

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

**February 2008**

<b>BUDGET ACTIVITY</b> <b>5 - System Development and Demonstration</b>		<b>PE NUMBER AND TITLE</b> <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>							
COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	58492	21375	22415	23267	23778	22854	22866	Continuing	Continuing
126 FAAD C2 ED	47547	1331	2981	2879	2986	2987	2988	Continuing	Continuing
146 AIR & MSL DEFENSE PLANNING CONTROL SYS (AMC PCS)	10945	10184	9516	10459	10863	9935	9941	Continuing	Continuing
149 COUNTER-ROCKETS, ARTILLERY & MORTAR (C-RAM) DVPMT		9860	9918	9929	9929	9932	9937	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Air and Missile Defense Planning and Control System (AMDPCS) is an Army Objective Force System with Homeland Defense capabilities that allows for the integration of Air and Missile Defense (AMD) operations for Air Defense Artillery (ADA) Brigades at Corps and Echelons above Corps (EAC), the Army Air and Missile Defense Command (AAMDC) Headquarters, at Army, Joint, or Coalition level forces.

The Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I) System provides continuously tailored situational awareness and situational understanding of the battlespace (including data on threat aircraft, cruise missiles and unmanned aerial vehicles (UAVs) to support the planning and decision process at various levels of command. The mission is to collect, digitally process and disseminate real time target cueing and tracking information, common tactical air picture, and C2I information to all Short Range Air Defense (SHORAD) weapons (Avenger, Bradley Linebacker, Manportable Air Defense System (MANPADS), joint and combined arms). Unique FAAD C2 software will provide this mission capability by integrating FAAD C2 engagement operations software with the Joint Digital Radio (JDR), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location Reporting System (EPLRS), Global Positioning System (GPS), Airborne Warning and Control System (AWACS), Sentinel and the Army Battle Command System (ABCS) architecture. Provides joint C2 interoperability and horizontal integration with PATRIOT, THAAD, MEADS, JLENS and SHORAD weapon systems by fusing sensor data to create a scalable and filterable single integrated air picture (SIAP) and common operating picture (COP) at Army divisions and below. System software will provide target data and engagement commands/status to the Surface Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM) air defense system. A small portion of RDTE funding is dedicated to SLAMRAAM C2 threshold requirements. FAAD C2 is the first system to digitize for Army Transformation in the First Digitized Division (FDD), III (Digitized) Corps, the Joint Contingency Force (JCF) and the STRYKER Brigade Combat Teams (SBCTs). The FAAD C2 netted and distributed system architecture has been briefed as the basis for a potential BM/C4I Future Combat Ssystem (FCS).

AMDPCS is the backbone of Army Air Defense, operating through the Battle Management/Command, Control, Communications, Computers, and Intelligence (BM/C4I), and the common tactical and operational air picture, (2) Air Defense System Integrator (ADSI), a communications data link processor and display system, provides real time joint airspace situational awareness and fire direction Command and Control (C2) for AMD, and (3) shelter configurations using computer hardware and tactical communications equipment (e.g., JTIDS 2M Terminals, Commanders Tactical Terminal). The AMDPCS enables Active, Passive and Attack Operations coordination and a correlated Single Integrated Air Picture (SIAP) to Army AMD and Joint Forces. The AMDPCS provides the Army Battle Command System (ABCS) architecture and the Army AMD Task Forces (AMDTF) with Joint BM/C4I capability and the Army component of interoperable Joint Theater Air and Missile Defense (JTAMD) BM/C4I.

In addition, the Air Missile Defense Work Station (AMDWS) supports the Surface Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM) air defense system by

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**5 - System Development and Demonstration**

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**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

providing an automated defense planning capability for deployed units.

Counter-Rockets, Artillery and Mortar (C-RAM) is a spiral Initiative Non-Developmental program initiated by the Army Chief of Staff in response to Iraqi threat and twice validated theater ONS. The primary mission of the C-RAM program is to develop, procure, field and maintain a system of systems that can detect rocket, artillery or mortar launches; warn the defended area with sufficient time for personnel to take cover; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. C-RAM utilizes a system of systems (SoS) approach, and is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) systems and a modified U.S. Navy intercept system, with a low cost commercial off-the-shelf (COTS) warning system and wireless local area network. The system will be fielded to various fixed or sites, providing them correlated air and ground pictures and linking them to the Army Battle Command System (ABCS) and the Joint Defense Network (JDN), via various forms of communications to provide situational awareness and exchange of timely and accurate information to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond and Protect decisions.

