Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army											Date: February 2015	

Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*							

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	38.412	15.898	24.569	-	24.569	27.131	20.524	20.018	18.082	Continuing	Continuing
126: *FAAD C2 ED*	-	3.293	-	-	-	-	-	-	-	-	-	3.293
146: *Air & Msl Defense Planning Control Sys*	-	12.861	13.532	15.757	-	15.757	15.965	16.106	16.288	14.466	Continuing	Continuing
149: *Counter-Rockets, Artillery & Mortar*	-	22.258	2.366	8.812	-	8.812	11.166	4.418	3.730	3.616	Continuing	Continuing

Note

FY14 RDTE reflects an adjustment in the amount of $20.683 million for C-RAM software improvements to enhance intercept capabilities.

FY16 RDTE reflects an adjustment in the amount of $4.435 million for C-RAM software enhancements (i.e., testing and upgrade of dynamic clearance of unplanned fires (DCUF) capability).

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 cuing and tracking information; the common tactical 3-dimentional air picture; and command, control, and intelligence information to all Air and Missile Defense (AMD) 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, airspace 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 systems (UAS). FAAD C2 software is a key component of the Air Defense and Airspace Management (ADAM) Cell that is being fielded to Brigade Combat Teams (BCT), Multi-Functional Support Brigades and Division Headquarters as part of the Army's modularity concept. FAAD C2 is also a principal air defense system within the Homeland Defense Program. Soldiers from activated Army National Guard AMD battalions operate the FAAD C2 systems in the National Capital Region and other locations.

The Air and Missile Defense Planning and Control System (AMDPCS) is an Army Objective Force System that provides integration of AMD operations at all echelons. AMDPCS systems are deployed with Air Defense Artillery (ADA) brigades, Army Air and Missile Defense Commands (AAMDCs), and ADAM Cells at the Brigade Combat Teams (BCTs), Multi Functional Support Brigades and Divisions/Corps. AMDPCS systems also provide air defense capabilities to Homeland Defense systems. 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 AMD 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 3-dimentional air picture; (2) the Air Defense System Integrator (ADSI) is a communications data link processor and display system that provides near-real time, 3-dimensional, joint airspace situational awareness and fire direction command and control for AMD 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.

Exhibit R-2, **RDT&E Budget Item Justification:** PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*		**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*

Counter-Rocket, Artillery, Mortar (C-RAM) is an evolutionary, non-developmental program initiated by the Army Chief of Staff in response to the indirect fire (IDF) threat and a validated Operational Needs Statement (ONS). The primary mission of the C-RAM program is to develop, procure, field, and maintain a system-of-systems (SoS) that can detect RAM launches; provide localized warning to the defended area, with sufficient time for personnel to take appropriate action; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. The C-RAM capability is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) systems, warning systems, and a modified U.S. Navy intercept system (Land-based Phalanx Weapon System (LPWS)), with a commercial off-the-shelf (COTS) wireless local area network. The C-RAM SoS capability is currently deployed at multiple sites in Afghanistan, providing correlated air and ground pictures, linking units to the Army Mission Command and the Joint Defense Network, and using various forms of communications to provide situational awareness and exchange of timely and accurate information in order to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond, and Protect decisions.

Multiple acquisition efforts are associated with the C-RAM program, including C-RAM Intercept, which fields existing LPWS guns to two Indirect Fire Protection Capability (IFPC)/Avenger composite Battalions, and RAM Warn, a horizontal technology insertion, using current C-RAM warning capability to provide early, localized warning to all Maneuver Brigade Combat Teams (BCT).

B. Program Change Summary ($ in Millions)	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**
Previous President's Budget	18.284	15.906	20.248	-	20.248
Current President's Budget	38.412	15.898	24.569	-	24.569
Total Adjustments	20.128	-0.008	4.321	-	4.321
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Intercept Enhancements (OCO Funded)	20.683	-	-	-	-
• Dynamic Clearance of Unplanned Fires (DCUF)	-	-	4.435	-	4.435
• Other Adjustments	-0.555	-0.008	-0.114	-	-0.114

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army											**Date:** February 2015	
Appropriation/Budget Activity 2040 / 5				**R-1 Program Element (Number/Name)** PE 0604741A / *Air Defense Command, Control and Intelligence - Eng Dev*							**Project (Number/Name)** 126 / *FAAD C2 ED*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
126: *FAAD C2 ED*	-	3.293	-	-	-	-	-	-	-	-	-	3.293
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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 cuing and tracking information. FAAD C2 provides the common tactical 3-dimensional air picture and command, control, and intelligence information to all Air and Missile Defense (AMD) 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, airspace 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 systems (UAS). The FAAD C2 system provides this mission capability by integrating dynamic FAAD C2 engagement operations software with the Multifunctional Information Distribution System (MIDS), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location and Reporting System (EPLRS), Global Positioning System (GPS), Airborne Warning and Control Systems (AWACS), Sentinel radar, and the Common Operating Environment (COE) architecture. In addition, FAAD C2 provides interoperability with Joint C2 systems and horizontal integration with PATRIOT and Theater High-Altitude Area Defense (THAAD) 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 Brigade Combat Teams (BCTs), Multi-Functional Support Brigades and Divisions/Corps as part of the Army's modularity concept. System software is able to provide target data and engagement commands/status to AMD Battalions. FAAD C2 is also a principal air defense system within the Homeland Defense Program. Soldiers from activated Army National Guard (ARNG) AMD battalions operate the FAAD C2 systems in the National Capital Region and other locations.

