Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Army											Date: March 2014	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604633A / *AIR TRAFFIC CONTROL*							
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	-	10.140	0.514	16.764	-	16.764	5.968	2.207	7.241	13.134	Continuing	Continuing
586: *Air Traffic Control*	-	10.140	0.514	16.764	-	16.764	5.968	2.207	7.241	13.134	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

FY 2015: POMBES 2015-2019 increased the FY 2015 budget to $16,764K.

A. Mission Description and Budget Item Justification

This program element funds continuous efforts in the development of modernized tactical and fixed base Air Traffic Control (ATC) systems that will enable safety of aircraft operations. ATC systems are required to achieve or maintain compliance with civil, military, domestic and international air traffic control mandates and combat identification requirements. Funding will be utilized to develop, evaluate and integrate technologies required to support ATC requirements. Efforts funded include the Tactical Airspace Integration System (TAIS) Web Based Architecture and Airspace Improvements Initiative, Air Traffic Navigation Integration and Coordination System (ATNAVICS) Modernization, Advanced Surveillance, the development of an ATC Tactical Network, and Tactical Terminal Control System (TTCS) modernization.

TAIS, the Airspace Management System of the Army Mission Command System, requires the development and testing of web-based services for Airspace Control, and integration of these new web-based services into the TAIS common Army Mission Command hardware, Air Traffic Services (ATS) and Airspace Integration Improvement Initiatives. Additional capabilities will be provided through advanced surveillance interfaces, mission planning interfaces, and TAIS dynamic airspace updates to the cockpit. TAIS efforts also include developing and testing improvements to the air picture including the addition of Blue Force Tracker correlation and radar fusion capability. TAIS develops software and required hardware for airspace management web services, to operate effectively in a dynamic net-centric interconnected environment. TAIS also integrates advanced surveillance interfaces to further enhance airspace integration and dynamic management capabilities. ATNAVICS provides all weather instrument flight capabilities to include, terminal, radar precision approach and landing services to all Army, Joint, and Allied aircraft. ATNAVICS will integrate Mode S capabilities required to control aircraft both OCONUS and CONUS. ATNAVICS will network its radar picture and advanced surveillance data (Mode 5 and Mode S) to aviation and joint network nodes through TAIS. As the Department of Defense transitions military aircraft to positional self-reporting technologies, these various technologies will be incorporated in the Advanced Surveillance program. Advanced Surveillance allows ATC reception of aircraft self-reporting data which include Automatic Dependent Surveillance Broadcast (ADS-B), Mode 5 and Mode S. Advanced Surveillance integrates local radar feeds and self-reporting aircraft positional data into a correlated air situational awareness picture. ATC Tactical Networking supports the non recurring engineering, test and evaluation tasks necessary for the integration of the radios, control stations and transmitter/receivers and software that will provide all ATC tactical systems an airfield network node capability. This will enable each ATC system to send voice and data between ATC platforms including connectivity to an external network for long range flight-following and data exchange. ATC Networking is required to meet the Net Ready Key Performance Parameter for ATC tactical systems. The TTCS provides initial Air Traffic Services at remote landing sites and drop zones. TTCS includes secure communications equipment for aircraft separation and ground control, meteorological measuring system for basic weather information, and precision location capability. The design, development and testing of the platform specific architecture for the integration of the ATC Wireless Network Backbone into the TTCS are required to support implementation of the ATC Tactical Network.

