battle Command Software, Network Management, Embedded Training Software, Live Training Tactical Engagement Simulation System (LT-TESS), Contractor Logistics Products Application Integration, Ground Sensors Integrator Hardware, and will deliver the following prototype hardware to C4ISR SIL, UGV SILs, and MGV SILs, Air Sensor Hardware, Communication Hardware (Air and Ground), Integrated Computer System (ICS) processing, hardware and software. For FY 2010, the associated sensors and MGV software are being terminated. As the program transitions to an incremental development approach, the above will continue to be provided by Boeing to the E-IBCT and T-IBCT. Future Network activities to support the new combat vehicle program (to be initiated in FY10) will be acquired outside of the current Boeing contractual arrangement.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration			PE NUMBER AND TITLE 0604665A - FCS Sustainment & Training R&D							PROJECT FC6		
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
SoSCOE / INFO MGT SYSTEM SOFTWARE	FAR	THE BOEING COMPANY, ST LOUIS, MO,		95845	1-3Q	50200	1-3Q	79606	1-3Q	Cont.	Cont.	
COMMUNICATIONS SYSTEMS SOFTWARE & NETWORK MGT SOFTWARE	FAR	THE BOEING COMPANY, ST LOUIS, MO, see remark 2		19083	1-3Q	17811	1-3Q	27000	1-3Q	Cont.	Cont.	
BATTLE COMMAND SOFTWARE	FAR	THE BOEING COMPANY, ST LOUIS, MO, see remarks 3,5,6,7		109574	1-3Q	63964	1-3Q	71569	1-3Q	Cont.	Cont.	
FUSION SOFTWARE	FAR	THE BOEING COMPANY, ST LOUIS, MO, see remarks 1, 7		21650	1-3Q	10792	1-3Q	9923	1-3Q	Cont.	Cont.	
EMBEDDED TRAINING SOFTWARE FY08	FAR	THE BOEING COMPANY, ST LOUIS, MO, all tier one subcontractors		12736	1-3Q	21152	1-3Q			Cont.	Cont.	
CONTRACTOR LOG PRODUCTS SOFTWARE	FAR	THE BOEING COMPANY, ST LOUIS, MO, see remarks 4,12,13		36970	1-3Q	1953	1-3Q	2629	1-3Q	Cont.	Cont.	
GROUND SENSOR INTEGRATOR HARDWARE	FAR	THE BOEING COMPANY, ST LOUIS, MO, see remark 8		187831	1-3Q	173750	1-3Q	223253	1-3Q	Cont.	Cont.	
AIR SENSOR INTEGRATOR SOFTWARE	FAR	THE BOEING COMPANY, ST LOUIS, MO, see remarks 9		16784	1-3Q	11376	1-3Q	26506	1-3Q	Cont.	Cont.	
COMMUNICATION	FAR	THE BOEING		46409	1-3Q	28800	1-3Q	28225	1-3Q	Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
5 - System Development and Demonstration			0604665A - FCS Sustainment & Training R&D								FC6	
HARDWARE - AIR & GROUND		COMPANY, ST LOUIS, MO, see remark 10										
ICS COMPUTER PROCESSING HARDWARE AND SOFTWARE	FAR	THE BOEING COMPANY, ST LOUIS, MO, see remark 11		97768	1-3Q	86986	1-3Q	125045	1-3Q	Cont.	Cont.	
Contractor SEPM	FAR	THE BOEING COMPANY, ST LOUIS, MO,		16403	1-3Q	18248	1-3Q	27387	1-3Q	Cont.	Cont.	
CONTRACTOR C4ISR SYSTEM IAT&C & MANAGEMENT	FAR	THE BOEING COMPANY, ST LOUIS, MO,		35340	1-3Q	26266	1-3Q	59892	1-3Q	Cont.	Cont.	
SO A-Kit Dev	CPFF	AM GENERAL, LIVONIA, MI						5000	1-3Q	Cont.	Cont.	
Government GFX	MIPR	PM FCS (BCT) St. Louis, MO		27776	1Q	29424	1Q	63147	1Q	Cont.	Cont.	
Subtotal:				724169		540722		749182		Cont.	Cont.	

