Selected Acquisition Report (SAR)

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

Integrated Air and Missile Defense (IAMD)

As of December 31, 2012

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Program Information

Program Name

Integrated Air and Missile Defense (IAMD)

DoD Component

Army

Responsible Office

Responsible Office

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Date Assigned September 26, 2011

References

SAR Baseline (Development Estimate)

FY2011 President's Budget dated February 1, 2010

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated November 20, 2012

Mission and Description

The mission of the Army Integrated Air And Missile Defense (IAMD) Project Office 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, 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 Air and Missile Defense (AMD) sensors, weapons, and mission control. The Army IAMD program will integrate the Patriot, 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 the 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. Additionally, the IBCS functionality will be incorporated into Air Defense Airspace Management (ADAM) Cells, Air Defense Artillery (ADA) Brigade Headquarters, and Army Air and Missile Defense Command (AAMDC) Headquarters.

The common IBCS provides the functional capabilities to control and manage the IAMD sensors and weapons via the Integrated Fire Control Network (IFCN) 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 (EOC) 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 AMD components, and providing a common IAMD mission command capability. This innovative approach at modernization will reduce manpower requirements, operation and support costs, and enhance training.

Executive Summary

Software development remains as a key focus area leading to developmental testing in 2014. Northrop Grumman (NG) is currently behind schedule on IAMD Battle Command System (IBCS) software development and submitted a proposed software schedule to realign software deliveries with key test activities. The realigned schedule represents a four month slip to Milestone (MS) C (within Acquisition Program Baseline (APB) schedule margin). The plan for the realigned schedule was briefed to the Army Acquisition Executive on April 3, 2012 and is being implemented for the program and coordinated across all key stakeholders.

An Army IAMD Program Restructure was approved via the APB signed November 20, 2012. The restructured program includes integrating IAMD capability into the following additional systems: Terminal High Altitude Area Defense (THAAD), Air Defense Artillery (ADA) Brigade (Bde), Army Air and Missile Defense Command (AAMDC), Indirect Fire Protection Capability (IFPC) within IFPC/Avenger Composite Battalions and Air Defense and Airspace Management (ADAM) cells and the removal of Surface Launched Advanced Medium Range Air to Air Missile (SLAMRAAM). The restructured program consists of two Product Improvements. Product Improvement 1 includes fielding the IAMD capability to AAMDC, ADA Bde, and ADAM Cells, and placing Patriot components directly on the Integrated Fire Control Network (IFCN) and will employ a common set of mission control tools across ADA formations with a First Unit Equipped (FUE) in FY 2018. Product Improvement 2 will integrate THAAD on the IFCN.

A Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) was approved on June 7, 2012.

The Raytheon Plug & Fight A-Kit Contract, W31P4Q-12-C-0120, was definitized on September 10, 2012 and is now being reported as a large active contract. The first Contract Performance Report (CPR) was delivered February 2013.

An IAMD Program In Process Review (IPR) was presented to the Deputy Assistant Secretary of Defense for Portfolio Systems Acquisition, on September 6, 2012. The purpose was to provide an update on the program since the MS B Defense Acquisition Board (DAB) and prepare a plan for the June 2015 MS C DAB.

The IAMD Critical Design Review (CDR) was conducted May 23-24, 2012 in Huntsville, AL as a System of Systems (SoS) review. The following component-level reviews were conducted prior to the system-level review: Sentinel A-Kit CDR: November 22, 2011 - Sentinel A-Kit Design Review Update (DRU): March 8, 2012 - IBCS Internal CDR: March 20-22, 2012 - Patriot Radar Interface Unit (RIU) and Joint Land Elevated Netted Sensor (JLENS) A-Kit CDRs: April 3-4, 2012 - IBCS External CDR: April 25-26, 2012. While the component-level reviews addressed the design details associated with each developer's Major End Items (MEIs), the system-level CDR focused on SoS requirement and design aspects and IAMD program integration.