Program funding provides a method to rapidly keep pace with leading edge technologies and maintain interoperability and backwards compatibility caused by improvement to other system components (upgrade from common hardware version 3 to 4 and EPLRS enhancements).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: FAAD C2 Software Development	3.293	-	-
Description: Supported FAAD C2 software development including unique software enhancements in support of Homeland Defense (HLD), software solutions for Host-Based Software Security (HBSS) and Common Operating Environment (COE) mandates, and security accreditation updates. Integrated Improved Sentinel radar. Incorporated IFF modes 1, 2, 3 (active decode), 5/S capabilities, and self-reporting systems. *FY 2014 Accomplishments:* Completed FAAD C2 software requirements for short range air defense capabilities in support of Homeland Defense. Supported FAAD C2 software development including: Avenger Upgrades for HLD, CWMI 2D/3D Man Machine Interface Enhancements. Enhanced the Battlefield Geometries passing between AMDWS & FAAD C2. Continued to support software on Advanced Battle			

Exhibit R-2A, **RDT&E Project Justification:** PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040 *I* 5	**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	**Project (Number/Name)** 126 *I FAAD C2 ED*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2014**	**FY 2015**	**FY 2016**
Management and enhanced capability for Digital Clearance of Fires. Continued to implement evolving COE requirements for real time systems. Continued security accreditation updates.			
Accomplishments/Planned Programs Subtotals	3.293	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• SSN AD5050: *SSN AD5050, FAAD C2*	4.607	-	-	-	-	-	-	-	-	-	4.607
• PE 0604741A, Proj 149: *PE 0604741A, Proj 149, Counter-Rockets, Artillery & Mortar*	22.258	2.366	8.812	-	8.812	11.166	4.418	3.730	3.616	Continuing	Continuing
• SSN H30503: *SSN H30503, Rocket, Artillery, Mortar (RAM) Warn (Parent is IFPC Family of Systems: BZ0501)*	11.929	27.652	42.458	-	42.458	28.602	8.425	3.470	-	-	122.536
• SSN H30504: *SSN H30504, C-RAM Enhancements (Parent is IFPC Family of Systems: BZ0501)*	43.425	40.644	18.221	-	18.221	23.189	-	-	-	-	125.479
• PE 0604741A, Proj 146: *PE 0604741A, Proj 146, Air & Missile Defense Planning and Control System*	12.861	13.532	15.757	-	15.757	15.965	16.106	16.288	14.466	Continuing	Continuing
• SSN AD5070: *SSN AD5070, Air & Missile Defense Planning and Control System*	13.090	27.374	28.176	-	28.176	32.443	32.690	33.032	13.366	Continuing	Continuing
• PE 0604319A, Proj DU3: *PE 0604319A, Proj DU3, IFPC (FY12 PE0603305A IFPC II - Intercept)*	76.559	96.131	155.361	-	155.361	90.323	58.562	43.384	109.445	Continuing	Continuing
• PE 0605457A, Proj S40: *PE 0605457A, Proj S40, Army Integrated Air and Missile Defense (AIAMD)*	358.192	152.516	214.099	-	214.099	227.103	169.575	153.451	33.424	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040 *I* 5	**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	**Project (Number/Name)** 126 *I FAAD C2 ED*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• SSN BZ5075: *SSN BZ5075, IAMD Battle Command System*	-	-	20.917	-	20.917	204.513	296.361	375.763	443.637	Continuing	Continuing
• PE 060482A, Proj E10: *PE 060482A, Proj E10, Sentinel*	1.796	5.221	12.309	-	12.309	11.465	10.971	12.191	30.277	Continuing	Continuing

Remarks

This program is an integral part of the Army Integrated Air and Missile Defense (IAMD) architecture.

D. 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 was followed in Blocks I-IV fieldings. FAAD C2 software provides engagement operational capabilities for the Army's Active and Reserve components.

FAAD C2 is a core component of C-RAM C2. As C-RAM C2 is developed, the interoperability of Air Defense functionality of FAAD C2 must be maintained.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army														Date: February 2015	
Appropriation/Budget Activity 2040 / 5				**R-1 Program Element (Number/Name)** PE 0604741A / *Air Defense Command, Control and Intelligence - Eng Dev*								**Project (Number/Name)** 126 / *FAAD C2 ED*			

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various	40.723	0.271	Dec 2013	-		-		-		-	-	40.994	-
Subtotal			40.723	0.271		-		-		-		-	-	40.994	-

Remarks
 Basic Air Defense functionality will be maintained under Counter-Rockets, Artillery & Mortar (C-RAM) Development.