- Remarks: 1: Subcontractor: Lockheed Martin Integrated Systems and Solutions, San Diego, CA; (ISR Level 1 Fusion)
 2: Subcontractor: Northrop Grumman Network Management Systems, Carson, CA; (Network Mgt Sys)
 3: Subcontractor: Boeing Mesa, Mesa, AZ; (Warfighter Machine Interface)
 4: Subcontractor: Northrop Grumman Mission Systems, Carson, CA; (Logistics Decision Support Software)
 5: Subcontractor: Raytheon Network Centric, Fort Wayne, IN; (Battle Command & Mission Execution)
 6: Subcontractor: Network Centric Systems/Austin Info Systems, Austin, TX; (Situational Understanding)
 7: Subcontractor: General Dynamics C4 Systems, Scottsdale, AZ; (Sensor Data Mgt)(Planning & Preparation Services)
 8: Subcontractor: Raytheon Network Centric Systems, Plano, TX; (Ground Sensor Integrator)
 9: Subcontractor: Northrop Grumman Electronic Sys CMS, Belcamp, MD; (Air Sensor Integrator)
 10. Subcontractor: BAE Systems, Wayne, NJ; (Air & Ground Communication Integration)
 11. Subcontractor: General Dynamics Adv Info Sys, Bloomington, MN; (Integrated Computer Systems)
 12. Subcontractor: Honeywell Defense & Electronics System, Albuquerque, NM; (Platform Soldier Mission Readiness System)
 13. Subcontractor: IBM, Bethesda, MD; (Logistics Data Management Systems)

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
SBIR/STTR	Direct	OSD				15579	1-2Q			Cont.	Cont.	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604665A - FCS Sustainment & Training R&D						PROJECT FC6		
Adjustment to Budget Line	Direct	ABO		228	1-2Q					Cont.	Cont.	
Subtotal:				228		15579				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
Subtotal:												

Remarks: All Test and Evaluation costs for this project are included in 0604661 FC2 SoS Engineering and Program Management project.

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: All Management Services costs for this project are included in 0604661 FC2 SoS Engineering and Program Management project.

Project Total Cost:		724397		556301		749182		Cont.	Cont.	
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604665A - FCS Sustainment & Training R&D

PROJECT
FC6

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) FCS SoS PDR							▲ 1																									
(2) E-IBCT SoS CDR								▲ 2																								
(3) T-IBCT SoS PDR								▲ 3																								
(4) T-IBCT SoS CDR												▲ 4																				
Software Build 2																																
(5) BCT Software Build 2 Final Planning Check Point								▲ 5																								
(6) BCT Software Build 2 Early Readiness Check Point		▲ 6																														
(7) BCT Software Build 2 Final Readiness Check Point								▲ 7																								
(8) BCT Software Build 2 SoSCOE 2.0 FQT								▲ 8																								
(9) BCT Software Build 2 SoSCOE 2.5 FQT (CHECK TITLE)								▲ 9																								
(10) Warfighter Machine Interface Svcs Build 2 Early Functional Qualification Test								▲ 10																								
(11) Network Management System Build 2 Early Functional Qualification Test								▲ 11																								

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE																PROJECT																										
5 - System Development and Demonstration		0604665A - FCS Sustainment & Training R&D																FC6																										
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												
(22) BCT Software Build 3 Final Readiness Check Point																																												
(23) BCT Software Build 3 SoSCOE 3.0 Functional Qualification Test																									▲ ²³ B3 3.0 FQT				▲ ²² B3FRC															
(24) BCT Software Build 3 SoSCOE 3.5 Functional Qualification Test																													▲ ²⁴ B3 3.5 FQT															
(25) Warfighter Machine Interface Svcs Build 3 Early Life Cycle Objectives																					▲ ²⁵ B3E LCO																							
(26) Warfighter Machine Interface Svcs Build 3 Early Life Cycle Architecture																					▲ ²⁶ B3E LCA																							
(27) Warfighter Machine Interface Svcs Build 3 Final Life Cycle Objectives																									▲ ²⁷ B3F LCO																			
(28) Warfighter Machine Interface Svcs Build 3 Final Life Cycle Architecture																													▲ ²⁸ B3F LCA															
(29) Battle Command & Mission Execution - Build 3 Early SRS LCO																					▲ ²⁹ B3E LCO																							
(30) Battle Command & Mission Execution - Build 3 Early TRC TRR																													▲ ³⁰ B3E TRR															
(31) Battle Command & Mission Execution - Build 3 Final SRS LCO																													▲ ³¹ B3F LCO															

