Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-205

Integrated Air and Missile Defense (IAMD)

As of FY 2017 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President’s Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

Integrated Air and Missile Defense (IAMD)

DoD Component

Army

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References

SAR Baseline (Development Estimate)

FY 2011 President's Budget dated February 1, 2010

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated October 8, 2014

Mission and Description

The mission of the Army Integrated Air and Missile Defense (IAMD) Project Office (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, Inter-Governmental and Multi-National net-centric architectures. Additionally, the IAMD PO will develop, acquire, field and sustain the IAMD Battle Command System (IBCS) component of the architecture and integrate externally developed sensors and shooters to provide an effective IAMD capability.

The IAMD program will allow transformation to a network-centric system of systems capability, also referred to as "Plug and Fight", that integrates all Air and Missile Defense (AMD) sensors, weapons, and mission control. The IAMD program will integrate the Patriot and Improved Sentinel components to support the engagement of air breathing targets, cruise missiles, unmanned aerial vehicles, and the tactical ballistic missiles threat. Each sensor and weapon platform will have a "Plug and Fight" interface module, which supplies distributed battle management functionality to enable network-centric operations. Additionally, the IBCS functionality will be incorporated into Air Defense Airspace Management Cells, Air Defense Artillery Brigade Headquarters, and Army Air and Missile Defense Command Headquarters.

The common IBCS provides the functional capabilities to control and manage the IAMD sensors and weapons via the Integrated Fire Control Network capability for fire control connectivity and enabling distributed operations. Central to the IAMD program is the IBCS Development Program consisting of the IBCS Major End Items (MEI): the Engagement Operations Center and "Plug and Fight" modules. The development of these MEIs is essential to achieving Army transformation imperatives, connectivity to the Global Interface Grid for Joint operations, obtaining a Joint Single Integrated Air Picture, establishing Engage on Network capabilities, enabling Net-Ready operations for Army AMD components, and providing a common IAMD mission command capability. This innovative approach at modernization will reduce O&S costs and will enhance training.

Executive Summary

The Army IAMD program conducted its first successful intercept test against a Tactical Ballistic Missile (TBM) surrogate target utilizing a Patriot Guidance Enhanced Missile-Tactical (GEM-T) missile on May 28, 2015. The Patriot-As-A-Target TBM surrogate flew a TBM trajectory against an asset defended by an AIAMD task force comprised of a Battalion Engagement Operations Center (EOC), a non-collocated Battery EOC with a Patriot radar, and a remote Integrated Fire Control Network (IFCN) Relay connected to two adapted Patriot Launchers operating on an IFCN. The two adapted Patriot Launchers were equipped with GEM-T missiles to intercept the threatening TBM surrogate. This test demonstrated a dramatic change in how current air and missile defense systems will operate in the future in a netted system of systems architecture. This test also demonstrated the ability to conduct an engagement over an IFCN utilizing the IAMD Battle Command System (IBCS).

The Army IAMD program conducted its first successful intercept test against a Cruise Missile surrogate target utilizing a Patriot Advanced Capability Three (PAC-3) interceptor and composite track data from Sentinel and Patriot radars on November 12, 2015. This test demonstrated the Army's capability to identify, track, engage and kill targets using an interceptor from one legacy air defense system and remote sensors to another legacy air defense system operating on the IFCN under the control of the IBCS. The cruise missile surrogate, an MQM-107 Drone Target, flew a low altitude trajectory against an asset defended by an Army IAMD task force comprised of a Battalion EOC, a non-collocated Battery EOC with a Patriot radar, a remote IFCN Relay connected to two Patriot PAC-3 launchers, two remote Sentinel radars connected to IFCN Relays, all operating on the IFCN. The low altitude trajectory of the target obscured it from the Patriot radar's field of view. As designed, the IBCS system correctly utilized the Sentinel composite tracking data to calculate the necessary engagement solution resulting in the PAC-3 missile successfully engaging and killing the target.