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development and Engineering	SS/CPIF	Northrop Grumman : Carson, CA	40.277	2.261	Feb 2014	-		-		-		-	-	42.538	-
Software Engineering	Various	Various : Various	23.082	0.236	Dec 2013	-		-		-		-	-	23.318	-
Subtotal			63.359	2.497		-		-		-		-	-	65.856	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Certification/Testing	Various	YPG : Yuma, AZ	11.791	0.411	Feb 2014	-		-		-		-	-	12.202	-
Interoperability	Various	CTSF : Ft Hood, TX	3.256	0.114	Dec 2013	-		-		-		-	-	3.370	-
Subtotal			15.047	0.525		-		-		-		-	-	15.572	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	119.129	3.293	-	-	-	-	-	122.422	-

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2016 Army	**Date:** February 2015

Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604741A / *Air Defense Command,* *Control and Intelligence - Eng Dev*	**Project (Number/Name)** 126 / *FAAD C2 ED*

Event Name	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
	1 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

Production and Deployment Phase — ...Prod/Deploy Phase

(1) FAAD Shelter Systems & Hardware Enter Sustainment — 1 Shelter Systems/HW Enter Sustainment

FAAD C2 Software Modifications for Emerging Capabilities — ...Emerging Capability Mods

FAAD C2 Software Upgrades for Homeland Defense (NCR-IADS) — ...Upgrades for Homeland Defense

Continued Periodical Software-related Testing for Homeland Defense — ...SW-related Testing for HLD

Linux Upgrades/ Handheld Replacements — ...Migration to Linux Operating System

18 Division Sensor C2 Sections (2 each) Fielded — ...FAAD Sensor C2 Node Fieldings

5-5 ADA Battalion & 2-44 ADA Battalion Integration/Train/Fielding — 5-5 ADA BN & 2-44 ADA BN Fieldings

(2) Full Operational Capability — 2 Full Operational Capability

Exhibit R-4A, **RDT&E Schedule Details:** PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040 *I* 5	**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	**Project (Number/Name)** 126 *I FAAD C2 ED*

Schedule Details

Events	Start		End	
	Quarter	**Year**	**Quarter**	**Year**
Production and Deployment Phase	4	2001	4	2014
FAAD Shelter Systems & Hardware Enter Sustainment	4	2014	4	2014
FAAD C2 Software Modifications for Emerging Capabilities	3	2006	4	2014
FAAD C2 Software Upgrades for Homeland Defense (NCR-IADS)	4	2007	4	2014
Continued Periodical Software-related Testing for Homeland Defense	4	2010	4	2014
Linux Upgrades/ Handheld Replacements	2	2010	4	2014
18 Division Sensor C2 Sections (2 each) Fielded	4	2009	3	2014
5-5 ADA Battalion & 2-44 ADA Battalion Integration/Train/Fielding	3	2013	1	2015
Full Operational Capability	4	2014	4	2014

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	

Appropriation/Budget Activity 2040 I 5				R-1 Program Element (Number/Name) PE 0604741A I Air Defense Command, Control and Intelligence - Eng Dev						Project (Number/Name) 146 I Air & Msl Defense Planning Control Sys	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
146: Air & Msl Defense Planning Control Sys	-	12.861	13.532	15.757	-	15.757	15.965	16.106	16.288	14.466	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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), Multi Functional Support Brigades and Divisions/Corps. AMDPCS systems also provide air defense capabilities to Homeland Defense systems. 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 Air & Missile Defense (AMD) 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 3-dimensional air picture. AMDWS is the air picture provider for the Army, producing an integrated and correlated air picture at all tactical levels and locations. AMDWS is also an integral component of Integrated Base Defense. AMDWS provides an interoperability link to multinational air defense forces; (2) The Air Defense System Integrator (ADSI) is a communications data link processor and display system that provides near-real time, 3-dimensional, joint airspace situational awareness and fire direction command and control for AMD 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.

FY16 funds the development, software engineering, testing and certification of the AMDWS, ADSI, and sheltered subsystem software as described below.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2014	FY 2015	FY 2016
Title: AMDWS Software Development *Description:* Continue AMDWS development and support of LandWarNet as well as various Common Operating Environments (COEs). Complete AMDWS software engineering and development consistent with COE requirements, evolving the air and missile defense planning and control requirements to a net-centric environment, and fulfilling the air defense force operations capabilities identified in the AMD TRADOC capabilities requirement list. Virtualize AMDWS software development and rehost onto COE Real-Time Computing Environment common hardware systems. Support the evolving development of the Force Operations portion of the Integrated Air and Missile Defense (IAMD) system of Systems. Includes Host Based Security System (HBSS) (Information Assurance Compliance). *FY 2014 Accomplishments:*	9.890	10.420	11.975