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE																PROJECT															
5 - System Development and Demonstration	0604665A - FCS Sustainment & Training R&D																FC6															
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
ICS Prototype Deliveries for NLOS-C Inc 0	ICS NLOS-C Inc 0																															
ICS Prototype to Support Spin Out																																
ICS Type IV Prototype Deliveries (8)																	ICS Type IV															
(32) Common Controller PDR																	▲ ³² CC PDR															
(33) Common Controller CDR																	▲ ³³ CC CDR															
(34) Common Controller Prototype Deliveries																	▲ ³⁴ CC Prototypes															
Common Controller IOT																	CC IQT															
(35) MFRF Prototype Deliveries																	▲ ³⁵ MFRF Prototypes															
Air Sensors																	▲ ³⁶ CI I EO-IR/LD PDR															
(36) Class I EO-IR/LD PDR																	▲ ³⁷ CI I EO-IR/LD CDR															
(37) Class I EO-IR/LD CDR																	■ CI I EO-IR/LD Prototypes															
Class I EO-IR/LD Prototype Deliveries																	▲ ³⁸ SAR/GMTI PDR															
(38) SAR/GMTI (STARLite) - Comp Program PDR																	▲ ³⁹ SAR/GMTI CDR															
(39) SAR/GMTI (STARLite) - Comp Program CDR																	SAR/GMTI Prototypes															
SAR/GMTI (STARLite) Prototype Deliveries																																

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604665A - FCS Sustainment & Training R&D

PROJECT
FC6

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
(40) ASTAMIDS - Comp Program CDR					▲ ⁴⁰ ASTAMIDS CDR																											
ASTAMIDS - Comp Program Prototype Deliveries									██████████ ASTAMIDS Prototypes																							
Ground Sensors																																
(41) MREO-Lite PDR									▲ ⁴¹ MREO-Lite PDR																							
(42) MREO-Lite CDR									▲ ⁴² MREO-Lite CDR																							
MREO-Lite Prototype Deliveries																	██████████ MREO-Lite Prototypes															
(43) SUGV EO-IR CDR									▲ ⁴³ SUGV EO-IR CDR																							
SUGV EO-IR Prototype Deliveries									██████ SUGV EO-IR Prototypes																							
JTRS Prototype Deliveries																																
JTRS GMR Prototype Deliveries																																
JTRS HMS Prototype Deliveries																																

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604665A - FCS Sustainment & Training R&D						PROJECT FC6	
<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>	
FCS SoS PDR		3Q							
E-IBCT SoS CDR		4Q							
T-IBCT SoS PDR		3Q							
T-IBCT SoS CDR			3Q						
Software Build 2									
BCT Software Build 2 Final Planning Check Point	4Q								
BCT Software Build 2 Early Readiness Check Point	1Q								
BCT Software Build 2 Final Readiness Check Point		2Q							
BCT Software Build 2 SoSCOE 2.0 FQT	3Q								
BCT Software Build 2 SoSCOE 2.5 FQT (CHECK TITLE)		3Q							
Warfighter Machine Interface Svcs Build 2 Early Functional Qualification Test		3Q							
Network Management System Build 2 Early Functional Qualification Test		3Q							
Level 1 Fusion Build 2 Early Functional Qualification Test		3Q							
Situational Understanding Build 2 Early Functional Qualification Test		3Q							
Battle Command & Mission Execution - Build 2 Early Functional Qualification Test		2Q							
Logistics Decision Support System - Build 2 Functional Qualification Test	3Q								
Platform Soldier - Mission Readiness System - Build 2 Functional Qual Test		3Q							

Software Build 3								
BCT Software Build 3 Early Definition Check Point		1Q						
BCT Software Build 3 Final Definition Check Point		2Q						
BCT Software Build 3 Early Planning Check Point			1Q					
BCT Software Build 3 Final Planning Check Point			4Q					
BCT Software Build 3 Early Readiness Check Point			2Q					
BCT Software Build 3 Final Readiness Check Point				1Q				
BCT Software Build 3 SoSCOE 3.0 Functional Qualification Test			2Q					
BCT Software Build 3 SoSCOE 3.5 Functional Qualification Test				1Q				
Warfighter Machine Interface Svcs Build 3 Early Life Cycle Objectives		3Q						
Warfighter Machine Interface Svcs Build 3 Early Life Cycle Architecture		4Q						
Warfighter Machine Interface Svcs Build 3 Final Life Cycle Objectives			3Q					
Warfighter Machine Interface Svcs Build 3 Final Life Cycle Architecture			4Q					
Battle Command & Mission Execution - Build 3 Early SRS LCO		3Q						
Battle Command & Mission Execution - Build 3 Early TRC TRR				1Q				
Battle Command & Mission Execution - Build 3 Final SRS LCO			3Q					
ICS Prototype Deliveries for NLOS-C Inc 0	2Q - 4Q	1Q - 4Q						
ICS Prototype to Support Spin Out		2Q						
ICS Type IV Prototype Deliveries (8)			1Q - 3Q					