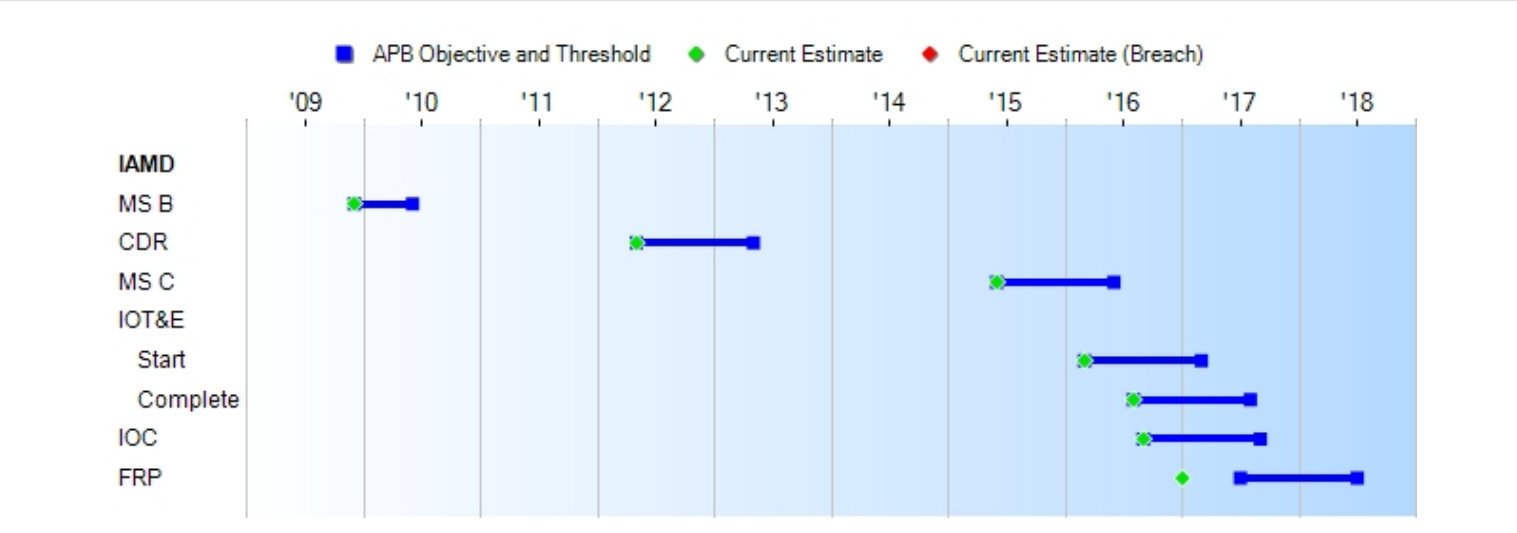
The IAMD Project Office (PO) held an IBCS CDR April 25-26, 2012. The IBCS CDR was executed by the prime contractor, NG, and was the last in a series of component CDRs leading to the IAMD SoS CDR. The IBCS consists of the Engagement Operations Center (EOC), IFCN, and sensor and weapon B-side adaption kits (IFCN Relay). Prior component CDRs were executed for the A-Side adaptation of the Sentinel sensor (November 22, 2012), the JLENS sensor (April 3, 2012) and the Patriot RIU (April 4, 2012).

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



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	MAY 2012	MAY 2013	MAY 2012	
MS C	DEC 2014	JUN 2015	JUN 2016	JUN 2015	
IOT&E					
Start	JAN 2016	MAR 2016	MAR 2017	MAR 2016	(Ch-1)
Complete	JUL 2016	AUG 2016	AUG 2017	AUG 2016	
IOC	AUG 2016	SEP 2016	SEP 2017	SEP 2016	
FRP	MAY 2017	JUL 2017	JUL 2018	JAN 2017	(Ch-2)

Acronyms And Abbreviations

CDR - Critical Design Review
FRP - Full Rate Production
IOC - Initial Operational Capability
IOT&E - Initial Operational Test and Evaluation
MS - Milestone

Change Explanations

(Ch-1) IOT&E Start current estimate changed from January 2016 to March 2016 due to the program restructure and is in alignment with the APB.

(Ch-2) FRP current estimate changed from July 2017 to January 2017 due to planned completion of IOT&E and receipt of the Beyond Low Rate Initial Production Report.