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 I 5	R-1 Program Element (Number/Name) PE 0604741A I *Air Defense Command,* *Control and Intelligence - Eng Dev*	Project (Number/Name) 146 I *Air & Msl Defense Planning Control* *Sys*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Continued AMDWS software engineering consistent with Capability Set 15-16 / COE v2 requirements. Implemented evolving COE requirements for Command Post Computing Environment (CP CE) and Real Time / Safety Critical / Embedded Computing Environment (TR/SC/E CE). Continued to develop interfaces with IAMD systems. Supported the IAMD/ADAM Demo. Supported testing of interfaces with C2BMC and THAAD. Maintained interconnectivity with PATRIOT. *FY 2015 Plans:* Continue AMDWS software engineering consistent with Capability Set 15-16 / COE v2 requirements. Continue to develop interfaces with IAMD systems. Support testing of defense design planning with C2BMC and THAAD. Maintain interconnectivity with PATRIOT. Develop Fires Gateway Modularization of AMDPCS External Interfaces. Evaluate AMDPCS CP web development. *FY 2016 Plans:* Begin AMDWS software engineering consistent with Capability Set 17-18 / COE v3 requirements. Support test of COE v2 capability sets, including Network Integration Event (NIE) 16.1 and 16.2. Finalize software design requirements for IAMD interfaces. Continue to evolve system interfaces to PATRIOT. Implement interface to the Cooperative Aircraft Surveillance System (CASS), in support of commercial aircraft de-confliction.			
Title: ADSI Software Engineering and Development *Description:* Continue ADSI software engineering and development in software versions 15, including testing and certification of capabilities for TacView Situational Awareness, with air control support, scenario generation and 3-dimentional capability across various tactical data links. The version 15 software upgrades the ADSI OS to use Windows 7 and Red Hat Linux. *FY 2014 Accomplishments:* Supported testing of version 15.1 software. Conducted version 15.1 certification activities. Began ADSI version 16 software development. Continued to implement updates in the ADSI baseline as a result of changes in interface systems and MIL-STDs. *FY 2015 Plans:* Conduct Authority to Operate (ATO) and Army Interoperability Certification (AIC) of version 15.1 software. Continue to work virtual ADSI solution to keep ADSI common with COE software architecture strategy as a Real Time, Safety Critical, Embedded (RTSCE CE) system. Continue ADSI version 16 software development. *FY 2016 Plans:* Continue ADSI version 16 software development. Begin version 16.0 test activities, including certification. Complete implementation of baseline updates.	0.656	0.677	0.788
Title: Engineering, Development, Test and Evaluation	1.543	1.624	2.048

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army				Date: February 2015		
Appropriation/Budget Activity 2040 I 5			R-1 Program Element (Number/Name) PE 0604741A I Air Defense Command, Control and Intelligence - Eng Dev		Project (Number/Name) 146 I Air & Msl Defense Planning Control Sys	

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Description: Continued engineering, development, test and evaluation of the AMDPCS Family of Shelter (FoS) subsystems Objective configuration; continued evaluation of the AMDPCS tactical communications, data processing and vehicle/shelter/power generation/environmental system block upgrade program for fielded systems. **FY 2014 Accomplishments:** Continued evaluation of AMDPCS FoS configurations. Assessed evolving technologies for providing system power and environmental control. Evaluated communications, secure wireless, secure VTC and data processing technologies for potential system applications. **FY 2015 Plans:** Continue evaluation of AMDPCS FoS configurations. Further assess and test power system technologies. Evaluate the Cooperative Air Surveillance System (CASS) as a technology insertion. Support ADAM at NIE 15.1. Support IBCS-ADAM participation at NIE 15.2. **FY 2016 Plans:** Continue evaluation of emerging technologies for future application in AMDPCS. Support IBCS-ADAM COE configurations at NIE 16.1 and 16.2. Continue to work closely with PM IAMD to identify the ADAM cell configuration to support IBCS Fire Control Network (FCN).			
Title: Software System Certification Testing, Accreditation, and Approval of Authority-to-Operate (ATO) **Description:** Continue software system certification testing, accreditation, and approval of ATOs for the various software systems; continue Army and Joint integration and interoperability assessments in compliance with ARCYBER and Host Based Security System (HBSS) requirements. **FY 2014 Accomplishments:** Continued software system certification testing, accreditation, and approval of ATOs; continued Army and Joint integration and interoperability assessments. **FY 2015 Plans:** Continue software system certification testing, accreditation, and approval of ATOs. Continue working software system certification testing, accreditation, and approval of IATO for COE v2 ADAM at NIE 16.1. **FY 2016 Plans:** Continue software system certification testing, accreditation, and approval of ATOs; continue Army and Joint integration and interoperability assessments.	0.772	0.811	0.946
Accomplishments/Planned Programs Subtotals	12.861	13.532	15.757

