# Selected Acquisition Report (SAR)

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


## IAMD

As of December 31, 2010

Defense Acquisition Management
Information Retrieval
(DAMIR)

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## Program Information

**Designation And Nomenclature (Popular Name)**

Army Integrated Air & Missile Defense (Army IAMD)

**DoD Component**

Army

## Responsible Office

**Responsible Office**

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**Date Assigned** June 10, 2007

## References

**SAR Baseline (Development Estimate)**

FY2011 President's Budget dated February 1, 2010

**Approved APB**

Defense Acquisition Executive Approved Acquisition Program Baseline (APB) dated June 28, 2010

## Mission and Description

The mission of the Army IAMD Project Office is to define, develop, acquire, field and sustain the Army's portion of the Joint Integrated Air And Missile Defense (IAMD) System of Systems capability to be deployed as integrated components in Army, Joint, Interagency, Intergovernmental and Multi-National (JIIM) net-centric architectures. Additionally, the Army IAMD Project Office will develop, acquire, field and sustain the Army IAMD Battle Command System (IBCS) component of the architecture and integrate externally developed sensors and shooters to provide an effective IAMD capability.

The Army IAMD program will allow transformation to a network-centric system of systems capability (also referred to as "Plug and Fight") that integrates all AMD sensors, weapons, and command and control. The Army IAMD program will integrate the Phased Array Tracking to Intercept of Target (PATRIOT), Surface Launched Advanced Medium Range Air-To-Air Missile (SLAMRAAM), Improved Sentinel, and Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) components to support the engagement of air breathing targets, Cruise Missiles, Unmanned Aerial Vehicles (UAVs), and Tactical Ballistic Missiles (TBMs) 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.

The common battle command element (IBCS) provides the functional capabilities to control and manage the IAMD sensors and weapons via the Integrated Fire Control (IFC) Network capability for fire control connectivity and enabling distributed operations. Central to the Army 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 (GIG) for Joint Operations, obtaining a Joint Single Integrated Air Picture (SIAP), establishing Engage on Network capabilities, enabling Net-Ready operations for Army Air and Missile Defense (AMD) components, and providing a common IAMD Battle Management capability. This innovative approach at modernization will reduce manpower requirements, operation and support costs, and enhance training.

## Executive Summary

**Issue:**

The Army Integrated Air and Misssile Defense (IAMD) Project Office (PO) was marked in FY 2010 at the $166M level. The program was marked by the authorization committees at $251M in FY 2011. Due to current Continuing Resolution Authority (CRA) funding limitations, IAMD will realize an $85M decrement in FY 2011 if CRA remains for the entire year resulting in significant impacts to the program. These impacts include: (1) Up to a 12-month slip to the Initial Operational Capability (IOC) (Current IOC FY 2016) (2) Estimated additional cost to the program of $189.4M (3) Loss of prime contract effort (approximately 200 jobs in Alabama) (4) IAMD Critical Design Review (CDR) and Office of Secretary of Defense (OSD) Defense Acquisition Board In-Process Review delayed 12 months (5) Delay to Joint Track Management Capability Demo with Navy currently scheduled for August 2011 (6) IAMD OSD Overarching Integrated Product Team update scheduled for March 2011 will be delayed approximately four months pending IAMD program realignment.

**Accomplishments:**

IAMD Battle Command System (IBCS) Engagement Operations Center (EOC) Prototype Rollout. The Northrop Grumman Corporation hosted an IAMD IBCS rollout ceremony in Huntsville, Alabama on August 11, 2010, to deliver the first IBCS EOC prototype to the United States Army. The IBCS will serve as a backbone for common command and control among Army Air Defense Artillery forces and fundamentally change how we fight air and missile defense across full spectrum operations.

Component Program of Record Preliminary Design Reviews (PDR). The IAMD Raytheon A-Kit PDR was held on October 20-21, 2010. The PDR agenda included discussion of the progress and status of the Raytheon preliminary design and allocated baseline for the Phased Array Tracking to Intercept of Target (PATRIOT), Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), and Surface Launched Advanced Medium Range Air-To-Air Missile (SLAMRAAM) IBCS adapted components. The Sentinel A-Kit PDR was held on November 3, 2010, at the IAMD PO. The PDR agenda included discussion of the requirements, A-Kit software design, B-Kit integration hardware design, Safety, Specialty Engineering (Information Assurance, Configuration Management, Verification & Validation, Logistics, Foreign Military Sales, Human Factors, Reliability-Availability-Maintainabillity, Risk/Technical Performance Measurements, and Life Cycle Cost Estimates.)

IAMD Delta PDR. The IAMD Project Office conducted the IAMD delta PDR on November 16, 2010. The IAMD delta PDR presented a roll-up and integration of previously held subsystem PDRs for the IBCS by Northrop Grumman; the PATRIOT,JLENS, and SLAMRAAM A-Kit PDRs by Raytheon; and the Sentinel A-Kit PDR by the Cruise Missile Defense Systems (CMDS) Project Office. The IAMD Project Manager concluded that remaining tasks necessary to finalize the preliminary design were understood and that the IAMD project could move into the CDR and detailed design phase with acceptable risk.