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Army					Date: March 2014
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)*		R-1 Program Element (Number/Name) PE 0604633A / *AIR TRAFFIC CONTROL*			
B. Program Change Summary ($ in Millions)	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO**	**FY 2015 Total**
Previous President's Budget	9.769	0.514	12.164	-	12.164
Current President's Budget	10.140	0.514	16.764	-	16.764
Total Adjustments	0.371	-	4.600	-	4.600
• Congressional General Reductions	-0.015	-			
• Congressional Directed Reductions	-0.470	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.100	-			
• SBIR/STTR Transfer	-0.244	-			
• Adjustments to Budget Years	-	-	4.600	-	4.600

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army			Date: March 2014
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604633A / *AIR TRAFFIC CONTROL*	Project (Number/Name) 586 / *Air Traffic Control*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
586: *Air Traffic Control*	-	10.140	0.514	16.764	-	16.764	5.968	2.207	7.241	13.134	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This project funds continuous efforts in the development of modernized tactical and fixed base Air Traffic Control (ATC) systems that will enable safety of aircraft operations. ATC systems are required to achieve or maintain compliance with civil, military, domestic and international air traffic control mandates and combat identification requirements. Funding will be utilized to develop, evaluate and integrate technologies required to support ATC requirements. Efforts funded include the Tactical Airspace Integration System (TAIS) Web Based Architecture and Airspace Improvements Initiative, Air Traffic Navigation Integration and Coordination System (ATNAVICS) Modernization, Advanced Surveillance, the development of an ATC Tactical Network, and Tactical Terminal Control System (TTCS) modernization.