Common Controller PDR		2Q					
Common Controller CDR			2Q				
Common Controller Prototype Deliveries				1Q - 3Q			
Common Controller IQT		3Q					
MFRF Prototype Deliveries	2Q						
Air Sensors							
Class I EO-IR/LD PDR	4Q						
Class I EO-IR/LD CDR		4Q					
Class I EO-IR/LD Prototype Deliveries				2Q - 3Q			
SAR/GMTI (STARLite) - Comp Program PDR	4Q						
SAR/GMTI (STARLite) - Comp Program CDR		1Q					
SAR/GMTI (STARLite) Prototype Deliveries			1Q - 2Q				
ASTAMIDS - Comp Program CDR		3Q					
ASTAMIDS - Comp Program Prototype Deliveries		3Q - 4Q	1Q - 3Q				
Ground Sensors							
MREO-Lite PDR		3Q					
MREO-Lite CDR		4Q					
MREO-Lite Prototype Deliveries			4Q	1Q - 3Q			
SUGV EO-IR CDR		1Q					
SUGV EO-IR Prototype Deliveries		4Q					
JTRS Prototype Deliveries							
JTRS GMR Prototype Deliveries		3Q					
JTRS HMS Prototype Deliveries		3Q					

The schedule reflected in this R-Form is based on preliminary analysis of the available budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change the program schedule.

- B1 RC - Software Build 1 Readiness Check Point
- B2 DC - Software Build 2 Definition Check Point
- B2 EPC - Software Build 2 Early Planning Check Point
- B2 FPC - Software Build 2 Final Planning Check Point
- B2 ERC - Software Build 2 Early Readiness Check Point

B2 FRC - Software Build 2 Final Readiness Check Point
B2E - Software Build 2 Early
FQT - Functional Qualification Test
LCA - Life Cycle Architecture
LCO - Life Cycle Objectives
LDSS - Logistics Decision Support System
PSMRS - Platform Soldier - Mission Readiness System
SIL - Systems Integration Lab
TRR - Technical Readiness Review

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - System Development and Demonstration		0604666A - Spin Out Technology/Capability Insertion			
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC7 FCS - Spin Out Technology/Capability Integration	84111	111032		Continuing	Continuing

A. Mission Description and Budget Item Justification: Through FY 2009, this program funds all non-core Future Combat System (FCS) unique efforts required to develop and test the integration of FCS technologies and capabilities into the current force "Spin Out" Programs. This includes A-Kit development, software and network hardware integration, Spin Out Network architecture and development, unique Spin Out training, logistics, testing, training support and upgrades of Training Aids, Devices, Simulators and Simulations (TADSS), etc. All FCS Core development required for B Kits are included in their appropriate program element as part of core program development. The Spin Out Program will provide early capability in Force Protection, Networked Fires, Expanded Battle Space, and limited Battle Command to the current force. Beginning in FY 2010, the FCS program is transitioning to an incremental development program. As such, this program is no longer required to capture unique spin out costs.

The Spin Out Program begins the process of providing interoperability of current force systems technologies (Force XXI Battle Command, Brigade and Below (FBCB2) and the Advanced Field Artillery Tactical Data System (AFATDS)) with new FCS capabilities (Unattended Ground Sensors (UGS), the Non Line of Sight Launch System (NLOS-LS), Small Unmanned Ground Vehicle (SUGV); Block 1, and Class I Unmanned Aerial Vehicle Block 0 (UAV). This will be accomplished by integrating a common Network Integration Kit (NIK) consisting of the Joint Tactical Radio System (JTRS), the Integrated Computer System (ICS), and limited Battle Command System (BCS) software, to include System of System Common Operating Environment (SOSCOE), into the High Mobility Multipurpose Wheeled Vehicle (HMMWV).