The IAMD Project Office Logistics Directorate published the results of the IBCS Early Abbreviated Demonstration (EAD) on November 12, 2015. The IAMD EAD was conducted at the Tobin Wells Training Facility at Fort Bliss, Texas from September 17 to October 8, 2015 to gain preliminary data points for Mean Time to Repair and Product Support Package validation to support the forthcoming IBCS Initial Operational Test & Evaluation Logistics Demonstration tentatively scheduled for 4th Quarter FY 2017.

An IBCS Army Acquisition Objective (AAO) adjustment memo was approved by Headquarters, Department of the Army on December 23, 2015. This memo adjusted the AAO from 431 to 454 EOCs. A revised program baseline will be established at Milestone C to reflect these quantities.

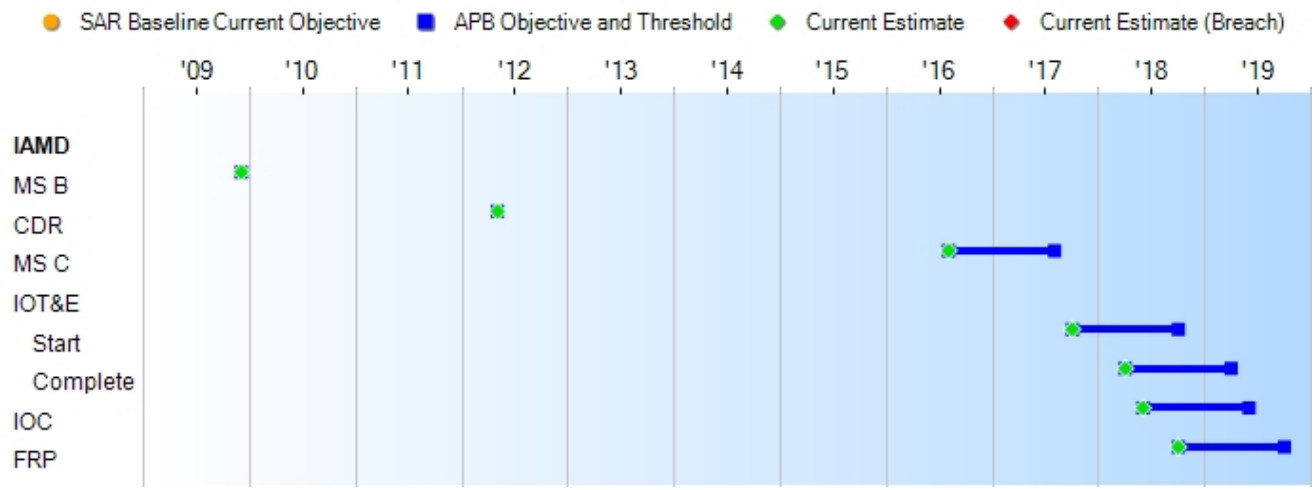
On February 23, 2016 the DAE hosted an IAMD status review presented by the PM. Army IAMD is preparing for a Limited User Test from March through May 2016 as the program proceeds to a Milestone C decision in August 2016. The areas of concerns were software maturity, system reliability and operator training/readiness. The program remains on track to execute per the current schedule.

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Schedule Events				
Events	**SAR Baseline Development Estimate**	**Current APB Development Objective/Threshold**		**Current Estimate**
MS B	Dec 2009	Dec 2009	Dec 2009	Dec 2009
CDR	Aug 2011	May 2012	May 2012	May 2012
MS C	Dec 2014	Aug 2016	Aug 2017	Aug 2016
IOT&E				
Start	Jan 2016	Oct 2017	Oct 2018	Oct 2017
Complete	Jul 2016	Apr 2018	Apr 2019	Apr 2018
IOC	Aug 2016	Jun 2018	Jun 2019	Jun 2018
FRP	May 2017	Oct 2018	Oct 2019	Oct 2018

Change Explanations

None

Acronyms and Abbreviations

CDR - Critical Design Review
IOT&E - Initial Operational Test and Evaluation
MS - Milestone