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 *I* 5	R-1 Program Element (Number/Name) PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	Project (Number/Name) 146 *I Air & Msl Defense Planning Control Sys*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• AD5070: *AD5070, AMDPCS*	13.090	27.374	28.176	-	28.176	32.443	32.690	33.032	13.366	Continuing	Continuing
• PE 0604741A, Proj 149: *PE 0604741A, Proj 149, Counter-Rockets, Artillery & Mortar*	22.258	2.366	8.812	-	8.812	11.166	4.418	3.730	3.616	Continuing	Continuing
• SSN H30503: *SSN H30503, Rocket, Artillery, Mortar (RAM) Warn (Parent is IFPC Family of Systems: BZ0501)*	11.929	27.652	42.458	-	42.458	28.602	8.425	3.470	-	-	122.536
• SSN H30504: *SSN H30504, C-RAM Enhancements (Parent is IFPC Family of Systems: BZ0501)*	43.425	40.644	18.221	-	18.221	23.189	-	-	-	-	125.479
• PE 06043019A, Proj DU3: *PE 06043019A, Proj DU3, IFPC (FY12 PE0603305A IFPC II - Intercept)*	76.559	96.131	155.361	-	155.361	90.323	58.562	43.284	109.445	Continuing	Continuing
• PE 0605457A, Proj S40: *PE 0605457A, Proj S40, Army Integrated Air and Missile Defense (AIAMD)*	358.192	152.516	214.099	-	214.099	227.103	169.575	153.451	33.424	Continuing	Continuing
• SSN BZ5075: *SSN BZ5075, IAMD Battle Command System*	-	-	20.917	-	20.917	204.513	296.361	375.763	443.637	Continuing	Continuing
• PE 060482A, Proj E10: *PE 060482A, Proj E10, Sentinel*	1.796	5.221	12.309	-	12.309	11.465	10.971	12.191	30.277	Continuing	Continuing

Remarks

This program is an integral part of the Army Integrated Air and Missile Defense (IAMD) architecture.

D. 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.

Exhibit R-2A, **RDT&E Project Justification:** PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040 *I* 5	**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	**Project (Number/Name)** 146 *I Air & Msl Defense Planning Control Sys*

AMDWS is a prime component of C-RAM. It provides the Forward Operating Base (FOB) commander with clearance of fires display and enemy munitions flight paths.

E. Performance Metrics

 N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army											Date: February 2015		

| Appropriation/Budget Activity
2040 I 5 | | | | | | R-1 Program Element (Number/Name)
PE 0604741A I Air Defense Command,
Control and Intelligence - Eng Dev | | | | | Project (Number/Name)
146 I Air & Msl Defense Planning Control
Sys | | |

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various	24.863	1.628	Dec 2013	1.705	Dec 2014	1.757	Dec 2015	-		1.757	Continuing	Continuing	-
Subtotal			24.863	1.628		1.705		1.757		-		1.757	-	-	-

<u>Remarks</u>
 Not Applicable

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AMDWS Software Development and Engineering	SS/CPFF	Northrop Grumman : Huntsville AL	101.012	9.792	Oct 2013	10.311	Oct 2014	11.660	Oct 2015	-		11.660	Continuing	Continuing	Continuing
ADSI Software Development and Engineering	SS/T&M	Ultra Electronics : Austin, TX	6.540	0.102	Feb 2014	0.107	Feb 2015	0.112	Feb 2016	-		0.112	Continuing	Continuing	Continuing
Developmental Engineering	Various	Various : Various	35.143	1.196	Dec 2013	1.259	Dec 2014	2.071	Dec 2015	-		2.071	Continuing	Continuing	Continuing
Subtotal			142.695	11.090		11.677		13.843		-		13.843	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Certification/Testing	Various	JITC : Ft Huachuca, AZ	0.955	0.066	Feb 2014	0.069	Feb 2015	0.073	Feb 2016	-		0.073	Continuing	Continuing	Continuing
Interoperability Assessment	Various	CTSF : Ft Hood, TX	1.261	0.077	May 2014	0.081	May 2015	0.084	May 2016	-		0.084	Continuing	Continuing	Continuing
Subtotal			2.216	0.143		0.150		0.157		-		0.157	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army								Date: February 2015		
Appropriation/Budget Activity 2040 *I* 5				**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*				**Project (Number/Name)** 146 *I Air & Msl Defense Planning Control Sys*		
	Prior Years	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**Cost To Complete**	**Total Cost**	**Target Value of Contract**
Project Cost Totals	169.774	12.861	13.532	15.757	-	15.757	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 I 5	R-1 Program Element (Number/Name) PE 0604741A I Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 146 I Air & Msl Defense Planning Control Sys

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 *I* 5	R-1 Program Element (Number/Name) PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	Project (Number/Name) 146 *I Air & Msl Defense Planning Control Sys*	

Event Name	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	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
ADAM Cell and AMDPCS-A & B Sheltered Systems Fieldings																												