As a result of the elimination of FCS Brigade Combat Team (FBCT), there is no longer a need for a unique FCS Spin Out Program Element. The funding requirements are now spread amongst the appropriate FCS program elements. For example, the testing requirements for E-IBCT are now reflected in PE 0604661A FCS System of System Engineering and Program Management commencing with the FY2010 program year.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - System Development and Demonstration	0604666A - Spin Out Technology/Capability Insertion		
<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	64385	64900	67021
Current BES/President's Budget (FY 2010)	84111	111032	
Total Adjustments	19726	46132	-67021
Congressional Program Reductions		-368	
Congressional Recissions			
Congressional Increases		46500	
Reprogrammings	21500		
SBIR/STTR Transfer	-1801		
Adjustments to Budget Years	27		-67021

As a result of new direction to eliminate FCS Brigade Combat Team (FBCT), there is no longer a need for a unique FCS Spin Out Program Element. The funding requirements are now spread amongst the appropriate FCS program elements. For example, the testing requirements for E-IBCT are now reflected in PE 0604661A FCS System of System Engineering and Program Management commencing with the FY2010 program year.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration		PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion			PROJECT FC7
COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
FC7 FCS - Spin Out Technology/Capability Integration	84111	111032		Continuing	Continuing

A. Mission Description and Budget Item Justification: Please see Exhibit R-2.

<u>Accomplishments/Planned Program:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Contractor SoS Engineering/PM FY08 - Includes engineering analysis and design, architecture developing, engineering support to ensure that FCS systems, currently under development, will interoperate with current force. Develop systems architectures that bridge the current force to the FBCT and the derived data products that are necessary for zero time system initialization for Spin Out test events, On-site tech support for current force software to the AETF to support success of Spin Out test events, scheduling, earned value program management, integrated program management, including data and supplier management, program control, procurement and contracts management, and operations management. Completed PDR and CDR like reviews for the Spin Out Configurations. Completed Specifications for the BKITs. Completed hardware and software integration of the limited EPLRS based network (A-Kit and B-Kit on ABRAMS, BRADLEY, and HMMWV). Begin to change design concept from a HBCT to IBCT for Spin Out. Analyzed effects of changing from an EPLRs based Network to Blue Force Tracking/WNW Network. Develop SoS level architecture for the SO IBCT Early Network.	8182		
Contractor SoS Engineering/PM FY09 IBCT - Completed the development of the Spin Out Early Network architecture, design, and specifications. Conducted CDR update for the Spin Out Configurations. Integrated Battle Command Software, SINCGARS, SRW and WNW Waveforms, and HMMWV A/B-Kits into a integrated Network. Coordinated Testing and analysis to verify the FCS capabilities to enhance the current IBCT. Inserted engineering changes to correct faults detected from FY 08 Preliminary-LUT. Integratee, verified and tested software changes. Supported FY09 LUT/FDTE/TFT testing.		6742	
Government and Contracting Training - FY08-09 - Spin Out training will support both the maintenance and enhancement of Current Force CCTTs, and modeling and simulations, and soldier training necessary to provide continuity of training in support of the Army's Tactical Field Test (TFT), Force Development Test and Evaluation (FDTE), and Limited Users Test (LUT) for E-IBCT.	1500	6332	
Contractor Logistics - FY09- Began the supportability planning and development of training procedures for the SO E-IBCTs, as well as the development of supportability planning and training procedures in support of government testing in FY09 efforts. This included coordination of spare parts, FSRs and labor to keep prototypes functioning during testing. It also included the fielding planning along with support planning for the FCS technologies in the IBCT. Coordinated and analyzed the logistics demonstrations and test activities in support of the SO IBCT Early Configuration.		2854	
Contractor SUGV - FY08 - In support of the Spin Out PLUT, procured, fabricated and delivered 22 prototypes (April, May 2008) for AETF tests; 16 for test, 4 spares and 2 for Network Integration. Includes costs of radios, sensor, platforms, controller unit, central processing unit, neck. Integrate SUGV Block 1 software/hardware into the Limited Battle Command Network. FY09 - In support of Spin Out IBCT (Early) refurbished and improved the 22 prototypes, in order to conduct follow-on testing (LUT/FDTE/TFT)to include	7895	2146	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - System Development and Demonstration	0604666A - Spin Out Technology/Capability Insertion	FC7	
mobility, range, endurance, RAM-T, logistics, and environmental tests.			
Contractor T-UGS/U-UGS - FY08 - Began long lead procurement of prototype 10 T-UGS and 16 U-UGS prototypes to support the Spin Out IBCT user test. Note original test assets were procured under the core program. Since these assets are only required for the Spin Out they are funded out of the Spin Out funding line. FY09 - Refurbished the 10 T-UGS to enhance and upgrade them to the new form factor. Fabricated, assembled and delivered 6 sets of T-UGS with new form factor configuration to support the Spin Out IBCT user test. Also, provided refurbishment and new gateway enhancements to the 16 U-UGS.	1300	1922	