The Army's decision to not procure the Medium Extended Air Defense System (MEADS) required reconsideration of putting Patriot launchers and radars directly onto the Integrated Fire Control Network (IFCN). After numerous trade studies and a delta PDR, the decision was made to remove the Engagment Control System (ECS) and place the PATRIOT launchers and radars directly onto the IFCN. The program always intended to net these systems and accelerating these changes creates no changes to any approved requirements of the program.

The IAMD Milestone B (MS B) Acquisition Decision Memorandum (ADM) and MS B documentation clearly supported the open architecture approach intended to place all primary subsystems and sensors on the net. Placing the radars and launchers directly on the IFCN is a logical and timely effort to meet program requirements.

Technology Maturity Assessment (TMA) Update. The IAMD Project Manager (PM) and the Northrop Grumman IBCS contractor team presented the Milestone B Acquisition Decision Memorandum-directed TMA update, including the supporting body of evidence, to the Assistant Secretary of the Army (Acqusition, Logistics and Technology)

Independent Review Team (IRT) on October 19-21, 2010. Supplemental data was generated, analyzed and presented to the IRT on December 15, 2010. As a result, an IRT assessed all IAMD Critical Technology Elements (CTEs) at a Technology Readiness Level of six (TRL-6).

There are no significant software related issues with this program at this time.

## Threshold Breaches

| APB Breaches | | |
|---|---|---|
| **Schedule** | | ☐ |
| **Performance** | | ☐ |
| **Cost** | RDT&E | ☑ |
| | Procurement | ☐ |
| | MILCON | ☐ |
| | Acq O&M | ☐ |
| **Unit Cost** | PAUC | ☐ |
| | APUC | ☐ |

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

**Explanation of Breach**

The RDT&E breach is a result of additional funds provided in FY 2014-2016 to accommodate a change in the approach for placing the PATRIOT radars and launchers directly on the Integrated Fire Control Network (IFCN).

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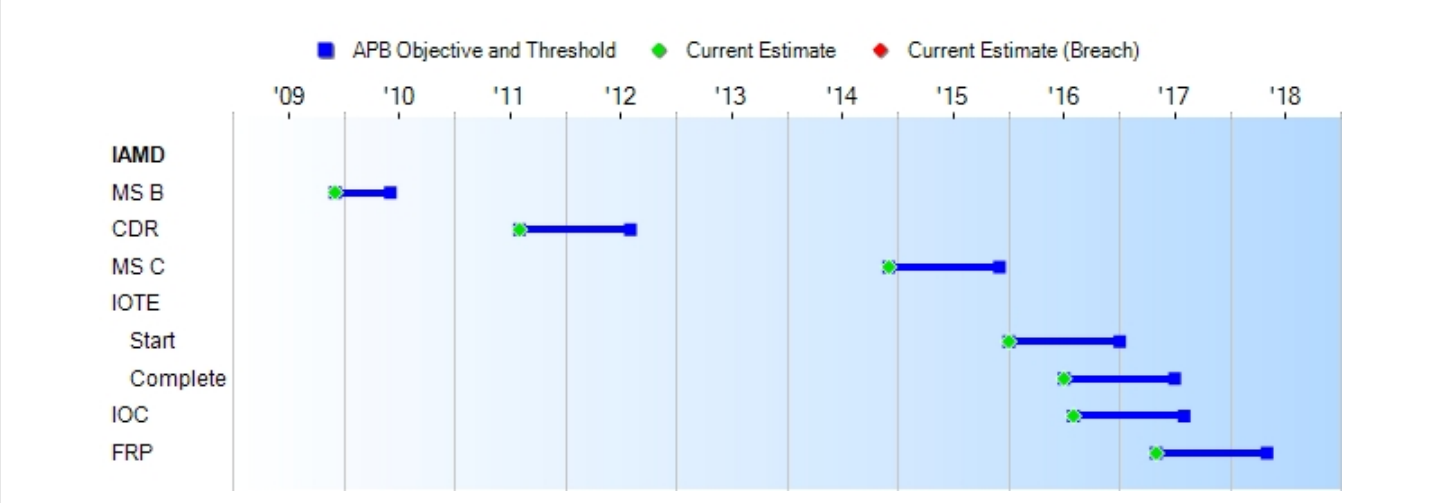
The IAMD Milestone B (MS B) Acquisition Decision Memorandum (ADM) and MS B documentation clearly supported the open architecture approach intended to place all primary subsystems and sensors on the net. Placing radars and launchers directly on the IFCN is a logical and timely effort to meet program requirements.