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**5 - System Development and Demonstration**

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<u><b>B. Program Change Summary</b></u>	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2008/2009)	21516	21513	22552
Current BES/President's Budget (FY 2009)	58492	21375	22415
Total Adjustments	36976	-138	-137
Congressional Program Reductions		-138	
Congressional Rescissions			
Congressional Increases	38900		
Reprogrammings	-1342		
SBIR/STTR Transfer	-582		
Adjustments to Budget Years			-137

Change Summary Explanation: Funding - FY 2007: \$38.9 million received in the FY 07 supplemental for the Counter-Rocket, Artillery & Mortar (C-RAM) system.

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

**February 2008**

<b>BUDGET ACTIVITY</b> <b>5 - System Development and Demonstration</b>	<b>PE NUMBER AND TITLE</b> <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>							<b>PROJECT</b> <b>126</b>	
COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
126 FAAD C2 ED	47547	1331	2981	2879	2986	2987	2988	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Forward Area Air Defense Command and Control (FAAD C2) system collects, digitally processes, and disseminates real-time target cueing and tracking information; the common tactical air picture; and command, control, and intelligence information to all Maneuver Air and Missile Defense (MAMD) weapon systems (Avenger and Man-Portable Air Defense System (MANPADS)), and joint and combined arms systems. The FAAD C2 system provides alerting data to air defense gunners, air space battle management, and up linking of mission operations, thereby enhancing force protection against air and missile attack. Situational awareness and targeting data is provided on threat aircraft, cruise missiles, and unmanned aerial vehicles (UAVs). The FAAD C2 system provides this mission capability by integrating dynamic FAAD C2 engagement operations software with the Multifunctional Information Distribution System (MIDS), Joint Tactical Terminal (JTT), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location System (EPLRS), Global Positioning System (GPS), Airborne Warning and Control Systems (AWACS), Sentinel radar, and the Army Battle Command System (ABCS) architecture. In addition, FAAD C2 provides interoperability with Joint C2 systems and horizontal integration with PATRIOT, Theater High-Altitude Area Defense (THAAD), Medium Extended Air Defense System (MEADS), and the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) by fusing sensor data to create a scalable and filterable Single Integrated Air Picture (SIAP) and common tactical picture. The system software is a key component of the Air Defense and Airspace Management (ADAM) Cell that is being fielded to Stryker Brigade Combat Teams (SBCTs), Brigade Combat Teams (BCTs), and Division Headquarters as part of the Army's modularity concept. The FAAD C2 software has been fielded to 62 ADAM Cells to date. System software is able to provide target data and engagement commands/status to MAMD Battalions. FAAD C2 is also a principal air defense system within the Homeland Security Program. Soldiers from activated ARNG MAMD battalions operate the FAAD C2 systems in the National Capital Region and other locations.

In support of the Global War on Terrorism (GWOT), FAAD C2 systems are in MAMD units and ADAM Cells deployed to Iraq and Afghanistan. These FAAD systems are critical in providing the local air picture to supported units and higher headquarters. FAAD C2 is also the integrating software that provides target track data and weapon system control for the initial Counter-Rocket, Artillery and Mortar (C-RAM) capability deployed to Iraq.

FY09 will fund the efforts listed in Accomplishments/Planned Program below.

NOTE: FY 2007 funding total includes \$38,900 received in GWOT supplemental.