Performance

Performance Characteristics				
SAR Baseline Development Estimate	**Current APB Development Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Net Ready				
The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applicable joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 •DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services •Information assurance requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA •Operationally effective information exchanges •Mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.	The Army IAMD SoS must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services IA requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA Operationally effective information exchanges Mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applicable joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services IA requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA Operationally effective information exchanges Mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.	TBD	The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applicable Joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1. DISR mandated GIG KIPs identified in the KIP declaration table. NCOW RM Enterprise Services. Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA. Operationally effective information exchanges. Mission critical performance and information assurance attributes, data correctness, data availability, and consistent data

				processing specified in the applicable Joint - and system-integrated architecture views.
Integrated Defense Effectiveness				
To support attainment of a command-er's defense effectiveness objectives, which would normally range from 0.50% to 0.99%, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engage-ments up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.	To support attainment of a commander's defense effectiveness objectives, which would normally range from 0.5 to 0.99, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360 -degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.	To support attainment of a commander's defense effectiveness objectives, which would normally range from 0.5 to 0.99, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360 -degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.	TBD	To support attainment of a commander's defense effectiveness objectives, which would normally range from 0.50% to 0.99%, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing greater defense effectiveness for high -priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non -ballistic threats. The Army IAMD SoS defense effectiveness levels

				shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.
Common Command and Control				
The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface, battle monitor and control, network interface and manage-ment, track manage-ment, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLAMRAAM Platoon with the Increment 2 equipped Task Force.	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface, battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLAMRAAM Platoon with the Increment 2 equipped Task Force.	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface, battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLAMRAAM Platoon with the Increment 2 equipped Task Force.	TBD	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface, battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force PATRIOT Battery/ SLAMRAAM Platoon with the Increment 2 equipped Task Force.
Material Availability				
The Army IAMD SoS C2 shall achieve an Operational Availability (Ao) of at least 95%.	The Army IAMD SoS common C2 shall achieve an Ao 99%.	The Army IAMD SoS common C2 shall achieve an Ao of at least 95%.	TBD	The Army IAMD SoS C2 shall achieve an Ao of at least 95%.
Force Protection and Survivability				
The Army IAMD SoS common C2 equipment shall be designed to be	All Army IAMD SoS common C2 vehicle cabs and manned	The Army IAMD SoS common C2 equipment shall be designed to be	TBD	The Army IAMD SoS common C2 equipment shall be

operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and under-standing commens-urate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by Soldiers in MOPP 4; and shall survive decontami-nation procedures in such a manner that it can quickly return (within 30 minutes) to full operational capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contaminat-ion during a CBRNE event that is sustainable through decontami-nation.	shelters shall be capable of adding up-armor protection sufficient to repel enemy small arms as developed by the PM, FMTV. All equipment manned during transport or operations shall mitigate the effects of 7.62mm rounds and below.	operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understanding commensurate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by Soldiers in MOPP 4; and shall survive decontamination procedures in such a manner that it can quickly return (within 30 min) to full operational capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamination during a CBRNE event that is sustainable through decontamination.		designed to be operated by soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understanding commensurate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by soldiers in MOPP 4; and shall survive decontamination procedures in such a manner that it can quickly return (within 30 min) to full operational capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor protection sufficient to repel enemy small arms as developed by PM FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamination during a CBRNE event that is sustainable through decontamination.

Requirements Reference

CDD dated May 17, 2010

Change Explanations

None

Notes

The Common Command and Control KPP no longer includes SLAMRAAM backward compatibility. This change will be reflected in the approved CPD supporting Milestone C.