## Schedule




| Milestones | SAR Baseline Dev Est | Current APB Development Objective/Threshold | | Current Estimate |
|---|---|---|---|---|
| MS B | DEC 2009 | DEC 2009 | JUN 2010 | DEC 2009 |
| CDR | AUG 2011 | AUG 2011 | AUG 2012 | AUG 2011 |
| MS C | DEC 2014 | DEC 2014 | DEC 2015 | DEC 2014 |
| IOTE | | | | |
| Start | JAN 2016 | JAN 2016 | JAN 2017 | JAN 2016 |
| Complete | JUL 2016 | JUL 2016 | JUL 2017 | JUL 2016 |
| IOC | AUG 2016 | AUG 2016 | AUG 2017 | AUG 2016 |
| FRP | MAY 2017 | MAY 2017 | MAY 2018 | MAY 2017 |

### Acronyms And Abbreviations

CDR - Critical Design Review
FRP - Full Rate Production
IOC - Initial Operational Capability
IOTE - Initial Operational Test and Evaluation
MS B - Milestone B
MS C - Milestone C

### Change Explanations

None

## Performance

| Characteristics | SAR Baseline Dev Est | 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 | 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 followingDISR 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, | 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, | TBD | The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applic-able 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 |

| | | | | | |
|---|---|---|---|---|---|
| | 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. | 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. | 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. | | availability, integrity, authentica-tion, 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. |
| Integrated Defense Effectiveness | To support attainment of a commander's defense effectiveness objectives, which would normally range from 0.50% to 0.99%, the Army IAMD | To support attainment of a commander's defense effectiveness objectives, which would normally range from 0.5 to 0.99, the Army IAMD SoS | To support attainment of a commander's defense effectiveness objectives, which would normally range from 0.5 to 0.99, the Army IAMD SoS | TBD | To support attainment of a comman-der'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 | 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 | 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 | | 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 |

| | | | | | |
|---|---|---|---|---|---|
| | 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. | 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. | 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. | | 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 management, track management, engagement planning, | 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, | 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, | 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/SLA MRAAM Platoon with the Increment 2 equipped Task Force. | 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/SLA MRAAM Platoon with the Increment 2 equipped Task Force. | 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/SLA MRAAM Platoon with the Increment 2 equipped Task Force. | | 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 Incre-ment 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 operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understandin | All Army IAMD SoS common C2 vehicle cabs and manned 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 | The Army IAMD SoS common C2 equipment shall be designed to be operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understandin | TBD | The Army IAMD SoS common C2 equipment shall be designed to be operated by Soldiers wearing body armor and equip-ped with appro priate weapons; shall have situational awareness and under-standing commensur- |

| | | | | | |
|---|---|---|---|---|---|
| | g 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 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 | transport or operations shall mitigate the effects of 7.62mm rounds and below. | g 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 | | ate 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 decontamina-tion procedures in such a manner that it can quickly return (within 30 min) to full opera-tional capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor protection sufficient to repel enemy small arms as devel-oped by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamina- |

| | | | | | |
|---|---|---|---|---|---|
| | system to prevent contaminatio n during a CBRNE event that is sustainable through decontaminat ion. | | system to prevent contaminatio n during a CBRNE event that is sustainable through decontaminat ion. | | tion during a CBRNE event that is sustainable through decontami-nation. |

**Requirements Source:**
The Integrated Air and Missile Defense (IAMD) Capability Development Document (CDD) was revalidated by the Joint Requirements Oversight Council Memorandum (JROCM) 073-10 dated May 17, 2010.

## 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 and Profile Registry
FMTV - Family of Medium Tactical Vehicles
GIG IT - Global Information Grid Information Technology
IA - Information Assurance
ID - Identification
KIP - Key Information Profile
MOPP 4 - Mission Oriented Protective Posture
NCOW RM - Net-Centric Operations and Warfare Reference Model
PM - Product Manager
SLAMRAAM - Surface-Launched Advanced Medium Range Air-to-Air Missile
SoS - System of Systems
TBM - Tactical Ballistic Missile
TV - Technical View, Standards Profile

## Change Explanations

None

## Memo

## Track To Budget

| RDT&E | | | | |
|---|---|---|---|---|
| APPN 2040 | BA 04 | PE 0603327A | (Army) | |
| | Project S34 | AMD System of Systems Engineering and Integration | | (Sunk) |
| APPN 2040 | BA 05 | PE 0605457A | (Army) | |
| | Project S40 | Army Integrated Air and Missile Defense | | |
| | IAMD Project Office | EMD program funding begins in FY11. | | |

| Procurement | | | | |
|---|---|---|---|---|
| APPN 2035 | BA 02 | PE 5075000BZ | (Army) | |
| | | IAMD Battle Command System | | |