<b>Accomplishments/Planned Program:</b>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Continue FAAD C2 Blk III software development/engineering, including external Beyond Line of Sight/Non-Line of Sight, SINCGARS Data Looping, Sentinel Identification Friend or Foe Mode 5/S development, and Single Integrated Air Picture Blk 0 & 1 implementation. Software is being fielded to active and reserve component Maneuver Air and Missile Defense Battalions, to units in support of Homeland Defense, and to ADAM Cells deployed in support modularity and Operation Iraqi Freedom/Operation Enduring Freedom.	4152		
Support FAAD C2 software development for new Air and Missile Defense Composite Battalions, including unique software	3556	1308	

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

**February 2008**

<b>BUDGET ACTIVITY</b> <b>5 - System Development and Demonstration</b>	<b>PE NUMBER AND TITLE</b> <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>		<b>PROJECT</b> <b>126</b>
enhancements in support of Homeland Defense and security accreditation upgrades. As a complementary Future Combat System (FCS), continue FAAD C2 integration and interoperability with FCS Mission Applications. Consistent with DA and DoD guidance, migrate FAAD C2 Engagement Operations software modules to the Joint Command and Control Mission Capability Packages. Integrate Sentinel radar Enhanced Target, Range and Classification (ETRAC). Implement software modifications necessary for Internet Protocol version 6 (IPv6), continue integration of interfaces for the Joint Tactical Terminal (JTT), and design Joint Tactical Radio System (JTRS) interfaces. Incorporate IFF modes 1,2 and 3 (active decode) capabilities.			
Develop, test and integrate FAAD C2 software with new hardware versions of FBCB2 and FACT that are fielded. FAAD C2 software cohost/rehost includes the development , test and integration of FAAD C2 software on newer versions of CHS hardware.		262	2981
Implement IFF Mode 5/S in order to enhance positive friendly identification and provide an associated robust civil aviation identification capability.		677	
FY07 Supplemental funds - Enhance C-RAM Response capability (digital clearance of fires, etc.) initiate consolidation of workstations and improvements in the Shape function, and conduct system integration testing at Yuma Proving Ground (YPG).		38900	
Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)			23
<b>Total</b>		<b>47547</b>	<b>1331</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
OPA 2, AD5050 - FAAD C2	41877	12276	7489	8956	3806	4993	4958	Continuing	Continuing
Spares (BS9702) - FAAD C2	842							Continuing	Continuing

Comment:

**C. Acquisition Strategy** The FAAD C2 acquisition strategy relies on evolutionary software development to rapidly meet the demands of air defense battle management/command, control, communications, computers, and intelligence (BM/C4I) requirements, and to keep pace with automated information technologies. The concept of evolutionary software development is being followed and will be accomplished in Blocks I, II, and III. Blocks I and II and III have been completed.

# ARMY RDT&E COST ANALYSIS (R3)

February 2008

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
<b>5 - System Development and Demonstration</b>			<b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>							<b>126</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Northrop Grumman/TRW, BLK I	C/CPIF	Carson, CA	176461								176461	
Northrop Grumman/TRW, BLK II	SS/CPIF	Carson, CA	32206								32206	
Northrop Grumman/TRW, BLK III	SS/CPIF	Carson, CA	97909	1052	1Q					Cont.	98961	
Northrop Grumman/TRW	SS/T&M	Carson, CA	10346	713	1Q	92	1Q	205	1Q	Cont.	Cont.	
Northrop Grumman				4276	1Q	805	1Q	1807	1Q	Cont.	Cont.	
Program Management Administration	MIPR	Various	33302	1075	2Q	130	2Q	296	2Q	Cont.	Cont.	
Sentinel GBS	MIPR	Huntsville, AL	3791								3791	
JTIDS	MIPR	Ft. Monmouth, NJ	6000							Cont.	6000	
ABCS SE&I	MIPR	Ft Monmouth, NJ	346								346	
Software Engineering	Various	Various	17614	717	1-4Q	93	1-4Q	206	1-4Q	Cont.	Cont.	
C-RAM Sense, Warn & Intercept	Various	Variuos	45753	38089							83842	
Subtotal:			423728	45922		1120		2514		Cont.	Cont.	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
ADATD	MIPR	Ft Bliss, TX	11274	289	1-4Q	37	1-4Q	83	1-4Q	Cont.	Cont.	