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	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	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	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

	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.	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.	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.		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 commander's defense effectiveness objectives, which would	To support attainment of a commander's defense effectiveness objectives, which would	To support attainment of a commander's defense effectiveness objectives, which would	TBD	To support attainment of a commander's defense effectiveness objectives,

	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	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 engage-ments up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of	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 engage-ments up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of		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 comman-der without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engage-ments up to the operation-ally effective range of selected missile kinematics. The Army IAMD SoS

	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.	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.	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.		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	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine	TBD	The Army IAMD SoS common C2 components (Battalion and below) shall incor-porate 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/SLA MRAAM Platoon with the Increment 2 equipped Task Force.	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/SLA MRAAM Platoon with the Increment 2 equipped Task Force.	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/SLA MRAAM Platoon with the Increment 2 equipped Task Force.		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 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	All Army IAMD SoS common C2 vehicle cabs and manned	The Army IAMD SoS common C2 equipment shall be	TBD	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 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 decontaminat-ion 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-	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.	designed to 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 decontaminat-ion 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-		designed to be operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understand-ing commensur-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 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 decontaminat-ion.		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 decontaminat-ion.		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-tion during a CBRNE event that is sustainable through decontami-nation.

Requirements Source: Capability Development Document (CDD) 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

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 DU4	Advanced Electronic Protection Enhancements		
	New requirement in FY 2013 for Advanced Electronic Protection Enhancements.			
	Project S40	Army Integrated Air and Missile Defense		
	IAMD Project Office Engineering and Manufacturing Development program funding began in FY 2011.			

Procurement				
APPN 2035	BA 02		(Army)	
	ICN BZ5075	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	2199.5	2419.5	2208.5	1627.5	2402.6	2436.0
Procurement	3316.0	3174.8	3492.3	3121.3	4164.1	3939.2	3939.2
Flyaway	2420.4	--	--	2975.2	3030.6	--	3756.2
Recurring	2370.4	--	--	2958.3	2970.9	--	3736.2
Non Recurring	50.0	--	--	16.9	59.7	--	20.0
Support	895.6	--	--	146.1	1133.5	--	183.0
Other Support	734.4	--	--	0.0	931.5	--	0.0
Initial Spares	161.2	--	--	146.1	202.0	--	183.0
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	5374.3	N/A	5329.8	5791.6	6341.8	6375.2

Confidence Level for Current APB Cost 50% -

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs. 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.

These revised current baseline costs have changed and reflect the direction of the February 2012 Acquisition Decision Memorandum (ADM) that directed a program restructure.

The Army IAMD Program Restructure was approved via the Acquisition Program Baseline (APB) dated November 20, 2012. The restructured program includes integrating IAMD capability into the following additional systems: Terminal High Altitude Area Defense (THAAD), Air Defense Artillery Brigades (ADA Bde), Army Air and Missile Defense Commands (AAMDC), Indirect Fire Protection Capability (IFPC) within IFPC/Avenger Composite Battalions and Air Defense and Airspace Management (ADAM) cells. The restructured program consists of two Product Improvements. Product Improvement 1 includes fielding the IAMD capability to AAMDC, ADA Bde, and ADAM Cells, and placing Patriot radars directly on the Integrated Fire Control Network (IFCN) and will employ a common set of Mission Command (MC) tools across ADA formations with a First Unit Equipped (FUE) in FY 2018. Product Improvement 2 will integrate THAAD on the IFCN.

Quantity	SAR Baseline Dev Est	Current APB Development	Current Estimate
RDT&E	11	16	16
Procurement	285	431	431
Total	296	447	447

The Army IAMD Unit of Measure (UOM) - 16 Fully Configured Research Development Test and Evaluation units and 431 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 Capabilities Development Document.

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2014 President's Budget / December 2012 SAR (TY$ M)

Appropriation	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
RDT&E	896.1	277.4	364.6	382.9	221.3	141.9	79.3	72.5	2436.0
Procurement	0.0	0.0	21.2	100.7	315.4	482.6	446.1	2573.2	3939.2
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 2014 Total	896.1	277.4	385.8	483.6	536.7	624.5	525.4	2645.7	6375.2
PB 2013 Total	904.3	277.4	374.3	497.8	492.5	561.8	386.9	3199.4	6694.4
Delta	-8.2	0.0	11.5	-14.2	44.2	62.7	138.5	-553.7	-319.2

Program funding and production quantities listed in this SAR are consistent with the FY 2014 President's Budget (PB). The FY 2014 PB did not reflect the enacted DoD appropriation for FY 2013, nor sequestration; it reflected the President's requested amounts for FY 2013.