## Cost and Funding

## Cost Summary

**Total Acquisition Cost and Quantity**

| | BY2009 $M | | | BY2009 $M | TY $M | | |
|---|---|---|---|---|---|---|---|
| Appropriation | SAR Baseline Dev Est | Current APB Development Objective/Threshold | | Current Estimate | SAR Baseline Dev Est | Current APB Development Objective | Current Estimate |
| RDT&E | 1540.6 | 1490.8 | 1639.9 | **1950.7** [1] | 1627.5 | 1573.1 | 2080.9 |
| Procurement | 3316.0 | 3316.0 | 3647.6 | 3389.0 | 4164.1 | 4164.1 | 4239.5 |
| Flyaway | 2420.4 | -- | -- | 2491.6 | 3030.6 | -- | 3106.1 |
| Recurring | 2370.4 | -- | -- | 2441.6 | 2970.9 | -- | 3046.4 |
| Non Recurring | 50.0 | -- | -- | 50.0 | 59.7 | -- | 59.7 |
| Support | 895.6 | -- | -- | 897.4 | 1133.5 | -- | 1133.4 |
| Other Support | 734.4 | -- | -- | 736.0 | 931.5 | -- | 931.4 |
| Initial Spares | 161.2 | -- | -- | 161.4 | 202.0 | -- | 202.0 |
| MILCON | 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 |
| Total | 4856.6 | 4806.8 | N/A | 5339.7 | 5791.6 | 5737.2 | 6320.4 |

[1] ***APB Breach***

The Independent Cost Estimate (ICE) to support the IAMD Increment 2 program's Milestone B approval, like all life-cycle cost estimates previously performed by the Cost Analysis Improvement Group (CAIG), is not consistent with the 80% confidence level specified in the Weapon System Acquisition Reform Act of 2009.

| Quantity | SAR Baseline Dev Est | Current APB Development | Current Estimate |
|---|---|---|---|
| RDT&E | 11 | 11 | 11 |
| Procurement | 285 | 285 | 285 |
| Total | 296 | 296 | 296 |

The Army IAMD Unit of Measure (UOM) - 11 Fully Configured Research Development Test and Evaluation units and 285 Army IAMD Battle Command Systems (IBCSs) Procurement Quantities which enable System of Systems operation of Army Air and Missile Defense Units as defined in the Army IAMD Increment 2 Capabilities Development Document.

## Cost and Funding

## Funding Summary

**Appropriation and Quantity Summary**
**FY2012 President's Budget / December 2010 SAR (TY$ M)**

| Appropriation | Prior | FY2011 | FY2012 | FY2013 | FY2014 | FY2015 | FY2016 | To Complete | Total |
|---|---|---|---|---|---|---|---|---|---|
| RDT&E | 387.4 | 251.1 | 270.6 | 250.9 | 346.3 | 298.9 | 275.7 | 0.0 | 2080.9 |
| Procurement | 0.0 | 0.0 | 0.0 | 0.0 | 23.6 | 100.6 | 256.8 | 3858.5 | 4239.5 |
| 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 2012 Total | 387.4 | 251.1 | 270.6 | 250.9 | 369.9 | 399.5 | 532.5 | 3858.5 | 6320.4 |
| PB 2011 Total | 388.8 | 251.1 | 271.5 | 251.6 | 253.6 | 230.7 | 285.8 | 3858.5 | 5791.6 |
| Delta | -1.4 | 0.0 | -0.9 | -0.7 | 116.3 | 168.8 | 246.7 | 0.0 | 528.8 |

| Quantity | Undistributed | Prior | FY2011 | FY2012 | FY2013 | FY2014 | FY2015 | FY2016 | To Complete | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Development | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Production | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 14 | 258 | 285 |
| PB 2012 Total | 11 | 0 | 0 | 0 | 0 | 0 | 13 | 14 | 258 | 296 |
| PB 2011 Total | 11 | 0 | 0 | 0 | 0 | 0 | 13 | 14 | 258 | 296 |
| Delta | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Cost and Funding

## Annual Funding By Appropriation

**Annual Funding TY$**
**2040 | RDT&E | Research, Development, Test, and Evaluation, Army**

| Fiscal Year | Quantity | End Item Recurring Flyaway TY $M | Non End Item Recurring Flyaway TY $M | Non Recurring Flyaway TY $M | Total Flyaway TY $M | Total Support TY $M | Total Program TY $M |
|---|---|---|---|---|---|---|---|
| 2006 | -- | -- | -- | -- | -- | -- | 23.7 |
| 2007 | -- | -- | -- | -- | -- | -- | 36.3 |
| 2008 | -- | -- | -- | -- | -- | -- | 48.0 |
| 2009 | -- | -- | -- | -- | -- | -- | 114.7 |
| 2010 | -- | -- | -- | -- | -- | -- | 164.7 |
| 2011 | -- | -- | -- | -- | -- | -- | 251.1 |
| 2012 | -- | -- | -- | -- | -- | -- | 270.6 |
| 2013 | -- | -- | -- | -- | -- | -- | 250.9 |
| 2014 | -- | -- | -- | -- | -- | -- | 346.3 |
| 2015 | -- | -- | -- | -- | -- | -- | 298.9 |
| 2016 | -- | -- | -- | -- | -- | -- | 275.7 |
| **Subtotal** | **11** | **--** | **--** | **--** | **--** | **--** | **2080.9** |