# ARMY RDT&E COST ANALYSIS (R3)

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BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>			PE NUMBER AND TITLE <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>							PROJECT <b>126</b>		
RTTC	MIPR	WSMR, NM	2924	5	1-4Q					Cont.	Cont.	
AATD	MIPR	Ft Eustis, VA	160	45	1-4Q	7	1-4Q	13	1-4Q	Cont.	Cont.	
ATEC	MIPR	Alexandria, VA	978	278	1-4Q	36	1-4Q	81	1-4Q	Cont.	Cont.	
Yuma Proving Ground	MIPR	Yuma, AZ	3545	1008	1-4Q	131	1-4Q	290	1-4Q	Cont.	Cont.	
Subtotal:			18881	1625		211		467		Cont.	Cont.	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												

Remarks: Not Applicable

<b>Project Total Cost:</b>	<b>442609</b>	<b>47547</b>		<b>1331</b>		<b>2981</b>		<b>Cont.</b>	<b>Cont.</b>	
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# Schedule Profile (R4 Exhibit)

February 2008

BUDGET ACTIVITY  
**5 - System Development and Demonstration**

PE NUMBER AND TITLE  
**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

PROJECT  
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Event Name	FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13							
	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) V5.4 Materiel Release							▲1		V5.4 Materiel Release																							
(2) Block III V5.4b Software Deliveries, (3) Block 5.4b Final SW Delivery		▲2	▲3		V5.4b SW Final Drop																											
V5.4b Thread Test		V5.4b SW Initial Drop			V5.4b Thread Test																											
(4) V5.4b Test Readiness Review				▲4	V5.4b Test Verification Test																											
(5) V5.4b System Certification Test				▲5	V5.4b System Certification Test																											
(6) Block III Initial Operational Capability (IOC)				▲6	Block III Initial Operational Capability																											
V5.4 Upgrades					V5.4 Upgrades																											
CHS Upgrades	CHS Upgrades																															
FAAD C2 DAMPL Fieldings					1-265 FL ARNG																											
(7) 1-265 FL ARNG, (8) 1-174 OH ARNG			▲7				▲8		1-174 OH ARNG																							
(9) C-RAM/FAAD C2 SW Materiel Release															▲9		C-RAM/FAAD C2 SW Materiel Release															



## Schedule Detail (R4a Exhibit)

February 2008

BUDGET ACTIVITY  
**5 - System Development and Demonstration**

PE NUMBER AND TITLE  
**0604741A - Air Defense Command, Control and Intelligence - Eng  
 Dev**

PROJECT  
**126**

<u>Schedule Detail</u>	<u>FY 2007</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>
Materiel Release							
V5.2 Materiel Release							
V5.4 Materiel Release		3Q					
Block III V5.4b Software Deliveries	2Q						
Block 5.4b Final SW Delivery	3Q						
V5.4b Thread Test	3Q						
V5.4b Test Readiness Review	4Q						
V5.4b System Certification Test	4Q						
Block III Initial Operational Capability (IOC)	4Q						
V5.4 Upgrades		2Q - 4Q	1Q - 2Q				
CHS Upgrades	1Q - 4Q						
FAAD C2 DAMPL Fieldings							
2-174 OH ARNG							
1-265 FL ARNG	3Q						
1-174 OH ARNG		3Q					
C-RAM/FAAD C2 SW Materiel Release				2Q			

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**February 2008**

<b>BUDGET ACTIVITY</b> <b>5 - System Development and Demonstration</b>		<b>PE NUMBER AND TITLE</b> <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>						<b>PROJECT</b> <b>146</b>	
COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
146 AIR & MSL DEFENSE PLANNING CONTROL SYS (AMC PCS)	10945	10184	9516	10459	10863	9935	9941	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Air and Missile Defense Planning and Control System (AMDPCS) is an Army Objective Force System that provides integration of Air and Missile Defense (AMD) operations at all echelons. AMDPCS systems are deployed with Air Defense Artillery (ADA) brigades, Army Air and Missile Defense Commands (AAMDCs), and Air Defense and Airspace Management (ADAM) Cells at the Brigade Combat Teams (BCT's), Fires Brigades and Divisions. AMDPCS systems also provide air defense capabilities to Homeland Defense systems. The development of ADAM Cells is essential in fulfilling the Army's Modularity requirement. ADAM Cells provide the Commander at BCTs, Brigades and Divisions with air defense situational awareness and airspace management capabilities. They also provide the interoperability link with Joint, multinational and coalition forces. AMDPCS components are vital in the transformation of ADA units and the activation of the Maneuver Air & Missile Defense (MAMD) Composite Battalions. AMDPCS has three major components:

- (1) The Air and Missile Defense Workstation (AMDWS) is an automated defense and staff planning tool that displays the common tactical and operational air picture. AMDWS provides the Battle Command (BC) capabilities embedded within the Warfighter Mission area. AMDWS is also the Net-centric interface to BC for all components of the AMD force. AMDWS provides an interoperability link to multinational air defense forces IAW Annex C to a Joint US/NATO Air Defense Agreement;
- (2) The Air Defense System Integrator (ADSI) is a communications data link processor and display system that provides near-real time joint airspace situational awareness and fire direction command and control for Air and Missile Defense forces;
- (3) The Army Air Defense shelter configurations use automated data processing equipment, tactical communications, Common Hardware Systems, standard vehicles and tactical power to provide AMD unit commanders and staffs with the capabilities to plan missions, direct forces, and control the airspace.

In support of the Global War on Terrorism (GWOT), AMDWS and ADSIs are vital components of the AMDPCS shelter systems fielded to ADAM Cells that have deployed to Iraq and Afghanistan. In addition, these components have also been integrated into non-ADA higher headquarters such as the Coalition Forces Land Component Command (CFLCC). AMDWS is a critical component in the integration and fielding of a Counter-Rocket, Artillery and Mortar (C-RAM) capability to Operating Bases in Iraq and elsewhere. In support of Homeland Defense missions, the AMDWS has been integrated as the Force Operations component into the Joint Service/Air Force architecture. These AMDPCS systems provide the common tactical air picture, a major component of the Common Operating Picture (COP), and are critical to the development and planning of offensive and defensive operations.

FY09 funds the development, software engineering, testing and certification of the AMDWS, ADSI, and sheltered subsystem software as described below.

<b><u>Accomplishments/Planned Program:</u></b>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Continue AMDWS development and support of Software Blocking and Battle Command. Complete AMDWS software engineering and development consistent with Software Block 2, 2+ and 3 requirements, evolving the air and missile defense planning and control	6938	5879	6006

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

**February 2008**

<b>BUDGET ACTIVITY</b> <b>5 - System Development and Demonstration</b>	<b>PE NUMBER AND TITLE</b> <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>			<b>PROJECT</b> <b>146</b>
requirements to a net-centric environment, and fulfilling the air defense force operations capabilities identified in the AMD TRADOC capabilities requirement list. Continue AMDWS software development and rehost onto emerging light/laptop common hardware systems. Continue integration of the PATRIOT Air Defense system Tactical Planner (PTP) and the Theater Battle Management Core Systems (TBMCS). Initiate development of the SLAMRAAM, JLENS, MEADS and Joint Theater Battle Operations Net-Centric Environment interfaces. Continue supporting the Air Force Joint Tactical Air and Missile Defense (JTAMD), and support the evolving development of the Force Operations portion of the Integrated Air and Missile Defense (IAMD) System of Systems. As a complimentary Future Combat System (FCS), initiate AMDWS integration and interoperability with FCS command and control system development. Begin migration of AMDWS software modules to the Net Enabled Command and Control Mission Capability Packages.				
Continue ADSI software engineering and development in software versions 14, 14.0.1, 14.1, and 14.2 including development of capabilities for TAC View Situational Awareness, full TADIL-J, Joint Range Extension Application Protocols (JREAP) for link 16 messages, MIDS TADIL-J connectivity, and Windows XP Pro and LINUX Realtime.	1329	1232		1050
Continue engineering, development, test and evaluation of the AMDPCS shelter subsystem Objective configurations; continue evaluation and definitization of the AMDPCS tactical communications, data processing and vehicle/shelter/power generation/environmental system block upgrade program for fielded systems.	1805	1950		1668
Continue software system certification testing, accreditation, and approval of Authority-to-Operate for the various software systems; continue Army and Joint integration and interoperability assessments.	873	845		792
Small Business Innovative Research/Small Business Technology Transfer Programs.		278		
<b>Total</b>	<b>10945</b>	<b>10184</b>		<b>9516</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
OPA, AD 5070 - AMDPCS	69011	40362	58054	91267	38205	24557	24273	Continuing	Continuing

Comment:

**C. Acquisition Strategy** The acquisition strategy relies on non-development items (NDI) and evolutionary software development to rapidly meet the demands of air defense battle management command, control, communications, computers, and intelligence (BM/C4I) requirements and to keep pace with automated information technologies. The concept of evolutionary software development will be accomplished in a series of AMDWS and ADSI Block releases and upgrades. AMDPCS is being developed for both the Army's Active and Reserve components.