ADAM Cell and AMDPCS Sheltered Systems Fieldings

Exhibit R-4A, **RDT&E Schedule Details:** PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040 *I* 5	**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	**Project (Number/Name)** 146 *I Air & Msl Defense Planning Control Sys*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Air and Missile Defense Workstation (AMDWS) V6.6 Full MR	4	2014	4	2014
Full Operational Capability AMDPCS	1	2020	1	2020
AMDWS Block IV Contract	2	2011	2	2016
AMDWS Block V Contract	2	2016	2	2021
AMDWS Software Block Development, Testing, Certification	3	2007	4	2021
AMDWS Capability Set and COE Development and Test	1	2013	1	2021
AMDWS AMD Interfaces: C2BMC, C2IS, C2AOS, AOC WS, Patriot, JLENS, IBCS,	4	2012	4	2016
- THAAD, C-RAM C2, etc	1	2017	4	2021
ADSI Software Sustainment, Service Level Testing, Interoperability Certification	1	2005	4	2021
14.1 & 14.2	1	2014	4	2014
COE ADAM Shelter in NIE 16.1/16.2 as System Under Evaluation	1	2016	3	2016
NIE X.X	1	2017	4	2020
AMDPCS ADAM Shelter Production	2	2001	4	2019
ADAM Cell and AMDPCS-A & B Sheltered Systems Fieldings	2	2001	4	2019

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army											Date: February 2015	
Appropriation/Budget Activity 2040 *I* 5				**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command,* *Control and Intelligence - Eng Dev*						**Project (Number/Name)** 149 *I Counter-Rockets, Artillery & Mortar*			
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
149: *Counter-Rockets, Artillery & Mortar*	-	22.258	2.366	8.812	-	8.812	11.166	4.418	3.730	3.616	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Counter-Rocket, Artillery, Mortar (C-RAM) is an evolutionary, non-developmental program initiated by the Army Chief of Staff in response to the indirect fire (IDF) threat and a validated Operational Needs Statement (ONS). The primary mission of the C-RAM program is to develop, procure, field, and maintain a system-of-systems (SoS) that can detect RAM launches; provide localized warning to the defended area, with sufficient time for personnel to take appropriate action; intercept rounds in flight, thus preventing damage to ground forces or facilities; and enhance response to and defeat of enemy forces. The C-RAM capability is comprised of a combination of multi-service fielded and non-developmental item (NDI) sensors, command and control (C2) systems, warning systems, and a modified U.S. Navy intercept system (Land-based Phalanx Weapon System (LPWS)), with a commercial off-the-shelf (COTS) wireless local area network. The C-RAM SoS capability is currently deployed at multiple sites in Afghanistan, providing correlated air and ground pictures, linking units to the Army Mission Command and the Joint Defense Network, and using various forms of communications to provide situational awareness and exchange of timely and accurate information in order to synchronize and optimize automated Shape, Sense, Warn, Intercept, Respond, and Protect decisions.

The deployment of the C-RAM SoS was accomplished through an incremental acquisition process driven by urgent operational needs, theater priorities, and emerging capability requirements to provide a counter-RAM capability to combat forces. The C-RAM SoS approach was initially validated by a Proof of Principle demonstration in December 2004 and has undergone more than 25 Army Test and Evaluation Command (ATEC)-supported operational assessments to incorporate multiple improvements in response to changes in threat tactics and lessons learned. The C-RAM Sense and Warn (S&W) and Intercept capabilities are currently deployed to locations in support of Operation Freedom's Sentinel (OFS). Continuing C-RAM SoS improvement efforts, required to meet emerging theater requirements, include C2 and LPWS software upgrades as well as integration and deployment of Ku band Multi-Function Radio Frequency System (MFRFS) radars for an enhanced detection capability against stressing threats. Base RDTE funding for FY 2015 and beyond supports maintenance of C-RAM C2 basic Air Defense functionality. Support of the existing C-RAM SoS capability deployed in theater has been through the Overseas Contingency Operations (OCO) process.

Near-term directed enhancements to the C-RAM SoS capability included use of Army tactical communications rather than commercial systems; integration of Warn functionality into the C2 workstation to reduce complexity and footprint; integration with Unmanned Aircraft Systems (UAS) Universal Ground Control Station (UGCS) for enhanced situational awareness, combat identification, and response options; and dynamic clearance of unplanned fires (DCUF). Future enhancements (FY16-17) include testing and upgrade of DCUF in conjunction with the Advanced Field Artillery Tactical Data System (AFATDS) V2 for rapid and enhanced response.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2014	FY 2015	FY 2016
Title: C-RAM C2 Software Development and Enhancements	1.575	2.366	4.377

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604741A / Air Defense Command, Control and Intelligence - Eng Dev	Project (Number/Name) 149 / Counter-Rockets, Artillery & Mortar