Acronyms and Abbreviations

ABT - Air Breathing Threat
Ao - Operational Availability
ATO - Approval to Operate
BFT - Blue Force Tracking
C2 - Command and Control
CBRNE - Chemical, Biological, Radiological, Nuclear and High Yield Explosives
CM - Cruise Missile
COP - Common Operating Picture
DAA - Designated Approval Authority
DISR - DoD Information Technology Standards Registry
FMTV - Family of Medium Tactical Vehicles
GIG - Global Information Grid
IA - Information Assurance
ID - Identification
IT - Information Technology
KIP - Key Information Profile
min - minute
mm - millimeter
MOPP - Mission Oriented Protective Posture
NCOW RM - Net-Centric Operations and Warfare Reference Model
SLAMRAAM - Surface-Launched Advanced Medium Range Air-to-Air Missile
SoS - System of Systems
TBM - Tactical Ballistic Missile
TV - Technical View, Standards Profile

Track to Budget

RDT&E

Appn	BA	PE
Army	04	0603327A

Project	Name	
S34	AMD System of Systems Engineering and Integration	(Sunk)

Appn	BA	PE
Army	05	0605457A

Project	Name	
DU4	Advanced Electronic Protection Enhancements	(Sunk)
S40	Army Integrated Air and Missile Defense	

Notes: Army IAMD Project Office Engineering and Manufacturing Development program funding began in FY 2011.

Procurement

Appn	BA	PE
Army	02	0214400A

Line Item	Name
BZ5075	IAMD Battle Command System

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2009 $M			BY 2009 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	1540.6	2199.5	2419.5	2385.0	1627.5	2402.6	2632.9
Procurement	3316.0	3174.8	3492.3	3403.7	4164.1	3939.2	4379.4
Flyaway	--	--	--	3248.0	--	--	4178.5
Recurring	--	--	--	3243.9	--	--	4173.9
Non Recurring	--	--	--	4.1	--	--	4.6
Support	--	--	--	155.7	--	--	200.9
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	155.7	--	--	200.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	4856.6	5374.3	N/A	5788.7	5791.6	6341.8	7012.3

Current APB Cost Estimate Reference

CAPE ICE dated June 07, 2012

Confidence Level

Confidence Level of cost estimate for current APB: 50%

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for MDAPs. Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Total Quantity			
Quantity	**SAR Baseline Development Estimate**	**Current APB Development**	**Current Estimate**
RDT&E	11	16	16
Procurement	285	431	427
Total	296	447	443

Quantity Notes

The IAMD Unit of Measure - 16 Fully Configured RDT&E units and 431 IAMD Battle Command Systems Procurement Quantities which enable System of Systems operation of Air and Missile Defense Units as defined in the IAMD CDD.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	1649.0	222.1	252.8	169.1	152.9	32.9	34.4	119.7	2632.9
Procurement	0.0	20.9	205.0	287.2	372.9	440.6	439.8	2613.0	4379.4
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2017 Total	1649.0	243.0	457.8	456.3	525.8	473.5	474.2	2732.7	7012.3
PB 2016 Total	1654.2	235.0	431.6	465.9	529.2	477.0	466.3	2732.7	6991.9
Delta	-5.2	8.0	26.2	-9.6	-3.4	-3.5	7.9	0.0	20.4

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	16	0	0	0	0	0	0	0	0	16
Production	0	0	0	12	16	25	39	65	270	427
PB 2017 Total	16	0	0	12	16	25	39	65	270	443
PB 2016 Total	16	0	0	18	24	44	47	53	241	443
Delta	0	0	0	-6	-8	-19	-8	12	29	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 2040 | RDT&E | Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	23.7
2007	--	--	--	--	--	--	36.3
2008	--	--	--	--	--	--	48.0
2009	--	--	--	--	--	--	114.7
2010	--	--	--	--	--	--	164.7
2011	--	--	--	--	--	--	246.7
2012	--	--	--	--	--	--	262.0
2013	--	--	--	--	--	--	247.4
2014	--	--	--	--	--	--	358.2
2015	--	--	--	--	--	--	147.3
2016	--	--	--	--	--	--	222.1
2017	--	--	--	--	--	--	252.8
2018	--	--	--	--	--	--	169.1
2019	--	--	--	--	--	--	152.9
2020	--	--	--	--	--	--	32.9
2021	--	--	--	--	--	--	34.4
2022	--	--	--	--	--	--	30.5
2023	--	--	--	--	--	--	47.7
2024	--	--	--	--	--	--	41.5
Subtotal	16	--	--	--	--	--	2632.9