Quantity	Undistributed	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
Development	16	0	0	0	0	0	0	0	0	16
Production	0	0	0	0	17	14	62	45	293	431
PB 2014 Total	16	0	0	0	17	14	62	45	293	447
PB 2013 Total	34	0	0	0	17	14	62	35	303	465
Delta	-18	0	0	0	0	0	0	10	-10	-18

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	--	--	--	--	--	--	246.7
2012	--	--	--	--	--	--	262.0
2013	--	--	--	--	--	--	277.4
2014	--	--	--	--	--	--	364.6
2015	--	--	--	--	--	--	382.9
2016	--	--	--	--	--	--	221.3
2017	--	--	--	--	--	--	141.9
2018	--	--	--	--	--	--	79.3
2019	--	--	--	--	--	--	37.8
2020	--	--	--	--	--	--	33.7
2021	--	--	--	--	--	--	1.0
Subtotal	**16**	**--**	**--**	**--**	**--**	**--**	**2436.0**

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	--	--	--	--	--	--	113.4
2010	--	--	--	--	--	--	160.4
2011	--	--	--	--	--	--	235.3
2012	--	--	--	--	--	--	245.0
2013	--	--	--	--	--	--	253.5
2014	--	--	--	--	--	--	324.3
2015	--	--	--	--	--	--	334.2
2016	--	--	--	--	--	--	189.5
2017	--	--	--	--	--	--	119.3
2018	--	--	--	--	--	--	65.4
2019	--	--	--	--	--	--	30.6
2020	--	--	--	--	--	--	26.8
2021	--	--	--	--	--	--	0.8
Subtotal	**16**	**--**	**--**	**--**	**--**	**--**	**2208.5**

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	--	16.6	--	4.6	21.2	--	21.2
2015	17	95.3	--	--	95.3	5.4	100.7
2016	14	300.8	--	--	300.8	14.6	315.4
2017	62	443.5	--	15.4	458.9	23.7	482.6
2018	45	420.8	--	--	420.8	25.3	446.1
2019	50	458.3	--	--	458.3	24.9	483.2
2020	51	429.7	--	--	429.7	25.1	454.8
2021	50	437.3	--	--	437.3	25.3	462.6
2022	41	396.1	--	--	396.1	20.8	416.9
2023	43	280.7	--	--	280.7	8.5	289.2
2024	35	217.5	--	--	217.5	5.7	223.2
2025	23	162.0	--	--	162.0	3.7	165.7
2026	--	77.6	--	--	77.6	--	77.6
Subtotal	**431**	**3736.2**	**--**	**20.0**	**3756.2**	**183.0**	**3939.2**

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	--	14.7	--	4.0	18.7	--	18.7
2015	17	82.7	--	--	82.7	4.7	87.4
2016	14	256.2	--	--	256.2	12.4	268.6
2017	62	370.7	--	12.9	383.6	19.8	403.4
2018	45	345.2	--	--	345.2	20.7	365.9
2019	50	368.9	--	--	368.9	20.0	388.9
2020	51	339.4	--	--	339.4	19.9	359.3
2021	50	339.0	--	--	339.0	19.6	358.6
2022	41	301.3	--	--	301.3	15.9	317.2
2023	43	209.6	--	--	209.6	6.3	215.9
2024	35	159.3	--	--	159.3	4.2	163.5
2025	23	116.5	--	--	116.5	2.6	119.1
2026	--	54.8	--	--	54.8	--	54.8
Subtotal	**431**	**2958.3**	**--**	**16.9**	**2975.2**	**146.1**	**3121.3**

Cost Quantity Information
2035 | Procurement | Other Procurement, Army

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 2009 $M
2014	--	--
2015	17	97.4
2016	14	256.2
2017	62	370.7
2018	45	345.2
2019	50	368.9
2020	51	339.4
2021	50	339.0
2022	41	301.3
2023	43	209.6
2024	35	159.3
2025	23	171.3
2026	--	--
Subtotal	**431**	**2958.3**

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	12/23/2009	2/1/2012
Approved Quantity	27	31
Reference	Milestone B ADM	ADM Restructure
Start Year	2015	2015
End Year	2016	2016

Total Low Rate Initial Production (LRIP) is not more than 10% of total procurement buy.

Foreign Military Sales

This is a FY 2012 Office of the Secretary of Defense (OSD) Defense Exportability Features (DEF) Pilot program conducting a feasibility study which will examine international markets, export variance(s), and anti-tamper and Critical Program Information (CPI) considerations for these variance(s).