Contractor UAV - FY08 - Procured 11 Class I Block 0 Systems, 9 primary and 2 spares. The AV systems, based on the g-MAV airframe and engine, featured gimbaled Electro Optical (EO) and Infrared (IR) sensors, and Small Form Factor (SFF)-A JTRS radios. FY09 - Upgraded 11 Class I Block 0 Systems with electric engine controllers, and Microhard 320 Command and Control (C2) and L3 VNTX (video) analog radios	7353	7578	
Contractor B-Kits - B-Kits include: Ground Platform Communication System (GPCS), Integrated Computer System, Ground Mobile Radio (GMR)-Joint Tactical Radio System (JTRS), GPCS consists of two antenna, 4 GMR radios, 4 power amplifiers, Network INFO/SEC Unit (NIU), and Local Control Display Device (LCDD). FY08 - Delivered (5) Abrams, (5) Bradley and (4) HMMWVs B Kits in support for the planned HBCT Spin Out LUT. When the Spin Out Program was refocused to the IBCT from the HBCT, began procurement of an additional 14 B-Kits to support the dual configuration HMMWV applications. FY09 - Final fabrication, assembly and delivery of the 14 additional B-Kits for the HMMWVs integration in support of the user testing.	1300	12848	
Contractor Software FY08 - Provided for the development and modification of any platform software needed for the integration of the ICS and GPCS into the current force platforms. This includes taking Current FCS FQT software and integrating that into the Spin Out Systems. Testing this network and fixing problems that arise during the testing. Continued to integrate software drops for the Spin Out 1 LUT configuration and started the software development of the Spin Out E-IBCT configuration of the NIK. FY09 - continued to integrate software drops for the Spin Out E-IBCT LUT configuration to support the Technical Tests (TTs). Provided the framework for NLOS-LS's communications link into the network.	4985	18817	
Contractor Test FY08 - Provided for personnel and instrumentation test & evaluation equipment to support the Integrated Qualification Test (IQT) of the Spin Out P-LUT configuration on the individual platforms and the operational field events to include the TFT and the P-LUT conducted by the US Army Operational Test Command (OTC). FY09 - Provides for personnel for IQT testing for the Spin Out E-IBCT configuration on the current force platforms and the operational field events to include the TFTs and the Spin Out E-IBCT LUT conducted by OTC. This includes similar M&S and instrumentation support for the Spin Out 1 test.	5710	5183	
Government Test FY08 - Completed the IQT testing of the Spin Out 1 P-LUT configuration on the individual platforms and the operational field events to include the TFT and the Preliminary LUT conducted by the US Army Operational Test Command (OTC). This included Modeling and Simulation used to provide simulation of the FCS material and the wrap around virtual battle-space as well as unique instrumentation needed to support Spin Out 1 testing. FY09: Provides for range support for SUGV and Class 1 Block 0 UAV characterization testing. Provides range support for SO Technical Field Test (TFT) and funds E-IBCT LimitedUser Test (LUT). Funds the development and deployment of a M&S wrap around simulation and common instrumentation package for TFT and LUT.	20005	31300	
A Kit Development/Installation FY08 - A Kit Prototype Build and Integration - Provided the procurement of all material required for the current force platform A-Kits and the labor required for both the fabrication of the A-Kits as well as the installation of both A-Kits and FCS technologies and all associated material onto the current force platforms. Funded the remaining material and labor required to make the Spin Out P-LUT configuration prototype A-Kits and modified the digital current force platforms to receive the NIKs. FY09 - Funded	22324	4800	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion	PROJECT FC7	
material and labor required to make the Spin Out E-IBCT LUT configuration prototype A-Kits, procured material needed for the production configuration A-Kit, as well as the labor required to build the prototype A-Kits and modified the digital current force platforms to accept the production configuration NIKs. Started development of the modular A-Kit for additional HMMWV variants.			
Government Integration of FBCB2 and Network - FY08 - Provided Systems Engineering, SW code changes and technical support to ensure a successful 2008 Spin Out 1 P-LUT, including the following: Developed and implemented Spin Out 1 interface in FBCB2 EPLRS network (start/shut down and VMF exchange with FCS). Implemented a direct Ethernet interface to the Ground Mobile Radio to accommodate lack of Internet Controller. Designed and developed imagery dissemination capability and interface with FCS for FCS produced photos/imagery. Provided Onsite technical support during developmental and field tests of the SO1 functionality. Developed and implemented revised So1 interface to FBCB2 JCR 1.0. FY09 - Provided Systems Engineering, SW code changes and technical support to ensure a successful 2009 E-IBCT Spin Out LUT, including: Adapt 2008 FBCB2 6.5 capability to a BFT (SATCOM) configuration. Enhanced Imagery capability (adds MPEG, provides more robust capability). Added ability to interface simultaneously to multiple networks (FCS provided WNW and BFT) for information dissemination. Provided on site technical support during developmental and field testing. Provided continuous support to Software Problem Report (SPR) resolution. Provided dedicated BFT Network Operations Center (NOC) to support Spin Out 1 LUT (need Unclass and 6.5 based NOC). Provided same capability with FBCB2 JCR 2.x with FCS Spin Out capability but adds ability to "intelligently" route FCS images over the BFT2 network and adds limited logistics threads.		3557	7401
Small Business Innovative Research/Small Business Technology Transfer Program			3109
Total		84111	111032