# ARMY RDT&E COST ANALYSIS (R3)

February 2008

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>5 - System Development and Demonstration</b>			<b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>								<b>146</b>	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Northrop Grumman/TRW	SS/CPIF	Huntsville, AL	41369	6481	1Q	5997		5625		Cont.	Cont.	
ULTRA Electronics, ADSI	SS/CPIF	Austin, TX	5366	155	1Q	144		133		Cont.	Cont.	
Program Management Administration	Various	Various	22432	3485	2Q	3267		3099		Cont.	Cont.	
ABCS SE&I	MIPR	Ft Monmouth, NJ	619								619	
Software Engineering	Various	Various	5858	764	2-3Q	718		607		Cont.	Cont.	
Subtotal:			75644	10885		10126		9464		Cont.	Cont.	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Certification	MIPR	JITC, Ft Huachuca, AZ	598	38	3Q	36		33		Cont.	Cont.	
Interoperability Assessment	MIPR	CTSF, Ft. Hood, TX	972	22	3Q	22		19		Cont.	Cont.	
Subtotal:			1570	60		58		52		Cont.	Cont.	
IV. Management Services	Contract Method &	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award	FY 2008 Cost	FY 2008 Award	FY 2009 Cost	FY 2009 Award	Cost To Complete	Total Cost	Target Value of

# ARMY RDT&E COST ANALYSIS (R3)

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PROJECT  
**146**

	Type				Date		Date		Date		Contract
Subtotal:											

Remarks: Not Applicable

<b>Project Total Cost:</b>	<b>77214</b>	<b>10945</b>		<b>10184</b>		<b>9516</b>		<b>Cont.</b>	<b>Cont.</b>	
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# Schedule Profile (R4 Exhibit)

February 2008

BUDGET ACTIVITY  
**5 - System Development and Demonstration**

PE NUMBER AND TITLE  
**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

PROJECT  
**146**

Event Name	FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13						
	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
(1) AMDWS Full Materiel Release (FMR), (2) ADAM Cell Conditional MR, (3) ADAM Cell FMR	v6.4 FMR ▲1 ▲2 ▲3				ADAM CMR				ADAM FMR																						
AMDWS/ADSI SW Development / Deliveries	AMDWS/ADSI SW Development / Deliveries																														
AMDWS, AAMDC & ADA BDE Migration to NECC, ,	NECC V1								NECC V2								NECC V3														
Migration to FCS	Migration to Future Combat Systems																														
AMDWS IAMD System of Systems Integration	AMDWS IAMD SoS Integration																														
(4) ADSI Joint Integration Cert & System Level Testing, (5) , (6)	v14.0 ▲4				v14.2 ▲5				v14.3 ▲6																						
(7) AMDPCS LOG DEMO, (8) Joint Project Optic Windmill, (9) Joint Red Flag / Roving Sands, (10) , (11) , (12) , (13)	Log Demo ▲7				JPOW ▲8				JRF/RS ▲9				JPOW ▲10				JRF/RS ▲11				JPOW ▲12				JRF/RS ▲13						
(14) Ulchi Focus Lens, (15) , (16) , (17) , (18) , (19) , (20)	▲14				UFL ▲15				UFL ▲16				UFL ▲17				UFL ▲18				UFL ▲19				UFL ▲20						
AMDWS Intra Army Certification (IAIC), , , , ,	SWB2				SWB 2+				SWB 3				IAIC				IAIC				IAIC				IAIC						
AMDWS Test-Fix-Test, , , , ,	SWB 2				SWB 2+				SWB 3				TFT				TFT				TFT				TFT						
Interface to SLAMRAAM / to THAAD / to MEADS	Interface to SLAMRAAM / to THAAD / to MEADS																														
BDE & ADAM Cell Technology Refresh	BDE & ADAM Cell Technology Refresh																														