TAIS, the Airspace Management System of the Army Mission Command System, requires the development and testing of web-based services for Airspace Control, and integration of these new web-based services into the TAIS common Army Mission Command hardware, Air Traffic Services (ATS) and Airspace Integration Improvement Initiatives. Additional capabilities will be provided through advanced surveillance interfaces, mission planning interfaces, and TAIS dynamic airspace updates to the cockpit. TAIS efforts also include developing and testing improvements to the air picture including the addition of Blue Force Tracker correlation and radar fusion capability. TAIS develops software and required hardware for airspace management web services, to operate effectively in a dynamic net-centric interconnected environment. TAIS also integrates advanced surveillance interfaces to further enhance airspace integration and dynamic management capabilities. ATNAVICS provides all weather instrument flight capabilities to include enroute, terminal, radar precision approach and landing services to all Army, Joint, and Allied aircraft. ATNAVICS will integrate Mode S capabilities required to control aircraft both OCONUS and CONUS. ATNAVICS will network its radar picture and advanced surveillance data (Mode 5 and Mode S) to aviation and joint network nodes through TAIS. As the Department of Defense transitions military aircraft to positional self-reporting technologies, these various technologies will be incorporated in the Advanced Surveillance program. Advanced Surveillance allows ATC reception of aircraft self-reporting data which include Automatic Dependent Surveillance Broadcast (ADS-B), Mode 5 and Mode S. Advanced Surveillance integrates local radar feeds and self-reporting aircraft positional data into a correlated air situational awareness picture. ATC Tactical Networking supports the non recurring engineering, test and evaluation tasks necessary for the integration of the radios, control stations and transmitter/receivers and software that will provide all ATC tactical systems an airfield network node capability. This will enable each ATC system to send voice and data between ATC platforms including connectivity to an external network for long range flight-following and data exchange. ATC Networking is required to meet the Net Ready Key Performance Parameter (KPP) for ATC tactical systems. The TTCS provides initial Air Traffic Services at remote landing sites and drop zones. TTCS includes secure communications equipment for aircraft separation and ground control, meteorological measuring system for basic weather information, and precision location capability. The design, development and testing of the platform specific architecture for the integration of the ATC Wireless Network Backbone into the TTCS are required to support implementation of the ATC Tactical Network.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Tactical Airspace Integration System (TAIS)	6.757	-	9.530
Articles:	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604633A / *AIR TRAFFIC CONTROL*	**Project (Number/Name)** 586 / *Air Traffic Control*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Description: TAIS Airspace Information Center (AIC) and Airspace Integration Improvements Initiative enhancements will be addressed through upgrades to the communications suite through new components such as 117G radios, BFT2/KGV-72, and ADS-B. TAIS develops software and required hardware for airspace management web services to operate effectively in a dynamic net-centric interconnected environment. TAIS also integrates advanced surveillance interfaces to further enhance a dynamic airspace management capability. ***FY 2013 Accomplishments:*** Began to design and develop TAIS service oriented architecture and web services in support of airspace control and AIC missions. Developed base foundation to build on, providing services to generate, display, and disseminate flight advisories. Laid the framework to display and disseminate High and Low Altitude Instrument Flight Rules (IFR) route structures, helicopter route structures, navigation information, communications information, refueling information, and terminal area information, for efficient future development and scalability. Developed initial web service data schema and infrastructure to dynamically support interoperability with Fires, Air Defense, and Joint Services (Air Force), to support rapid airspace de-confliction, coordination, and airspace clearance. Implemented Airspace Operations Community of Interest service schema for initial dynamic interoperability with the Theater Battle Management Core System. Developed first phase of the Expanded Airtrack Sensor Interface to provide interoperability with other ATC sensors in a fused data display. ***FY 2015 Plans:*** Develop sensor and data interfaces to Civil Aviation agencies in support of military and homeland defense Air Traffic Services and Airspace Management Command and Control. Develop web services and service oriented architecture with Joint systems to facilitate Air Traffic services and Airspace Command and Control across DoD agencies, Federal Agencies and with Allied Nations. Develop dynamic mission updates and interfaces with Unmanned Aerial Systems and DoD / Joint Air platforms for situational awareness. Develop and refine interfaces to cooperative, and non cooperative sensors and self reporting aircraft in support of Situational Awareness and airspace management and de-confliction. Develop rapidly deployable web based capabilities to enable disconnected off grid operations via non-line-of-sight communications and disjoined edge user nodes in support of ATC and ATS. Develop personnel recovery data dissemination to facilitate medical evacuation and search-and-rescue operations. Develop 3D view of airspace execution and usage to prevent fratricide and mid-air collisions between military and civil air craft. Develop capability to display and disseminate flight rules (IFR) and route structures, navigation information, and terminal area information. Implement new interfaces to support the rapid visualization, de-confliction of airspace, increasing situational awareness and facilitating rapid clearance of airspace.			
Title: Air Traffic Navigation Integration and Coordination System (ATNAVICS) Modernization	0.187	-	2.301
Articles:	-	-	-
Description: ATNAVICS is a highly mobile tactical area surveillance and precision approach air traffic control radar system. It provides the Joint Force Commander, or Combatant Commander, with a mobile, self-contained, and reliable Airport Surveillance			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604633A / *AIR TRAFFIC CONTROL*	**Project (Number/Name)** 586 / *Air Traffic Control*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Radar, Precision Approach Radar, and a Secondary Surveillance Radar capability. Product modernizations include radar interrogator modernization. ***FY 2013 Accomplishments:*** Continued the engineering of the Mode S, Federal Aviation Administration (FAA), Army Spectrum Management Office (ASMO), and AIMS System certification. ***FY 2015 Plans:*** Complete the development of the TPX-57 with Mode S as the secondary surveillance interrogator onto the radar. Support development of the hardware and software which processes both Mode S and ADS-B messages as transmitted via the extended squitter function or upon interrogation, as well as the physical integration of the component into the ATNAVICS. Conduct system testing and qualification, as well as certification and FAA/ASMO approvals, and Air Traffic Control Radar Beacon System Identification Friend or Foe, Mark XII/Mark XIIa Systems (AIMS) certification.			
Title: Advanced Surveillance	1.899	-	2.015
Articles:	-	-	-
Description: Advanced Surveillance technologies integration supports the non-recurring engineering, integration and test tasks required to incorporate the passive reception of self-reporting technologies and the correlation of local radar feeds into Air Traffic Control systems. Self-reporting technologies include ADS-B, Mode 5 Level 2, Mode S and similar civil aircraft self-reporting technologies. Local radar feeds include any radars in close proximity to ATC systems. ***FY 2013 Accomplishments:*** Continued evaluation and down-select of commercially available Advanced Surveillance receivers, and integration of receivers into PM Air Traffic Control programs of record, to allow reception of aircraft self-reported positional data. The Passive receiver will process all of the self reported air tracks broadcasted in a line of sight field of view. Continued development of fusion software to correlate tracks received via self reported means and radar tracks received from available radar sensors. The fusion software processes both the self-reported and the radar tracks to produce an appropriated local airfield situational awareness picture for display. Participated in Bold Quest 13 and Network Integration Experimentation (NIE) exercises to evaluate advance surveillance technologies. ***FY 2015 Plans:*** Continue testing and integration of the selected Advanced Surveillance passive receiver into non-equipped tactical ATC equipment, including the Mobile Tower System, TAIS and TTCS. Testing and evaluation will include participation in NIE and Bold Quest exercises and operational/developmental testing to include potentially destructive testing. Advanced Surveillance will enable tactical Army ATC equipment to comply with FAA mandated capabilities.			
Title: ATC Tactical Network	-	-	1.231