<u>B. Other Program Funding Summary</u>	FY 2008	FY 2009	FY 2010	To Compl	Total Cost
0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components	635846	782664	368557	Continuing	Continuing
0604661A FCS System of Systems Engr & Program Management	1292514	1414756	1067191	Continuing	Continuing
0604662A FCS Reconnaissance (UAV) Platforms	42772	57190	68701	Continuing	Continuing
0604663A FCS Unmanned Ground Vehicles	78826	102976	125616	Continuing	Continuing
0604664A FCS Unattended Ground Sensors	22007	17011	26919	Continuing	Continuing
0604665A FCS Network Hardware & Software	724397	556301	749182	Continuing	Continuing
0604646A Non Line of Sight - Launch System	246071	208009	88660	Continuing	Continuing
0604647A Non Line of Sight - Cannon	133139	89545	58216	Continuing	Continuing
0603639A FCS MRM	43068	40731		Continuing	Continuing
WTCV G86100 FCS Core Program	78932	154127		Continuing	Continuing
WTCV G86200 FCS Spin Out Program	1370	67268	327921	Continuing	Continuing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration	PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion	PROJECT FC7
0605625A - Manned Ground Vehicles		100000 Continuing Continuing

Comment: Comp Programs: ASTAMIDS, WIN-T, JTRS-HMS, JTRS-GMR, STARLite SAR/GMTI, GSTAMIDS, JAVELIN, JCADS, JSLSCAD, DCGS-A, STRS-AMF, FBCB2, OneTESS, OneSAF

C. Acquisition Strategy The Army initially determined that implementation of a LSI was the best program management approach for developing and managing the complexities of the Concept and Technology Development (CTD) and System Development and Demonstration (SDD) phases of the FCS (BCT) program. The Army has further determined that the LSI approach remains the most viable approach for Spin Out (SO) LRIP efforts.

Spin Out as presently structured is now Infantry-BCT focused rather than Heavy-BCT focused, and is slated for LRIP acquisition, test, and fielding in two major roll-outs: Spin Out Early IBCT Initial Production (FY10-FY12) and Spin Out Threshold IBCT LRIP (FY13 and beyond). The complete Spin Out Early IBCT Initial Production Acquisition Strategy is covered in the "Future Combat Systems Acquisition Plan- Revision E". A MS C decision for Spin Out Early in the FY 2010 budget is scheduled for FY2010 and for Spin Out Threshold in FY2013. It is anticipated that the Spin Out efforts, both Early and Threshold, will also require acquisition of Long Lead Items (LLI), tooling, facilitization, testing, ILS, STS, technical liaison personnel, and training. Spin Out Early IBCT Initial Production is envisioned for limited initial production only, based on the expectation that the Early configuration will not continue to be proliferated once the Spin Out Threshold configuration becomes available. A Full Rate Production (FRP) decision milestone for Spin Out Threshold has not yet been scheduled.