**Annual Funding BY$**
**2040 | RDT&E | Research, Development, Test, and Evaluation, Army**

| Fiscal Year | Quantity | End Item Recurring Flyaway BY 2009 $M | Non End Item Recurring Flyaway BY 2009 $M | Non Recurring Flyaway BY 2009 $M | Total Flyaway BY 2009 $M | Total Support BY 2009 $M | Total Program BY 2009 $M |
|---|---|---|---|---|---|---|---|
| 2006 | -- | -- | -- | -- | -- | -- | 24.8 |
| 2007 | -- | -- | -- | -- | -- | -- | 37.1 |
| 2008 | -- | -- | -- | -- | -- | -- | 48.1 |
| 2009 | -- | -- | -- | -- | -- | -- | 113.6 |
| 2010 | -- | -- | -- | -- | -- | -- | 161.3 |
| 2011 | -- | -- | -- | -- | -- | -- | 242.2 |
| 2012 | -- | -- | -- | -- | -- | -- | 256.9 |
| 2013 | -- | -- | -- | -- | -- | -- | 234.3 |
| 2014 | -- | -- | -- | -- | -- | -- | 317.9 |
| 2015 | -- | -- | -- | -- | -- | -- | 269.8 |
| 2016 | -- | -- | -- | -- | -- | -- | 244.7 |
| **Subtotal** | **11** | **--** | **--** | **--** | **--** | **--** | **1950.7** |

**Annual Funding TY$**
**2035 | Procurement | Other Procurement, Army**

| Fiscal Year | Quantity | End Item Recurring Flyaway TY $M | Non End Item Recurring Flyaway TY $M | Non Recurring Flyaway TY $M | Total Flyaway TY $M | Total Support TY $M | Total Program TY $M |
|---|---|---|---|---|---|---|---|
| 2014 | -- | 23.6 | -- | -- | 23.6 | -- | 23.6 |
| 2015 | 13 | 59.1 | -- | 11.6 | 70.7 | 29.9 | 100.6 |
| 2016 | 14 | 190.0 | -- | 11.8 | 201.8 | 55.0 | 256.8 |
| 2017 | 22 | 183.0 | -- | 12.0 | 195.0 | 77.2 | 272.2 |
| 2018 | 32 | 281.5 | -- | 12.5 | 294.0 | 92.9 | 386.9 |
| 2019 | 32 | 276.8 | -- | -- | 276.8 | 92.9 | 369.7 |
| 2020 | 31 | 277.1 | -- | -- | 277.1 | 89.2 | 366.3 |
| 2021 | 25 | 259.1 | -- | -- | 259.1 | 72.0 | 331.1 |
| 2022 | 21 | 228.3 | -- | -- | 228.3 | 68.7 | 297.0 |
| 2023 | 20 | 227.5 | -- | -- | 227.5 | 69.7 | 297.2 |
| 2024 | 20 | 227.4 | -- | -- | 227.4 | 71.0 | 298.4 |
| 2025 | 10 | 138.1 | -- | -- | 138.1 | 56.4 | 194.5 |
| 2026 | 9 | 130.3 | -- | -- | 130.3 | 66.9 | 197.2 |
| 2027 | 9 | 132.4 | -- | -- | 132.4 | 68.5 | 200.9 |
| 2028 | 9 | 134.9 | -- | -- | 134.9 | 70.1 | 205.0 |
| 2029 | 9 | 137.4 | -- | -- | 137.4 | 71.5 | 208.9 |
| 2030 | 9 | 139.9 | -- | -- | 139.9 | 73.0 | 212.9 |
| 2031 | -- | -- | -- | 11.8 | 11.8 | 8.5 | 20.3 |
| **Subtotal** | **285** | **3046.4** | **--** | **59.7** | **3106.1** | **1133.4** | **4239.5** |

**Annual Funding BY$**
**2035 | Procurement | Other Procurement, Army**

| Fiscal Year | Quantity | End Item Recurring Flyaway BY 2009 $M | Non End Item Recurring Flyaway BY 2009 $M | Non Recurring Flyaway BY 2009 $M | Total Flyaway BY 2009 $M | Total Support BY 2009 $M | Total Program BY 2009 $M |
|---|---|---|---|---|---|---|---|
| 2014 | -- | 21.6 | -- | -- | 21.6 | -- | 21.6 |
| 2015 | 13 | 53.1 | -- | 10.4 | 63.5 | 26.9 | 90.4 |
| 2016 | 14 | 167.8 | -- | 10.4 | 178.2 | 48.7 | 226.9 |
| 2017 | 22 | 159.0 | -- | 10.4 | 169.4 | 67.0 | 236.4 |
| 2018 | 32 | 240.4 | -- | 10.7 | 251.1 | 79.4 | 330.5 |
| 2019 | 32 | 232.5 | -- | -- | 232.5 | 78.0 | 310.5 |
| 2020 | 31 | 228.8 | -- | -- | 228.8 | 73.7 | 302.5 |
| 2021 | 25 | 210.4 | -- | -- | 210.4 | 58.4 | 268.8 |
| 2022 | 21 | 182.3 | -- | -- | 182.3 | 54.8 | 237.1 |
| 2023 | 20 | 178.6 | -- | -- | 178.6 | 54.7 | 233.3 |
| 2024 | 20 | 175.5 | -- | -- | 175.5 | 54.8 | 230.3 |
| 2025 | 10 | 104.8 | -- | -- | 104.8 | 42.8 | 147.6 |
| 2026 | 9 | 97.2 | -- | -- | 97.2 | 50.0 | 147.2 |
| 2027 | 9 | 97.2 | -- | -- | 97.2 | 50.2 | 147.4 |
| 2028 | 9 | 97.3 | -- | -- | 97.3 | 50.6 | 147.9 |
| 2029 | 9 | 97.5 | -- | -- | 97.5 | 50.7 | 148.2 |
| 2030 | 9 | 97.6 | -- | -- | 97.6 | 50.9 | 148.5 |
| 2031 | -- | -- | -- | 8.1 | 8.1 | 5.8 | 13.9 |
| **Subtotal** | **285** | **2441.6** | **--** | **50.0** | **2491.6** | **897.4** | **3389.0** |