Annual Funding 2040 | RDT&E | Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	BY 2009 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	24.8
2007	--	--	--	--	--	--	37.1
2008	--	--	--	--	--	--	48.1
2009	--	--	--	--	--	--	113.4
2010	--	--	--	--	--	--	160.5
2011	--	--	--	--	--	--	235.7
2012	--	--	--	--	--	--	246.5
2013	--	--	--	--	--	--	228.9
2014	--	--	--	--	--	--	325.0
2015	--	--	--	--	--	--	131.5
2016	--	--	--	--	--	--	196.2
2017	--	--	--	--	--	--	219.3
2018	--	--	--	--	--	--	143.9
2019	--	--	--	--	--	--	127.5
2020	--	--	--	--	--	--	26.9
2021	--	--	--	--	--	--	27.6
2022	--	--	--	--	--	--	24.0
2023	--	--	--	--	--	--	36.8
2024	--	--	--	--	--	--	31.3
Subtotal	16	--	--	--	--	--	2385.0

Annual Funding 2035 | Procurement | Other Procurement, Army							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	--	16.3	--	4.6	20.9	--	20.9
2017	12	205.0	--	--	205.0	--	205.0
2018	16	281.3	--	--	281.3	5.9	287.2
2019	25	356.5	--	--	356.5	16.4	372.9
2020	39	416.6	--	--	416.6	24.0	440.6
2021	65	412.1	--	--	412.1	27.7	439.8
2022	53	488.6	--	--	488.6	29.2	517.8
2023	45	476.2	--	--	476.2	30.6	506.8
2024	43	391.0	--	--	391.0	24.8	415.8
2025	42	394.1	--	--	394.1	22.8	416.9
2026	48	279.9	--	--	279.9	9.3	289.2
2027	34	217.0	--	--	217.0	6.2	223.2
2028	5	161.7	--	--	161.7	4.0	165.7
2029	--	77.6	--	--	77.6	--	77.6
Subtotal	427	4173.9	--	4.6	4178.5	200.9	4379.4

Annual Funding 2035 | Procurement | Other Procurement, Army							
Fiscal Year	Quantity	BY 2009 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	--	14.3	--	4.1	18.4	--	18.4
2017	12	176.9	--	--	176.9	--	176.9
2018	16	238.0	--	--	238.0	5.0	243.0
2019	25	295.7	--	--	295.7	13.6	309.3
2020	39	338.8	--	--	338.8	19.5	358.3
2021	65	328.6	--	--	328.6	22.0	350.6
2022	53	381.9	--	--	381.9	22.8	404.7
2023	45	364.9	--	--	364.9	23.5	388.4
2024	43	293.8	--	--	293.8	18.6	312.4
2025	42	290.3	--	--	290.3	16.8	307.1
2026	48	202.1	--	--	202.1	6.7	208.8
2027	34	153.6	--	--	153.6	4.4	158.0
2028	5	112.2	--	--	112.2	2.8	115.0
2029	--	52.8	--	--	52.8	--	52.8
Subtotal	427	3243.9	--	4.1	3248.0	155.7	3403.7

Cost Quantity Information 2035 | Procurement | Other Procurement, Army		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2009 $M**
2016	--	--
2017	12	191.2
2018	16	238.0
2019	25	295.7
2020	39	338.8
2021	65	328.6
2022	53	381.9
2023	45	364.9
2024	43	293.8
2025	42	290.3
2026	48	202.1
2027	34	153.6
2028	5	165.0
2029	--	--
Subtotal	427	3243.9

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	12/23/2009	12/23/2009
Approved Quantity	27	27
Reference	Milestone B ADM	MS B ADM
Start Year	2015	2017
End Year	2016	2018

Foreign Military Sales

Notes

The IAMD program continues to refine the program protection techniques and incorporate them into the baseline program design. Interest in the system has been expressed by the Netherlands, Germany, Poland, Saudi Arabia and the United Kingdom.