As a result of the elimination of FCS Brigade Combat Team (FBCT), there is no longer a need for a unique FCS Spin Out Program Element. The funding requirements are now spread amongst the appropriate FCS program elements. For example, the testing requirements for E-IBCT are now reflected in PE 0604661A FCS System of System Engineering and Program Management commencing with the FY2010 program year.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - System Development and Demonstration			0604666A - Spin Out Technology/Capability Insertion							FC7		
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
Contractor SoS Engineering/PM	CPFF	Various - remarks 3-5	3100	8182	1-2Q	6742	1-2Q				18024	
Contractor Training	CPFF	Various - remarks 3-5		1500	1-2Q	6332	1-2Q				7832	
Contractor Logistics	CPFF	Various - remarks 3-5	1000		1-2Q	2854	1-2Q				3854	
Contractor SUGV	CPFF	Various - remark 2		7895	1-2Q	2146	1-2Q				10041	
Contractor T/U UGS	CPFF	Various - remark 6		1300	1-2Q	1922	1-2Q				3222	
MBE A Kit Development/Installation	CPFF	Various - remark 5	11786	22324	1-2Q	4800	1-2Q				38910	
Contractor B-kits	CPFF	The Boeing Company, St. Louis, MO (see remark 7)		1300	1-2Q	12848	1-2Q				14148	
Contractor UAV	CPFF	The Boeing Company, St. Louis, MO (see remark 1)		7353	1-2Q	7578	1-3Q				14931	
Contractor Software	MIPR	PM FCS (BCT) St. Louis, MO	8175	4985	1-2Q	18817	1-3Q				31977	
TRADOC Support											Cont.	
Subtotal:			24061	54839		64039					Cont.	

Remarks: Remark 1: Subcontractor: Honeywell Defense and Electronics System, Albuquerque, New Mexico
 Remark 2: Subcontractor: iRobot Corporation, Burlington, MA, Honeywell for Class 1
 Remark 3: Spin Out Integration into the Abrams, General Dynamics, Sterling Heights, MI
 Remark 4: Spin Out Integration into the Bradley Fighting Vehicle, BAE, Santa Clara, CA
 Remark 5: Spin Out Integration into the High Mobility Multi Wheeled Vehicle (HMMWV), AM General, Livonia, MI
 Remark 6: Textron, Willington, MA
 Remark 7: BAE Systems, Wayne NJ

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
SBIR/STTR	Direct	OSD				3109	1-2Q				3109	

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604666A - Spin Out Technology/Capability Insertion						PROJECT FC7		
Adjustment to Budget Years	Direct	ABO		28	1-2Q						28	
Subtotal:				28		3109					3137	

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 Test	MIPR	Various	3839	20005	1-3Q	31300	1-3Q				55144	
Contractor Test				5710		5183					10893	
Subtotal:			3839	25715		36483					66037	

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 Integration of FBCB2 and Network				3529		7401					10930	
Subtotal:				3529		7401					10930	

Project Total Cost:	27900	84111		111032							Cont.
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Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604666A - Spin Out Technology/Capability Insertion

PROJECT
FC7

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
Preliminary Limited User Test (P-LUT)	P-LUT																															
Capability Development Document Update	CDD Update																															
Capability Production Document Update	CPD Update																															
Technical Field Tests (A - B - C)					TFTs																											
Force Development Testing and Experimentation					FDTE																											
Limited User Test					LUT																											

Schedule Detail (R4a Exhibit)

May 2009

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT	
5 - System Development and Demonstration		0604666A - Spin Out Technology/Capability Insertion						FC7	
<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>	
Preliminary Limited User Test (P-LUT)	4Q								
Capability Development Document Update	4Q	1Q							
Capability Production Document Update		2Q - 4Q							
Technical Field Tests (A - B - C)		3Q - 4Q							
Force Development Testing and Experimentation		4Q							
Limited User Test		4Q							

The schedule reflected in this budget justification is based on preliminary analysis of the available budget. Upon further resolution and detailed planning, adjustments may occur which could potentially change the program schedule.