Nuclear Cost

None

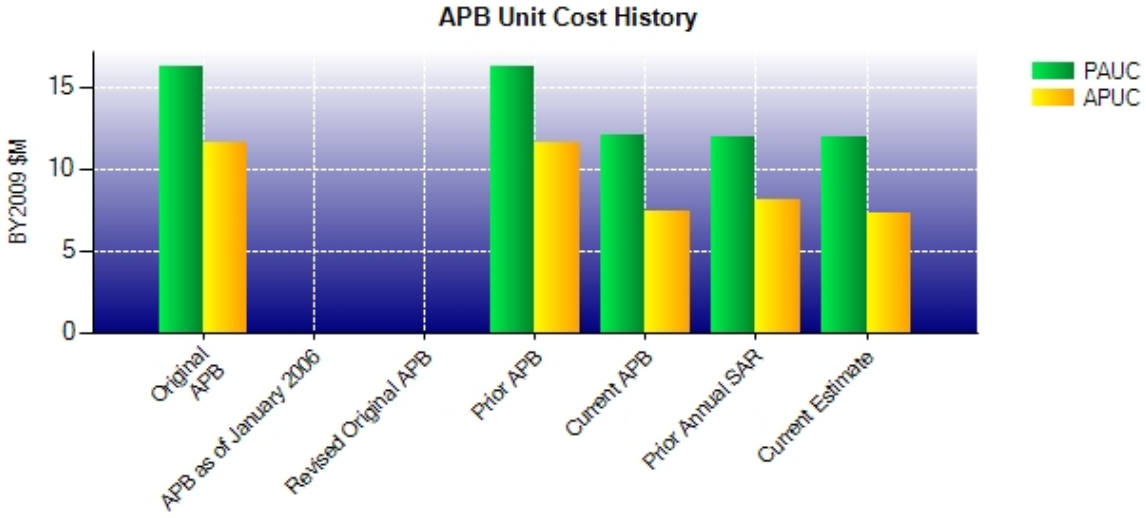
Unit Cost

Unit Cost Report

	BY2009 $M	BY2009 $M	
Unit Cost	**Current UCR Baseline (NOV 2012 APB)**	**Current Estimate (DEC 2012 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	5374.3	5329.8	
Quantity	447	447	
Unit Cost	12.023	11.923	-0.83
Average Procurement Unit Cost (APUC)			
Cost	3174.8	3121.3	
Quantity	431	431	
Unit Cost	7.366	7.242	-1.68

	BY2009 $M	BY2009 $M	
Unit Cost	**Original UCR Baseline (JUN 2010 APB)**	**Current Estimate (DEC 2012 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	4806.8	5329.8	
Quantity	296	447	
Unit Cost	16.239	11.923	-26.58
Average Procurement Unit Cost (APUC)			
Cost	3316.0	3121.3	
Quantity	285	431	
Unit Cost	11.635	7.242	-37.76

Unit Cost History



		BY2009 $M		TY $M	
	Date	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	JUN 2010	16.239	11.635	19.382	14.611
Current APB	NOV 2012	12.023	7.366	14.187	9.140
Prior Annual SAR	DEC 2011	11.963	8.052	14.397	10.263
Current Estimate	DEC 2012	11.923	7.242	14.262	9.140

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	0.559	-2.006	-0.591	0.382	-1.451	0.000	-2.197	-5.304	14.262

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	0.472	-0.149	-0.613	0.000	-2.903	0.000	-2.278	-5.471	9.140

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	JUN 2015
IOC	N/A	AUG 2016	N/A	SEP 2016
Total Cost (TY $M)	N/A	5791.6	N/A	6375.2
Total Quantity	N/A	296	N/A	447
Prog. Acq. Unit Cost (PAUC)	N/A	19.566	N/A	14.262

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1627.5	4164.1	--	5791.6
Previous Changes				
Economic	+24.9	+90.5	--	+115.4
Quantity	--	+2068.6	--	+2068.6
Schedule	--	-130.8	--	-130.8
Engineering	+170.6	--	--	+170.6
Estimating	+448.1	-836.8	--	-388.7
Other	--	--	--	--
Support	--	-932.3	--	-932.3
Subtotal	+643.6	+259.2	--	+902.8
Current Changes				
Economic	+21.2	+113.1	--	+134.3
Quantity	-10.8	--	--	-10.8
Schedule	--	-133.3	--	-133.3
Engineering	--	--	--	--
Estimating	+154.5	-414.3	--	-259.8
Other	--	--	--	--
Support	--	-49.6	--	-49.6
Subtotal	+164.9	-484.1	--	-319.2
Total Changes	+808.5	-224.9	--	+583.6
CE - Cost Variance	2436.0	3939.2	--	6375.2
CE - Cost & Funding	2436.0	3939.2	--	6375.2