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army		Date: March 2014
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Description: ATC Tactical Networking supports the non recurring engineering, test and evaluation tasks necessary for the integration of the radios, control stations and transmitter/receivers and software that will provide all ATC tactical systems an airfield network node capability. This will enable each ATC system to send voice and data between ATC platforms including connectivity to an external network for long range flight-following and data exchange. ATC Networking is required to meet the Net Ready KPP for ATC tactical systems. ***FY 2015 Plans:*** Conduct non recurring engineering, test and evaluation tasks necessary for the integration of the radios, control stations and transmitter/receivers and software that will provide all ATC tactical systems an airfield network node capability which enables each ATC system to send voice and data between ATC platforms including connectivity to an external network for long range flight-following and data exchange.			
Title: Tactical Terminal Control System (TTCS) ***Description:*** TTCS provides initial Air Traffic Services at remote landing sites and drop zones. TTCS includes secure communications equipment for aircraft separation and ground control, meteorological measuring system for basic weather information, and precision location capability. The design, development and testing of the platform specific architecture for the integration of the ATC Wireless Network Backbone into the TTCS are required to support implementation of the ATC Tactical Network. ***FY 2015 Plans:*** Design, develop and test the platform specific architecture for the integration of the ATC Wireless Network Backbone into the Tactical Terminal Control System (TTCS). The integration will allow the TTCS to be wirelessly networked with other ATC systems for voice and data communications.	-	-	0.987
Title: Program Management Support	0.107	0.120	0.221
Articles:	-	-	-
Description: Program Management Support of PM ATC. ***FY 2013 Accomplishments:*** Continue program management in support of PM ATC. ***FY 2014 Plans:*** Continue program management in support of PM ATC. ***FY 2015 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604633A / *AIR TRAFFIC CONTROL*	**Project (Number/Name)** 586 / *Air Traffic Control*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Continue program management in support of PM ATC.			
Title: Tech and Log Support	1.190	0.394	0.479
Articles:	-	-	-
Description: Technical and logistics services in support of PM ATC.			
FY 2013 Accomplishments: Continued technical and logistics services in support of PM ATC.			
FY 2014 Plans: Continue technical and logistics services in support of PM ATC.			
FY 2015 Plans: Continue technical and logistics services in support of PM ATC.			
Accomplishments/Planned Programs Subtotals	10.140	0.514	16.764

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• Air Traffic Control (AA0050): *Air Traffic Control*	46.081	79.692	127.232	-	127.232	88.441	86.734	113.560	100.706	Continuing	Continuing