Nuclear Costs

None

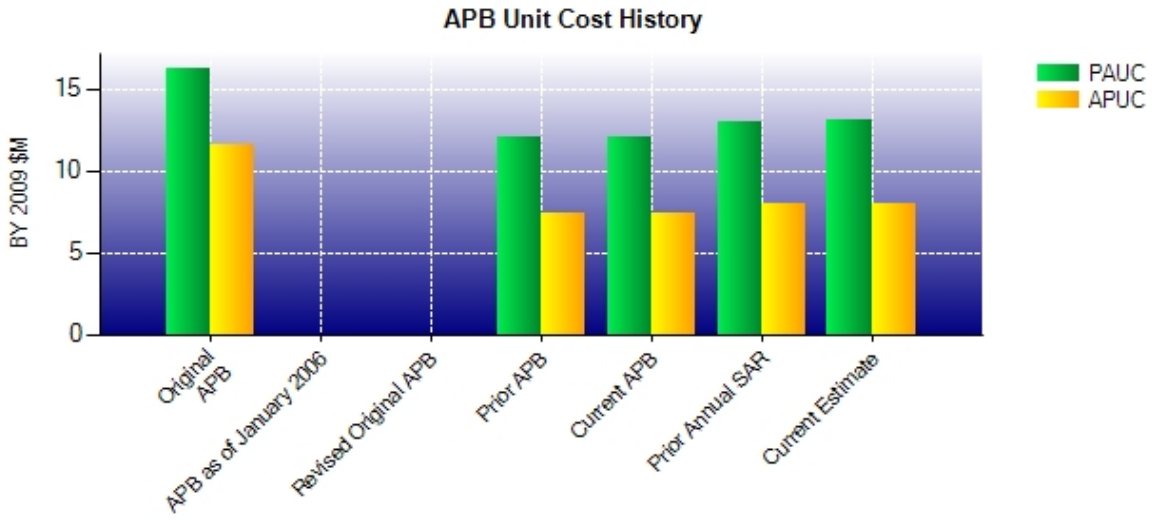
Unit Cost

Unit Cost Report

Item	BY 2009 $M Current UCR Baseline (Oct 2014 APB)	BY 2009 $M Current Estimate (Dec 2015 SAR)	% Change
Program Acquisition Unit Cost			
Cost	5374.3	5788.7	
Quantity	447	443	
Unit Cost	12.023	13.067	+8.68
Average Procurement Unit Cost			
Cost	3174.8	3403.7	
Quantity	431	427	
Unit Cost	7.366	7.971	+8.21

Item	BY 2009 $M Original UCR Baseline (Jun 2010 APB)	BY 2009 $M Current Estimate (Dec 2015 SAR)	% Change
Program Acquisition Unit Cost			
Cost	4806.8	5788.7	
Quantity	296	443	
Unit Cost	16.239	13.067	-19.53
Average Procurement Unit Cost			
Cost	3316.0	3403.7	
Quantity	285	427	
Unit Cost	11.635	7.971	-31.49

Unit Cost History



Item	Date	BY 2009 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Jun 2010	16.239	11.635	19.382	14.611
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Nov 2012	12.023	7.366	14.187	9.140
Current APB	Oct 2014	12.023	7.366	14.187	9.140
Prior Annual SAR	Dec 2014	12.947	7.948	15.783	10.305
Current Estimate	Dec 2015	13.067	7.971	15.829	10.256

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
19.566	0.184	-1.980	-0.122	0.385	-0.040	0.000	-2.164	-3.737	15.829

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.611	0.187	-0.152	-0.127	0.000	-2.018	0.000	-2.245	-4.355	10.256

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Dec 2009	N/A	Dec 2009
Milestone C	N/A	Dec 2014	N/A	Aug 2016
IOC	N/A	Aug 2016	N/A	Jun 2018
Total Cost (TY $M)	N/A	5791.6	N/A	7012.3
Total Quantity	N/A	296	N/A	443
PAUC	N/A	19.566	N/A	15.829