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Description: Funds system-of-systems development and upgrades based on changes in threat, integration of emerging requirements from external PMs (Mission Command) and other Services/agencies, technology insertions (IP-based communications), and interoperability requirements (Joint interoperability, MIL Standard), and provides development and regression testing to ensure C-RAM C2 enhancements do not negatively impact the performance of the other C-RAM pillars. Includes Host Based Security System (HBSS) (Information Assurance compliance) but not Common Operating Environment (COE). FY 2014 Accomplishments: C-RAM C2 software development contract efforts. FY 2015 Plans: C-RAM C2 software development contract efforts. FY 2016 Plans: C-RAM C2 software development contract efforts.			
Title: Dynamic Clearance of Unplanned Fires (DCUF) Description: Provides an automated unplanned fires clearance capability, enabling the safe engagement of targets that would not be possible with current, manual procedures. Provides more rapid clearance of airspace and more effective engagements of unplanned targets. FY 2016 Plans: C-RAM C2 software development contract efforts to incorporate DCUF functionality.	-	-	4.435
Title: C-RAM Software Improvements to Enhance Intercept Capabilities Description: Funds a three-phased effort to enhance the performance of Land-based Phalanx Weapon System (LPWS) in theater by upgrading both the C-RAM C2 and LPWS software to enable the engagement of all indirect fire (IDF) threats within the LPWS engagement range, decreasing the number of IDF threats that impact on the Forward Operating Base (FOB). This is an OCO-funded effort in support of U.S. Forces-Afghanistan (USF-A) Operational Needs Statement (ONS) 14-19701, approved 23 April 2014. FY 2014 Accomplishments: C-RAM C2 and LPWS software development contract efforts to incorporate C-RAM Intercept enhancements.	20.683	-	-
Accomplishments/Planned Programs Subtotals	22.258	2.366	8.812

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040 *I* 5	**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command,* *Control and Intelligence - Eng Dev*	**Project (Number/Name)** 149 *I Counter-Rockets, Artillery & Mortar*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• SSN H30503: *SSN H30503, Rocket, Artillery, Mortar (RAM) Warn (Parent is IFPC Family of Systems: BZ0501)*	11.929	27.652	42.458	-	42.458	28.602	8.425	3.470	-	-	122.536
• SSN H30504: *SSN H30504, C-RAM Enhancements (Parent is IFPC Family of Systems: BZ0501)*	43.425	40.644	18.221	-	18.221	23.189	-	-	-	-	125.479
• PE 0604741A, Proj 146: *PE 0604741A, Proj 146, Air & Missile Defense Planning and Control System*	12.861	13.532	15.757	-	15.757	15.965	16.106	16.288	14.466	Continuing	Continuing
• SSN AD5070: *SSN 5070, Air & Missile Defense Planning and Control System*	13.090	27.374	28.176	-	28.176	32.443	32.690	33.032	13.366	Continuing	Continuing
• PE 0604319A, Proj DU3: *PE 0604319A, Proj DU3, IFPC2 (FY12 PE0603305A IFPC II - Intercept)*	76.559	96.131	155.361	-	155.361	90.323	58.562	43.384	109.495	Continuing	Continuing
• PE 0605457A, Proj S40: *PE 0605457A, Proj S40, Army Integrated Air and Missile Defense (AIAMD)*	358.192	152.516	214.099	-	214.099	227.103	169.575	153.451	33.424	Continuing	Continuing
• SSN BZ5075: *SSN BZ5075, IAMD Battle Command System*	-	-	20.917	-	20.917	204.513	296.361	375.763	443.637	Continuing	Continuing
• PE 060482A, Proj E10: *PE 060482A, Proj E10, Sentinel*	1.796	5.221	12.309	-	12.309	11.465	10.971	12.191	30.277	Continuing	Continuing
• PE 0604823A, Proj L86: *PE 0604823A, Proj L86, Lightweight Counter Mortar Radar (LCMR)*	-	-	2.967	-	2.967	3.230	3.463	3.500	3.475	Continuing	Continuing
• PE 0604823A, Proj L88: *PE 0604823A, Proj L88, Enhanced AN/TPQ-36*	17.734	23.480	3.276	-	3.276	8.084	7.543	6.850	8.587	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040 *I* 5	**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	**Project (Number/Name)** 149 *I Counter-Rockets, Artillery & Mortar*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• SSN B01301: *SSN B01301, Lightweight Counter Mortar Radar (LCMR)*	98.535	24.828	63.472	-	63.472	46.395	11.399	9.614	-	-	254.243
• SSN B05310: *SSN B05310, Enhanced AN/TPQ-36*	348.557	159.050	217.379	-	217.379	345.879	217.246	98.900	-	-	1,387.011
• SSN BZ7325: *SSN BZ7325, Mod of In-Svc Equip (Firefinder Radars)*	1.185	4.186	-	-	-	-	-	-	-	-	5.371

Remarks

This program is an integral part of the Army Integrated Air and Missile Defense (IAMD) architecture.

D. Acquisition Strategy

The C-RAM program is following an evolutionary acquisition strategy for rapid fielding of mature technology to the user. The objective of the strategy is to balance needs, available technology, and resources to quickly provide a robust capability to engage RAM threats. Both C-RAM Intercept (LPWS) and RAM Warn have transitioned to acquisition programs and continue to capitalize on RDTE investments.