**Cost Quantity Information**
**2035 | Procurement | Other Procurement, Army**

| Fiscal Year | Quantity | End Item Recurring Flyaway (Aligned with Quantity) BY 2009 $M |
|---|---|---|
| 2014 | -- | -- |
| 2015 | 13 | 74.7 |
| 2016 | 14 | 167.8 |
| 2017 | 22 | 159.0 |
| 2018 | 32 | 240.4 |
| 2019 | 32 | 232.5 |
| 2020 | 31 | 228.8 |
| 2021 | 25 | 210.4 |
| 2022 | 21 | 182.3 |
| 2023 | 20 | 178.6 |
| 2024 | 20 | 175.5 |
| 2025 | 10 | 104.8 |
| 2026 | 9 | 97.2 |
| 2027 | 9 | 97.2 |
| 2028 | 9 | 97.3 |
| 2029 | 9 | 97.5 |
| 2030 | 9 | 97.6 |
| 2031 | -- | -- |
| **Subtotal** | **285** | **2441.6** |

## Low Rate Initial Production

| | Initial LRIP Decision | Current Total LRIP |
|---|---|---|
| **Approval Date** | 12/23/2009 | 12/23/2009 |
| **Approved Quantity** | 27 | 27 |
| **Reference** | ADM dated Dec 23, 2009 | ADM dated Dec 23, 2009 |
| **Start Year** | 2015 | 2015 |
| **End Year** | 2017 | 2017 |

## Foreign Military Sales

There are no Foreign Military Sales data to display.

## Nuclear Cost

## Unit Cost

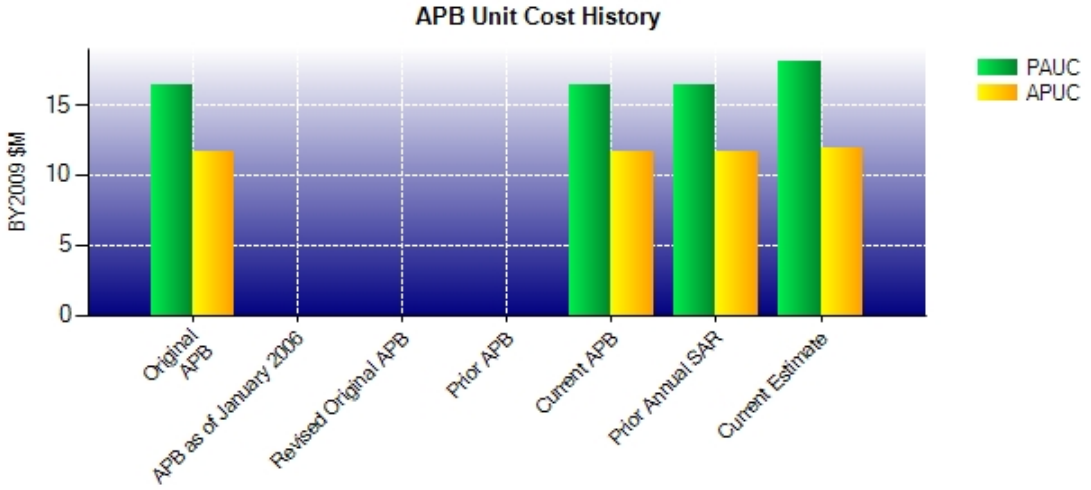
## Unit Cost Report

| Unit Cost | BY2009 $M Current UCR Baseline (JUN 2010 APB) | BY2009 $M Current Estimate (DEC 2010 SAR) | BY % Change |
|---|---|---|---|
| Program Acquisition Unit Cost (PAUC) | | | |
| Cost | 4806.8 | 5339.7 | |
| Quantity | 296 | 296 | |
| Unit Cost | 16.239 | 18.040 | +11.09 |
| Average Procurement Unit Cost (APUC) | | | |
| Cost | 3316.0 | 3389.0 | |
| Quantity | 285 | 285 | |
| Unit Cost | 11.635 | 11.891 | +2.20 |

| Unit Cost | BY2009 $M Original UCR Baseline (JUN 2010 APB) | BY2009 $M Current Estimate (DEC 2010 SAR) | BY % Change |
|---|---|---|---|
| Program Acquisition Unit Cost (PAUC) | | | |
| Cost | 4806.8 | 5339.7 | |
| Quantity | 296 | 296 | |
| Unit Cost | 16.239 | 18.040 | +11.09 |
| Average Procurement Unit Cost (APUC) | | | |
| Cost | 3316.0 | 3389.0 | |
| Quantity | 285 | 285 | |
| Unit Cost | 11.635 | 11.891 | +2.20 |

The Current UCR Baseline values for the PAUC have been corrected to reflect the final approved Acquisition Program Baseline (APB), dated June 2010. The PAUC was revised from 16.407 to 16.239, which increased the BY % Change from 9.95 to 11.09.