Cost Variance

Summary TY $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Development Estimate)	1627.5	4164.1	--	5791.6
Previous Changes				
Economic	+12.1	+114.2	--	+126.3
Quantity	-10.8	+2009.9	--	+1999.1
Schedule	--	-95.2	--	-95.2
Engineering	+170.6	--	--	+170.6
Estimating	+792.4	-832.9	--	-40.5
Other	--	--	--	--
Support	--	-960.0	--	-960.0
Subtotal	+964.3	+236.0	--	+1200.3
Current Changes				
Economic	-10.1	-34.5	--	-44.6
Quantity	--	--	--	--
Schedule	--	+41.1	--	+41.1
Engineering	--	--	--	--
Estimating	+51.2	-28.6	--	+22.6
Other	--	--	--	--
Support	--	+1.3	--	+1.3
Subtotal	+41.1	-20.7	--	+20.4
Total Changes	+1005.4	+215.3	--	+1220.7
CE - Cost Variance	2632.9	4379.4	--	7012.3
CE - Cost & Funding	2632.9	4379.4	--	7012.3

Summary BY 2009 $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Development Estimate)	1540.6	3316.0	--	4856.6
Previous Changes				
Economic	--	--	--	--
Quantity	-9.2	+1436.6	--	+1427.4
Schedule	--	+3.0	--	+3.0
Engineering	+148.7	--	--	+148.7
Estimating	+661.2	-620.4	--	+40.8
Other	--	--	--	--
Support	--	-741.2	--	-741.2
Subtotal	+800.7	+78.0	--	+878.7
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+43.7	+8.4	--	+52.1
Other	--	--	--	--
Support	--	+1.3	--	+1.3
Subtotal	+43.7	+9.7	--	+53.4
Total Changes	+844.4	+87.7	--	+932.1
CE - Cost Variance	2385.0	3403.7	--	5788.7
CE - Cost & Funding	2385.0	3403.7	--	5788.7

Previous Estimate: December 2014

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-10.1
Revised estimate for test equipment and test and integration efforts resulting from test plan changes. (Estimating)	+39.7	+46.8
Adjustment for current and prior escalation. (Estimating)	+4.0	+4.4
RDT&E Subtotal	+43.7	+41.1

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-34.5
Accelerated procurement buy profile from FY 2017 to FY 2028 to align with fielding synchronization efforts. (Schedule)	0.0	+41.1
Revised estimate for IAMD Battle Command System components resulting from design maturation. (Estimating)	+8.2	-28.8
Adjustment for current and prior escalation. (Estimating)	+0.2	+0.2
Increase in Initial Spares resulting from design maturation. (Support)	+1.3	+1.3
Procurement Subtotal	+9.7	-20.7

Contracts

Contract Identification

Appropriation: RDT&E

Contract Name: IAMD Battle Command System (IBCS) Development Program

Contractor: Northrop Grumman Space & Mission Systems Corporpation

Contractor Location: 213 Wynn Drive
Huntsville, AL 35805

Contract Number: W31P4Q-08-C-0418

Contract Type: Cost Plus Incentive Fee (CPIF)

Award Date: December 30, 2009

Definitization Date: December 30, 2009

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
420.0	N/A	11	819.8	N/A	11	814.4	814.4

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to an increase in contract cost since original contract value. Several modifications have been issued to adjust the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)	-9.0	-0.6
Previous Cumulative Variances	-4.3	-4.5
Net Change	-4.7	+3.9

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to the discovery of software issues during software integration at the system of systems level which required unplanned additional effort. No impact to the Estimate at Completion is anticipated.

The favorable net change in the schedule variance is due to the award of modification #20 (P00118) which extended the contract to November 30, 2016.

Notes

This contract is more than 90% complete; therefore, this is the final report for this contract.