Summary Base Year 2009 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1540.6	3316.0	--	4856.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	+1478.9	--	+1478.9
Schedule	--	--	--	--
Engineering	+148.7	--	--	+148.7
Estimating	+403.2	-607.0	--	-203.8
Other	--	--	--	--
Support	--	-717.5	--	-717.5
Subtotal	+551.9	+154.4	--	+706.3
Current Changes				
Economic	--	--	--	--
Quantity	-9.2	--	--	-9.2
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+125.2	-317.1	--	-191.9
Other	--	--	--	--
Support	--	-32.0	--	-32.0
Subtotal	+116.0	-349.1	--	-233.1
Total Changes	+667.9	-194.7	--	+473.2
CE - Cost Variance	2208.5	3121.3	--	5329.8
CE - Cost & Funding	2208.5	3121.3	--	5329.8

Previous Estimate: December 2011

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+21.2
Decrease of 5 prototypes from 16 to 11 due to Pre-Planned Product Improvement (P3I) 1 and P3I 2 test requirements. (Quantity) (QR)	-9.2	-10.8
Increased estimate and associated testing costs for the P3I 1 and 2 efforts. (Estimating)	+150.6	+183.5
Adjustment for current and prior escalation. (Estimating)	-2.4	-2.6
Decreased to reflect FY 2012 actuals. (Estimating)	-7.6	-8.2
Updated development software cost estimate and associated System Test and Evaluation. (Estimating)	-15.4	-18.2
RDT&E Subtotal	+116.0	+164.9

(QR) Quantity Related

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+113.1
Acceleration of procurement and fielding of Integrated Air and Missile Defense Battle Command System (IBCS), P3I 1, and P3I 2 components. (Schedule)	0.0	-133.3
Updated estimate to reflect Office of the Secretary of Defense (OSD) Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) dated June 2012. (Subtotal)	-317.1	-414.3
Updated estimate to include placing Patriot components directly on the Integrated Fire Control Network (IFCN) and integrating IAMD capability into the following systems: Terminal High Altitude Area Defense (THAAD), Air Defense Artillery (ADA) Brigade, Army Air and Missile Defense Command (AAMDC), Indirect Fire Protection Capability (IFPC), and Air Defense and Airspace Management (ADAM) Cells. (Estimating)	(-258.8)	(-345.0)
Revised estimate of the hardware costs associated with IBCS. (Estimating)	(-58.3)	(-69.3)
Revised Initial Spares estimate due to accelerated procurement schedule. (Subtotal)	-32.0	-49.6
Revised Initial Spares estimate due to accelerated procurement schedule. (Support)	(-28.8)	(-45.1)
Non quantity related. Revised Initial Spares estimate due to to refelect CAPE ICE dated June 2012. (Support)	(-3.2)	(-4.5)
Procurement Subtotal	-349.1	-484.1

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	December 30, 2009

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	601.4	N/A	11	630.4	630.4

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/22/2013)	-25.7	-25.9
Previous Cumulative Variances	-0.8	-0.6
Net Change	-24.9	-25.3

Cost And Schedule Variance Explanations

The unfavorable net change in the cost variance is due to the contractor software development/testing activities requiring more effort than planned.

The unfavorable net change in the schedule variance is due to the contractor software development/testing effort requiring more time than planned and configuring and gaining security approval for a classified environment.

Contract Comments

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a contract modification updating the IAMD System Specification.

Appropriation: RDT&E

Contract Name	**A-Kit Development**
Contractor	Raytheon Company
Contractor Location	401 Jan Davis Dr. Huntsville, AL 35806
Contract Number, Type	W31P4Q-12-C-0120, CPFF
Award Date	February 14, 2012
Definitization Date	September 10, 2012

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	0	126.0	N/A	0	126.0	126.0

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/24/2013)	+0.5	-0.1
Previous Cumulative Variances	--	--
Net Change	+0.5	-0.1

Cost And Schedule Variance Explanations

The favorable cumulative cost variance is due to the actual cost of materials being less than estimated.