**Schedule Detail (R4a Exhibit)**

**February 2008**

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT
<b>5 - System Development and Demonstration</b>		<b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>						<b>146</b>
<u>Schedule Detail</u>	<u>FY 2007</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>	
AMDWS Full Materiel Release (FMR)		1Q						
ADAM Cell Conditional MR		2Q						
ADAM Cell FMR		4Q						
AMDWS/ADSI SW Development / Deliveries	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
AMDWS, AAMDC & ADA BDE Migration to NECC		1Q - 4Q	1Q - 4Q					
				1Q - 4Q	1Q - 4Q			
						1Q - 4Q	1Q - 4Q	
Migration to FCS				1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	
AMDWS IAMD System of Systems Integration					1Q - 4Q	1Q - 4Q	1Q - 4Q	
ADSI Joint Integration Cert & System Level Testing	2Q							
		2Q						
			2Q					
AMDPCS LOG DEMO		1Q						
Joint Project Optic Windmill		3Q						
Joint Red Flag / Roving Sands			3Q					
				3Q				
					3Q			
						3Q		
							3Q	
Ulchi Focus Lens	4Q							
		4Q						
			4Q					
				4Q				

					4Q		
						4Q	
							4Q
AMDWS Intra Army Certification (IAIC)	3Q - 4Q						
		3Q - 4Q					
			2Q - 3Q				
				3Q - 4Q			
					3Q - 4Q		
						3Q - 4Q	
							3Q - 4Q
AMDWS Test-Fix-Test	1Q - 2Q						
		1Q - 2Q					
		4Q	1Q - 2Q				
				1Q - 2Q			
					1Q - 2Q		
						1Q - 2Q	
							1Q - 2Q
Interface to SLAMRAAM / to THAAD / to MEADS	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 2Q		
BDE & ADAM Cell Technology Refresh							1Q - 4Q

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

**February 2008**

<b>BUDGET ACTIVITY</b> <b>5 - System Development and Demonstration</b>		<b>PE NUMBER AND TITLE</b> <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>						<b>PROJECT</b> <b>149</b>	
COST (In Thousands)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
149 COUNTER-ROCKETS, ARTILLERY & MORTAR (C-RAM) DVPMT		9860	9918	9929	9929	9932	9937	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Counter-Rockets, Artillery and Mortar (C-RAM) is a spiral Initiative Non-Developmental program initiated by the Army Chief of Staff in response to Iraqi threat and twice validated theater ONS. The primary mission of the C-RAM program is to develop, procure, field and maintain a system of systems that can detect rocket, artillery or mortar launches; warn the defended area with sufficient time for personnel to take cover; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. C-RAM utilizes a system of systems (SoS) approach, and is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) systems and a modified U.S. Navy intercept system, with a low cost commercial off-the-shelf (COTS) warning system and wireless local area network. The system will be fielded to various fixed or sites, providing them correlated air and ground pictures and linking them to the Army Battle Command System (ABCS) and the Joint Defense Network (JDN), via various forms of communications to provide situational awareness and exchange of timely and accurate information to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond and Protect decisions.

The fielding of the C-RAM SoS will be accomplished through an incremental fielding approach that is driven by an urgent operational need, theater priorities and emerging capability requirements to provide counter-RAM capability to fielded forces. The C-RAM Program Office has fielded equipment to eighteen (18) Forward Operating Bases (FOBs) (Sense, Warn and Intercept to three (3) FOBs; Sense and Warn to fifteen (15) additional FOBs). The C-RAM SoS approach was validated by a Proof of Principle demonstration in December 2004 and Army Test and Evaluation Command (ATEC) tests in Feb 05, Apr 05, Nov-Dec 05, and Sep 06.

Current development efforts include the implementation of improvements and upgrades to fielded C-RAM and the initial development of Indirect Fire Protection Capability (IFPC) capabilities. C-RAM is the current program for the Iraq theater of operations. The follow-on program to address future requirements (mobile, semi-fixed and fixed sites) will be titled Indirect Fire Protection Capability (IFPC). In parallel with a JFIIT led effort to develop JCIDS documentation for IFPC program initiation, the Army is persuing designation of a program office to provide materiel developer input to the JCIDS documentation and concurrent designation of IFPC as a Pre-MDAP Program.

FY09 will fund the efforts listed in Accomplishments/Planned Program below.