## Unit Cost History




| | | BY2009 $M | | TY $M | |
|---|---|---|---|---|---|
| | Date | PAUC | APUC | PAUC | APUC |
| **Original APB** | JUN 2010 | 16.407 | 11.635 | 19.566 | 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** | N/A | N/A | N/A | N/A | N/A |
| **Current APB** | JUN 2010 | 16.407 | 11.635 | 19.566 | 14.611 |
| **Prior Annual SAR** | DEC 2009 | 16.407 | 11.635 | 19.566 | 14.611 |
| **Current Estimate** | DEC 2010 | 18.040 | 11.891 | 21.353 | 14.875 |

### SAR Unit Cost History

### Current SAR Baseline to Current Estimate (TY $M)

| Initial PAUC Dev Est | Changes | | | | | | | | PAUC Current Est |
|---|---|---|---|---|---|---|---|---|---|
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 19.566 | -0.034 | 0.000 | 0.000 | 0.000 | 1.816 | 0.000 | 0.005 | 1.787 | 21.353 |

### Current SAR Baseline to Current Estimate (TY $M)

| Initial APUC Dev Est | Changes | | | | | | | | APUC Current Est |
|---|---|---|---|---|---|---|---|---|---|
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 14.611 | -0.028 | 0.000 | 0.000 | 0.000 | 0.288 | 0.000 | 0.005 | 0.265 | 14.875 |

## SAR Baseline History

| Item/Event | SAR Planning Estimate (PE) | SAR Development Estimate (DE) | SAR Production Estimate (PdE) | 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 | DEC 2014 |
| IOC | N/A | AUG 2016 | N/A | AUG 2016 |
| Total Cost (TY $M) | N/A | 5791.6 | N/A | 6320.4 |
| Total Quantity | N/A | 296 | N/A | 296 |
| Prog. Acq. Unit Cost (PAUC) | N/A | 19.566 | N/A | 21.353 |

## Cost Variance

## Cost Variance Summary

| Summary Then Year $M | | | | |
|---|---|---|---|---|
| | RDT&E | Proc | MILCON | Total |
| SAR Baseline (Dev Est) | 1627.5 | 4164.1 | -- | 5791.6 |
| Previous Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | -- | -- | -- | -- |
| Schedule | -- | -- | -- | -- |
| Engineering | -- | -- | -- | -- |
| Estimating | -- | -- | -- | -- |
| Other | -- | -- | -- | -- |
| Support | -- | -- | -- | -- |
| Subtotal | -- | -- | -- | -- |
| Current Changes | | | | |
| Economic | -1.9 | -8.1 | -- | -10.0 |
| Quantity | -- | -- | -- | -- |
| Schedule | -- | -- | -- | -- |
| Engineering | -- | -- | -- | -- |
| Estimating | +455.3 | +82.0 | -- | +537.3 |
| Other | -- | -- | -- | -- |
| Support | -- | +1.5 | -- | +1.5 |
| Subtotal | +453.4 | +75.4 | -- | +528.8 |
| Total Changes | +453.4 | +75.4 | -- | +528.8 |
| CE - Cost Variance | 2080.9 | 4239.5 | -- | 6320.4 |
| CE - Cost & Funding | 2080.9 | 4239.5 | -- | 6320.4 |

| Summary Base Year 2009 $M | | | | |
|---|---|---|---|---|
| | RDT&E | Proc | MILCON | Total |
| SAR Baseline (Dev Est) | 1540.6 | 3316.0 | -- | 4856.6 |
| Previous Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | -- | -- | -- | -- |
| Schedule | -- | -- | -- | -- |
| Engineering | -- | -- | -- | -- |
| Estimating | -- | -- | -- | -- |
| Other | -- | -- | -- | -- |
| Support | -- | -- | -- | -- |
| Subtotal | -- | -- | -- | -- |
| Current Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | -- | -- | -- | -- |
| Schedule | -- | -- | -- | -- |
| Engineering | -- | -- | -- | -- |
| Estimating | +410.1 | +71.2 | -- | +481.3 |
| Other | -- | -- | -- | -- |
| Support | -- | +1.8 | -- | +1.8 |
| Subtotal | +410.1 | +73.0 | -- | +483.1 |
| Total Changes | +410.1 | +73.0 | -- | +483.1 |
| CE - Cost Variance | 1950.7 | 3389.0 | -- | 5339.7 |
| CE - Cost & Funding | 1950.7 | 3389.0 | -- | 5339.7 |