The unfavorable cumulative schedule variance is due to delays in Patriot Combined Aggregate Program (CAP) Software Investigation Report (SIR) completion tasks.

General Contract Variance Explanation

The first Contract Performance Report (CPR) was delivered in February 2013.

Contract Comments

This is the first time this contract is being reported.

Appropriation: RDT&E

Contract Name	**Air and Missile Defense (AMD) Capability Phase 1**
Contractor	Raytheon Integrated Defense Systems
Contractor Location	401 Jan Davis Drive Huntsville, AL 35806
Contract Number, Type	W31P4Q-01-C-0167, CPFF
Award Date	March 25, 2010
Definitization Date	September 29, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
55.8	N/A	N/A	62.1	N/A	N/A	55.5	55.5

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (3/23/2012)	0.0	0.0
Previous Cumulative Variances	+2.1	0.0
Net Change	-2.1	+0.0

Cost And Schedule Variance Explanations

The unfavorable net change in the cost variance is due to a contract change for Critical Design Review (CDR) deliverables.

Contract Comments

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

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the extension of the Period of Performance leading up to the Phase 2 contract award.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	1	1	16	6.25%
Production	0	0	431	0.00%
Total Program Quantities Delivered	1	1	447	0.22%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	6375.2	Years Appropriated	8
Expenditures To Date	958.8	Percent Years Appropriated	38.10%
Percent Expended	15.04%	Appropriated to Date	1173.5
Total Funding Years	21	Percent Appropriated	18.41%

The above data is current as of 3/31/2013.

Of the $958.8M expenditures to date, $222.7M represents 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. The remaining expenditures are actual program costs expended since Milestone B.

Operating and Support Cost

IAMD

Assumptions and Ground Rules

Cost Estimate Reference:
Estimate is based on approved Office of the Secretary of Defense (OSD) Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE), dated June 7, 2012.

The CAPE ICE was based on the approved Army IAMD Cost Analysis Requirements Description (CARD), Version 3.5.4, April 19, 2012.

Military Personnel costs are contained in the OSD CAPE ICE.

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 Battalion.

Contractor Field Service Representatives (CFSR) will be required during the Interim Contractor Logistics Support which will be 2 years after Initial Operational Capability (IOC).

Demilitarization will occur after 20 years of use.

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 PO will utilize performance based sustainment methods and performance metrics which may include a Product Support Integrator (PSI) overseeing the performance of its various Product Support Providers (PSP) from both the commercial and organic industrial support base. The decision for PSI/PSP designation will be the culmination of a formal (type II) Business Case Analysis. The IAMD PBL PSS provides a Human Systems Integration/Manpower and Personnel Integration approach that will provide the human interface, tools, and resources needed to sustain the IAMD equipment throughout its life cycle.

There are 431 Procurement units.

The life of the equipment is 20 years.

Antecedent Information:
There is no antecedent system.

Unitized O&S Costs BY2009 $K		
Cost Element	**IAMD NA**	**No Antecedent System (Antecedent) NA**
Unit-Level Manpower	0.0	0.0
Unit Operations	0.7	0.0
Maintenance	115.7	0.0
Sustaining Support	84.9	0.0
Continuing System Improvements	58.0	0.0
Indirect Support	0.0	0.0
Other	0.0	0.0
Total	259.3	--

Unitized Cost Comments:
Average annual cost per unit is based on 431 units times 20 years of operations and support.

The Unitized Operating and Support (O&S) cost is based on the Office of the Secretary of Defense (OSD) Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE), dated June 7, 2012.

	Total O&S Cost $M			
	Current Development APB Objective/Threshold		**Current Estimate**	
	IAMD		**IAMD**	**No Antecedent System (Antecedent)**
Base Year	2235.9	2459.5	2235.9	N/A
Then Year	3333.3	N/A	3430.2	N/A

Total O&S Costs Comments:
The O&S cost decreased from 2824 in the December 2011 SAR to 2235.9 in the December 2012 SAR is a result of the OSD CAPE ICE dated June 7, 2012. The major change in O&S cost were the result of a reduction of years of O&S costs from FY 2051 to FY 2047 as a result of a change to the procurement schedule, and a change in estimating methodology for the cost of software maintenance.

Disposal Costs

Lifecycle demilitarization and disposal costs are $20.9M BY2009 and are not included in the above estimate.