Remarks

D. Acquisition Strategy

This project is comprised of multiple systems supporting ATC development and test efforts. While the detailed acquisition strategy varies by program, the general strategy for each program is to complete development and testing efforts through contract modifications, engineering service tasks, and new/follow-on contracts. ATC systems are required to achieve or maintain compliance with civil, military, domestic and international air traffic control and upcoming Next Gen requirements and mandates, as well as current aircraft self-reporting transponders.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Army			Date: March 2014
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	PM ATC : Redstone Arsenal, AL	0.226	0.107	Dec 2012	0.120	Dec 2013	0.221	Oct 2014	-		0.221	Continuing	Continuing	Continuing
		Subtotal	0.226	0.107		0.120		0.221		-		0.221	-	-	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TAIS (Web Based Services Dev)	SS/T&M	General Dynamics C4S : Huntsville, AL	8.099	6.757	Dec 2012	-		9.530	Dec 2014	-		9.530	Continuing	Continuing	Continuing
ATNAVICS Modernization	SS/CPFF	Raytheon : Marlboro, Mass	12.000	0.187	Oct 2012	-		2.301	Dec 2014	-		2.301	-	14.488	-
Advanced Surveillance	Various	Various : Various	1.427	1.899	Feb 2013	-		2.015	Jan 2015	-		2.015	Continuing	Continuing	Continuing
Tactical Terminal Control System (TTCS)	Various	Various : Various	0.791	-		-		0.987	Mar 2015	-		0.987	-	1.778	-
Tech and Log Development Support	Various	PM ATC : Huntsville, AL	1.675	1.190	Dec 2012	0.394	Dec 2013	0.479	Oct 2014	-		0.479	Continuing	Continuing	Continuing
ATC Tactical Network	Various	PM ATC : Huntsville, AL	0.000	-		-		1.231	Jan 2015	-		1.231	Continuing	Continuing	Continuing
		Subtotal	23.992	10.033		0.394		16.543		-		16.543	-	-	-

	Prior Years	FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	24.218	10.140		0.514		16.764		-		16.764	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604633A / *AIR TRAFFIC CONTROL*	**Project (Number/Name)** 586 / *Air Traffic Control*

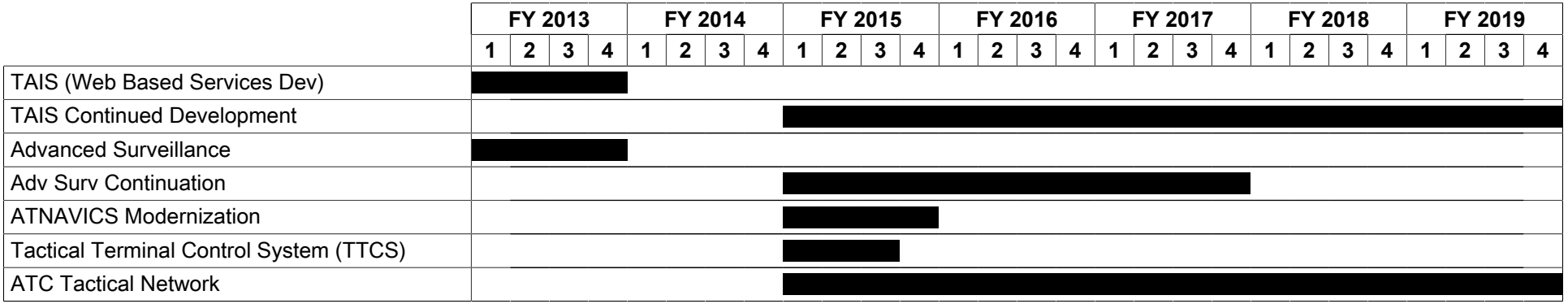

Exhibit R-4A, RDT&E Schedule Details: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604633A / *AIR TRAFFIC CONTROL*	**Project (Number/Name)** 586 / *Air Traffic Control*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
TAIS (Web Based Services Dev)	1	2011	4	2013
TAIS Continued Development	1	2015	4	2020
Advanced Surveillance	2	2011	4	2013
Adv Surv Continuation	1	2015	4	2017
ATNAVICS Modernization	1	2015	4	2015
Tactical Terminal Control System (TTCS)	1	2015	3	2015
ATC Tactical Network	1	2015	4	2019