Contract Identification

Appropriation: RDT&E
Contract Name: A-Kit Development
Contractor: Raytheon Company
Contractor Location: 401 Jan Davis Dr
Huntsville, AL 35806
Contract Number: W31P4Q-12-C-0120
Contract Type: Cost Plus Fixed Fee (CPFF)
Award Date: February 14, 2012
Definitization Date: September 19, 2012

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
126.0	N/A	1	152.8	N/A	1	152.4	152.4

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to an increase in contract cost. Contract modification P00039 was received on April 28, 2015 which extended the period of performance to November 30, 2015 and added scope for the continuation of IAMD support requirements, described as Phase 2 Extension.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)	-0.2	0.0
Previous Cumulative Variances	-1.0	-0.1
Net Change	+0.8	+0.1

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to completion of the most challenging phase of the program. As a result, the effort going forward became less complex.

The favorable net change in the schedule variance is due to

Notes

This contract is more than 90% complete; therefore, this is the final report for this contract.

Deliveries and Expenditures

Deliveries				
Delivered to Date	**Planned to Date**	**Actual to Date**	**Total Quantity**	**Percent Delivered**
Development	12	12	16	75.00%
Production	0	0	427	0.00%
Total Program Quantity Delivered	12	12	443	2.71%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	7012.3	Years Appropriated	11
Expended to Date	1385.3	Percent Years Appropriated	45.83%
Percent Expended	19.76%	Appropriated to Date	1892.0
Total Funding Years	24	Percent Appropriated	26.98%

The above data is current as of February 09, 2016.

Expenditures to Date decreased from the FY 2016 PB due to miscalculation; the correct Expenditures to Date are included in this report.

Operating and Support Cost

Cost Estimate Details

Date of Estimate: February 20, 2014
Source of Estimate: POE
Quantity to Sustain: 427
Unit of Measure: Engagement Operations Center (EOC)
Service Life per Unit: 20.00 Years
Fiscal Years in Service: FY 2018 - FY 2048

The difference in the acquisition quantity of 443 and the sustainment quantity of 427 is due to 16 RDT&E prototypes that are not to be sustained.

An IAMD Engagement Operations Center provides common mission command through an IAMD Battle Command System with full Engagement Operations/Force Operations capability.

Sustainment Strategy

The IAMD Program will be supported by a combination of Army organic and contractor-provided resources through a Performance Based Logistics (PBL) Product Support Strategy (PSS). Under PBL sustainment constructs, the IAMD Project Office will utilize performance based sustainment methods and performance metrics which will include a public-private partnership. The sustainment decision will be the result of a Product Support Business Case Analysis. The IAMD PBL PSS provides a sustainment level product support decision that will provide the human interface, tools, and resources needed to sustain the IAMD equipment throughout its life cycle.

Antecedent Information

No Antecedent

Annual O&S Costs BY2009 $K

Cost Element	IAMD Average Annual Cost Per Engagement Operations Center (EOC)	No Antecedent System (Antecedent)
Unit-Level Manpower	0.000	--
Unit Operations	0.800	--
Maintenance	124.500	--
Sustaining Support	91.400	--
Continuing System Improvements	62.400	--
Indirect Support	0.000	--
Other	0.000	--
Total	279.100	--

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Item	Total O&S Cost $M			
	IAMD			No Antecedent System (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	2235.9	2459.5	2383.5	N/A
Then Year	3333.3	N/A	3454.2	N/A

Equation to Translate Annual Cost to Total Cost

Average annual cost per unit is based on 427 units x 20-years of O&S. (Total Cost = Average Annual Cost per unit ($279.1) x number of units (427) x life per unit (20-years) = $2,383.5M (BY$ 2009)

O&S Cost Variance		
Category	**BY 2009 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2014 SAR	2383.5	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	2383.5	

Disposal Estimate Details

Date of Estimate: February 20, 2014

Source of Estimate: POE

Disposal/Demilitarization Total Cost (BY 2009 $M): Total costs for disposal of all Engagement Operations Center (EOC) are 22.3