NOTE: FY 2008 funding total does not include \$38,900 previously requested for current FY 2008 GWOT requirements.

<b><u>Accomplishments/Planned Program:</u></b>	<b><u>FY 2007</u></b>	<b><u>FY 2008</u></b>	<b><u>FY 2009</u></b>
Develop advanced user interface/capabilities		4860	
Test/demonstration support for new C-RAM capabilities		4724	2000
Develop Threat Evaluation and Weapons Assignment (TEWA) capabilities			2718

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

**February 2008**

<b>BUDGET ACTIVITY</b> <b>5 - System Development and Demonstration</b>	<b>PE NUMBER AND TITLE</b> <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>	<b>PROJECT</b> <b>149</b>
Integrate with Rapid Digital "Clearance of Fires"		2000
Develop Advanced Defense Design System Exerciser		2000
Support Joint, Interagency and Multi-national (JIM) interoperability (Common Link Integration Processing (CLIP) integration, communications improvement)		1200
Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)		276
<b>Total</b>		<b>9860</b>

<b><u>B. Other Program Funding Summary</u></b>	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
OPA 2 BZ0526- COUNTER-ROCKETS, ARTILLERY& MORTAR (C-RAM)	245000							Continuing	Continuing

Comment:

**C. Acquisition Strategy** The C-RAM program is following an evolutionary acquisition strategy for rapid acquisition of mature technology to the user. The approach will deliver capabilities in increments, recognizing up front the need for future improvements. The objective of the strategy is to balance needs and available capability with resources and put a robust capability to engage rockets, artillery, and mortars into the hands of the user quickly. Success will depend on continuous user feedback, consistent definition of capability needs, maturation of technology, and allocation of required resources. To achieve the evolutionary acquisition of C-RAM, the program director will collaborate and coordinate with the user, combat developer, tester, logistician, PEO C3T, and resource provider (e.g., G8). The program will follow the Spiral Development process (per DoDI 5000.2), where the desired capability is identified, but the end-state requirements are not fully known at program initiation. Those end-state C-RAM requirements will be refined through demonstration and risk management. Each fielded increment provides the user with the best possible capability over time. The requirements for future increments depend on feedback from users and technology maturation.

# ARMY RDT&E COST ANALYSIS (R3)

February 2008

BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT	
<b>5 - System Development and Demonstration</b>			<b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>								<b>149</b>	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Northrop Grumman	ID/IQ CPFF	Carson, CA				875		2125		Cont.	Cont.	70500
Nortrop Grumman	CPIF	Carson, CA			2Q	8600		6357		Cont.	Cont.	40000
Program Management Administration	MIPR	Various				385	2Q	1436	2Q	Cont.	Cont.	
Subtotal:						9860		9918		Cont.	Cont.	110500
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 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 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:												

# ARMY RDT&E COST ANALYSIS (R3)

February 2008

BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>	PE NUMBER AND TITLE <b>0604741A - Air Defense Command, Control and Intelligence - Eng                  Dev</b>						PROJECT <b>149</b>			
<b>Project Total Cost:</b>				9860		9918		Cont.	Cont.	110500

# Schedule Profile (R4 Exhibit)

February 2008

BUDGET ACTIVITY  
**5 - System Development and Demonstration**

PE NUMBER AND TITLE  
**0604741A - Air Defense Command, Control and Intelligence - Eng Dev**

PROJECT  
**149**

Event Name	FY 07				FY 08				FY 09				FY 10				FY 11				FY 12				FY 13			
	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) C-RAM Tests/Demonstrations, (2)					▲ 1				▲ 2																			
C-RAM Improvements Effort					C_RAM Improvements Effort																							
IFPC Development													Development Effort															



**Schedule Detail (R4a Exhibit)**

**February 2008**

BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>	PE NUMBER AND TITLE <b>0604741A - Air Defense Command, Control and Intelligence - Eng Dev</b>	PROJECT <b>149</b>
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<u>Schedule Detail</u>	<u>FY 2007</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>
C-RAM Tests/Demonstrations		3Q					
			4Q				
C-RAM Improvements Effort	1Q - 4Q	1Q - 4Q	1Q - 4Q				
IFPC Development			1Q - 4Q				