Previous Estimate: December 2009

| RDT&E | $M | |
|---|---|---|
| **Current Change Explanations** | **Base Year** | **Then Year** |
| Revised escalation indices. (Economic) | N/A | -1.9 |
| Adjustment for current and prior escalation. (Estimating) | +0.2 | +0.2 |
| Increased estimate for development costs of placing the PATRIOT radar and launcher directly on the Integrated Fire Control network. (Estimating) | +409.9 | +455.1 |
| RDT&E Subtotal | +410.1 | +453.4 |

| Procurement | $M | |
|---|---|---|
| **Current Change Explanations** | **Base Year** | **Then Year** |
| Revised escalation indices. (Economic) | N/A | -8.1 |
| Increased estimate for engagement operations center hardware. (Estimating) | +71.2 | +82.0 |
| Increase in Other Support. (Support) | +1.6 | +1.5 |
| Increase in Initial Spares. (Support) | +0.2 | 0.0 |
| Procurement Subtotal | +73.0 | +75.4 |

## Contracts

**Appropriation: RDT&E**

| | |
|---|---|
| Contract Name | **IAMD Battle Command System (IBCS) Development Program** |
| Contractor | Northrop Grumman Space & Mission Systems Corp. |
| Contractor Location | Huntsville, AL 35805 |
| Contract Number, Type | W31P4Q-08-C-0418, CPIF |
| Award Date | December 30, 2009 |
| Definitization Date | August 12, 2010 |

| Initial Contract Price ($M) | | | Current Contract Price ($M) | | | Estimated Price At Completion ($M) | |
|---|---|---|---|---|---|---|---|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 375.0 | N/A | 11 | 378.9 | N/A | 11 | 379.0 | 391.2 |

| Variance | Cost Variance | Schedule Variance |
|---|---|---|
| Cumulative Variances To Date | -3.4 | -7.5 |
| Previous Cumulative Variances | -- | -- |
| Net Change | -3.4 | -7.5 |

**Cost And Schedule Variance Explanations**

The net unfavorable cost variance is a direct result of the Engineering Change Proposal (ECP) negotiation delay and funding constraints which have prevented the ordering of hardware therefore pushing out hardware deliveries and delaying the acceleration of the version 2 software schedules.

The net unfavorable schedule variance is a direct result of the ECP negotiation delay and funding constraints which have prevented the ordering of hardware therefore pushing out hardware deliveries and delaying the acceleration of the version 2 software schedules.

**Contract Comments**

The increase in Target Price of $3.9M is due to additional work for Joint Track Management Capability and Medium Extended Air Defense System (MEADS).

## Deliveries and Expenditures

| Deliveries To Date | Plan To Date | Actual To Date | Total Quantity | Percent Delivered |
|---|---|---|---|---|
| Development | 0 | 0 | 11 | 0.00% |
| Production | 0 | 0 | 285 | 0.00% |
| Total Program Quantities Delivered | 0 | 0 | 296 | 0.00% |

| Expenditures and Appropriations (TY $M) | | | |
|---|---|---|---|
| Total Acquisition Cost | 6320.4 | Years Appropriated | 6 |
| Expenditures To Date | 387.4 | Percent Years Appropriated | 23.08% |
| Percent Expended | 6.13% | Appropriated to Date | 638.5 |
| Total Funding Years | 26 | Percent Appropriated | 10.10% |

Of the $387.4M expenditures to date, $222.7M represent the costs associated with developing Army IAMD Increment 2 technologies and processes that allowed the program to proceed into the Engineering Manufacturing and Development phase of the program.

## Operating and Support Cost

**Assumptions And Ground Rules**

There is no antecedent system.

Costs are from the Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate, dated December 2009.

Estimate is based on approved Army IAMD Cost Analysis Requirements Description, Version 3.5, October 6, 2009.

There are 285 procurement units.

Military Personnel costs for the Composite Battalion will be contained in the Army IAMD Program Office Estimate.

The life of the equipment is 20 years.

Overhaul will occur seven years after fielding.

Technology refresh will occur every five years.

Fielding of IAMD Battle Command System (IBCS) and associated equipment will not increase the manpower in the Composite Battalions.

Contractor Field Service Representatives (CFSR) will be required during Interim Contractor Logisitics Support which will be two years after Initial Operational Capability (IOC).

Demilitarization will occur after 20 years of use.

| Costs BY2009 $K | | |
|---|---|---|
| **Cost Element** | **IAMD<br>Average Annual Cost Per Unit** | **No Antecedent System<br>NA** |
| Unit-Level Manpower | -- | -- |
| Unit Operations | 5.0 | -- |
| Maintenance | 147.0 | -- |
| Sustaining Support | 40.0 | -- |
| Continuing System Improvements | 63.0 | -- |
| Indirect Support | -- | -- |
| Other | -- | -- |
| Total Unitized Cost (Base Year 2009 $) | 255.0 | -- |

| Total O&S Costs $M | IAMD | No Antecedent System |
|---|---|---|
| Base Year | 1450.9 | -- |
| Then Year | 2374.3 | -- |