E. Performance Metrics

N/A

Exhibit R-3, **RDT&E Project Cost Analysis:** PB 2016 Army														**Date:** February 2015		
Appropriation/Budget Activity 2040 / 5								**R-1 Program Element (Number/Name)** PE 0604741A / *Air Defense Command, Control and Intelligence - Eng Dev*					**Project (Number/Name)** 149 / *Counter-Rockets, Artillery & Mortar*			

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various	20.872	1.813		0.211		0.799		-		0.799	Continuing	Continuing	Continuing
		Subtotal	20.872	1.813		0.211		0.799		-		0.799	-	-	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Northrop Grumman	C/CPIF	C-RAM C2 Development and Enhancements : Redondo Beach, CA	84.797	6.942	Mar 2014	2.155	Feb 2015	8.013	Feb 2016	-		8.013	Continuing	Continuing	Continuing
Raytheon Company	C/CPIF	Improved Interceptor : Tucson, AZ	77.675	-		-		-		-		-	-	77.675	-
Raytheon Company	C/CPIF	LPWS Enhancements : Tucson, AZ	0.000	3.500		-		-		-		-	-	3.500	-
Northrop Grumman	C/CPFF	Modeling and Simulation : Redondo Beach, CA	0.000	1.800		-		-		-		-	-	1.800	-
		Subtotal	162.472	12.242		2.155		8.013		-		8.013	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
OGA	Various	TBD : TBD	20.151	8.203		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	20.151	8.203		-		-		-		-	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army										**Date:** February 2015

| Appropriation/Budget Activity
2040 *I* 5 | | | R-1 Program Element (Number/Name)
PE 0604741A *I Air Defense Command,*
Control and Intelligence - Eng Dev | | | Project (Number/Name)
149 *I Counter-Rockets, Artillery & Mortar* | | | | |

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	203.495	22.258	2.366	8.812	-	8.812	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 I 5	**R-1 Program Element (Number/Name)** PE 0604741A I Air Defense Command, Control and Intelligence - Eng Dev	**Project (Number/Name)** 149 I Counter-Rockets, Artillery & Mortar

Event Name	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020

C-RAM System-of-Systems (SoS) Sustainment — Field/Sustain C-RAM SoS (Sense & Warn, Intercept) per Theater ONS / JUON

C-RAM C2 Development — C-RAM C2 Development, Updates, Virtualization, & Integration w/IAMD

C-RAM Directed Enhancements - Integ/Test/Fielding — C2 & Warn Improvements, DCUF Upgrades, C2 Integ. w/UAS GCS

C-RAM SoS Improvements - Stressing Threat Detection — Deploy/Sustain Ku MFRFS Radars

(1) Ku MFRFS Decision Point — △1 Ku MFRFS Disposition/Retention Decision

C-RAM Intercept (LPWS) Fielding/NET — C-RAM Intercept Fldg to 5-5 & 2-44 ADA

(2) 5-5 ADA Fielding — △2

(3) 2-44 ADA Fielding — △3 2-44 ADA E-Date

(4) C-RAM Intercept Operational Assessment (OA) — C-RAM Intercept OA △4

C-RAM Intercept Logistics Demonstration — C-RAM Intercept Log Demo

(5) C-RAM Intercept Materiel Release — △5 C-RAM Intercept Materiel Release

C-RAM Intercept (LPWS) Sustainment — Sustain C-RAM Intercept (LPWS) at CONUS Units

(6) RAM Warn Full Rate Production (FRP) Decision — △6 RAM Warn FRP Decision Review

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 *I* 5	R-1 Program Element (Number/Name) PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	Project (Number/Name) 149 *I Counter-Rockets, Artillery & Mortar*

Event Name	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	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
RAM Warn Production and Fielding																												

RAM Warn Production / Fielding

Exhibit R-4A, **RDT&E Schedule Details:** PB 2016 Army		**Date:** February 2015
Appropriation/Budget Activity 2040 *I* 5	**R-1 Program Element (Number/Name)** PE 0604741A *I Air Defense Command, Control and Intelligence - Eng Dev*	**Project (Number/Name)** 149 *I Counter-Rockets, Artillery & Mortar*

Schedule Details

Events	Start		End	
	Quarter	**Year**	**Quarter**	**Year**
C-RAM System-of-Systems (SoS) Sustainment	1	2007	4	2020
C-RAM C2 Development	1	2013	4	2020
C-RAM Directed Enhancements - Integ/Test/Fielding	1	2012	4	2017
C-RAM SoS Improvements - Stressing Threat Detection	1	2012	1	2017
Ku MFRFS Decision Point	2	2016	2	2016
C-RAM Intercept (LPWS) Fielding/NET	4	2013	3	2016
5-5 ADA Fielding	1	2014	1	2014
2-44 ADA Fielding	1	2015	1	2015
C-RAM Intercept Operational Assessment (OA)	2	2015	2	2015
C-RAM Intercept Logistics Demonstration	1	2016	2	2016
C-RAM Intercept Materiel Release	1	2016	1	2016
C-RAM Intercept (LPWS) Sustainment	1	2014	4	2020
RAM Warn Full Rate Production (FRP) Decision	3	2014	3	2014
RAM Warn Production and Fielding	3	2013	4	2018