Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force											Date: February 2016	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*							
COST ($ in Millions)	**Prior Years**	**FY 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**Cost To Complete**	**Total Cost**
Total Program Element	-	25.309	19.392	9.770	0.000	9.770	6.288	6.316	6.498	6.614	Continuing	Continuing
673587: *Air Traffic Control Systems*	-	25.309	19.392	9.770	0.000	9.770	6.288	6.316	6.498	6.614	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

To support the Air Force worldwide flying mission, this program element funds research, development, and management of new air traffic control communications, surveillance, positioning, and precision approach and landing systems. When applicable, this includes joint efforts with the Federal Aviation Administration (FAA) and coordination with the International Civil Aviation Organization and the North Atlantic Treaty Organization (NATO). ATCALS development funding currently focuses on the Next Generation (NextGen) Air Transportation System (ATS) and Deployable Radar Approach Control (D-RAPCON) programs as described below.

NextGen ATS. This is an interagency effort designed to enable the transition from a ground infrastructure dominated Air Traffic Management capability for the U.S. National Airspace System (NAS) to a capability that leverages advances in Performance Based Navigation (PBN), non-radar based surveillance services, and transition from solid-state analogue voice communications to networked digital voice and data exchange. Per Deputy Secretary of Defense Direction (28 Dec 07 Memo), the Air Force is the DoD lead Service for NextGen ATS implementation and architecture development. NextGen ATS will be built on key elements from existing programs and technologies and on new systems under development. As these technologies and architectures mature, ground system upgrades will be coordinated and fielded concurrently with aircraft avionics capabilities that are acquired and integrated into Air Force aircraft (manned and unmanned). These efforts are a subset of the Communication, Navigation, and Surveillance/Air Traffic Management (CNS/ATM) program in PE 0305099F and will involve aircraft avionics as well as fixed based and deployable air traffic control and landing systems. FY17 efforts will continue to use the Lead Service Office (LSO) Enterprise Architecture process to develop a NextGen ATS DoD Strategic Roadmap, Integrated Master Schedule (IMS), and Command and Control Core Function Support Plan, outlining DoD and Air Force equities and requirements, via in-depth analysis of FAA NextGen ATS programs and timelines. Portfolio analysis will be captured in DoD NextGen ATS charters to guide Services through a broad and complex NextGen ATS environment. To minimize integration costs, the LSO and Joint Program Office (JPO) along with the Air Force Flight Standards Agency (AFFSA) will also assist aircraft depots, program offices, and major commands in combining military (Mode-5 Identification Friend or Foe (IFF), Global Positioning System (GPS) Military (M)-Code), and civil avionics upgrades, including Automatic Dependent Surveillance Broadcast (ADS-B), Data Communication (DataComm), and PBN. To support LSO and JPO NextGen ATS decision making, AFFSA and major command users will use supporting infrastructure tools, such as the CNS/ATM Global Aviation Initiatives, Mandates, and Standards (GAIMS) database and a DoD Fleet-Wide Avionics Repository (F-WAR). In support of remotely piloted aircraft (RPA) operations, JPO efforts will also continue to support requests for implementation of GBSAA at new locations. Additionally, AFFSA will continue efforts to examine new civil air traffic control and landing system technologies that may have military utility such as a remote virtual Air Traffic Control tower capability. In total, these efforts will focus on enabling DoD aircraft to take advantage of NextGen envisioned NAS efficiencies, developing policies/procedures to reduce costs while ensuring airspace access, seamlessly integrating RPAs into the NAS and international airspaces, improving the display of aircraft position to air traffic controllers, determining future requirements for digital communications with manned and unmanned aircraft, and enhancing flight safety.

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*

Deployable Radar Approach Control (D-RAPCON). D-RAPCON will replace the 40 year old AN/MPN-14K and AN/TPN-19 Airport Surveillance Radar (ASR) and Operations Shelter (OPS) subsystems with state of the art digital systems. Modification and overhaul of the existing systems has proven to be ineffective due to diminishing manufacturing sources. On average, due to systemic equipment failures, no more than three of the existing 17 systems are deployable at any given time. The current AN/TPN-19 and AN/MPN-14K Operational Availability rates are 69% and 67% respectively versus a requirement for D-RAPCON of 98%. D-RAPCON will provide aircraft surveillance/sequencing, air traffic control communications, and automation capabilities for terminal area air traffic control operations. D-RAPCON will also be deployed with a fixed base or deployable Instrument Landing System and a fixed or mobile control tower to provide a complete air traffic control capability. The D-RAPCON will support tactical military and worldwide humanitarian operations and provide a capability to support domestic disaster relief. The primary surveillance radar coverage (non-cooperative targets) is out to 60 nautical miles (nm) and the secondary surveillance radar coverage (cooperative targets) will increase from 120 nm to 200 nm. The D-RAPCON Capability Development Document (CDD) was approved by the Air Force Requirements Oversight Council on 8 Feb 11. FY17 funds will complete developmental testing (DT) and operational testing (OT), and perform any deficiency mitigation work as necessary. In FY17, the program office will also be preparing for MS C and approval for a production representative unit and, a full rate production decision (FRP). Prior to FRP approval, there are also six system certifications which must be accomplished. These include: Air Traffic Control Radar Beacon System Identification Friend or Foe, Mark XII/Mark XIIA Systems Certification; National Airspace System Certification; Shelter/Transportability Certification; Electro-Magnetic Spectrum Certification; Information Assurance Certification; and Accreditation and Interoperability and Supportability Certification. Activities also include studies and analysis to support both current program planning and execution and future program planning. Related OPAF funds are in the PE 0305114F Weapon System Code 833010.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	26.087	21.485	9.867	0.000	9.867
Current President's Budget	25.309	19.392	9.770	0.000	9.770
Total Adjustments	-0.778	-2.093	-0.097	0.000	-0.097
• Congressional General Reductions	0.000	-0.093			
• Congressional Directed Reductions	0.000	-2.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.778	0.000			
• Other Adjustments	0.000	0.000	-0.097	0.000	-0.097

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2015	FY 2016
Project: 673587: *Air Traffic Control Systems*		
Congressional Add: *Ground Based Sense and Avoid (GBSAA)*	3.000	0.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2015	FY 2016
Congressional Add Subtotals for Project: 673587	3.000	0.000
Congressional Add Totals for all Projects	3.000	0.000

Change Summary Explanation

FY16 Decrease: Congressional mark of $2.0M - Unjustified growth in Program Management Administration.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: NextGen ATS	3.341	5.188	5.020	-	5.020

Description: Includes efforts to implement NextGen ATS efficiencies and capabilities. Focus is on Automatic Dependent Surveillance Broadcast (ADS-B) implementation, seamlessly integrating Remotely Piloted Aircraft (RPA) into civil airspace, Instrument Procedure Development System (IPDS) software development, Lead Service Office technical support/architecture development, development of aircraft performance based navigation avionics roadmaps, and surveillance radar/automation system upgrades.

FY 2015 Accomplishments:

- Developed a working copy of the Strategic Roadmap and Integrated Master Schedule (IMS).
- Began effort to define Global Aviation Initiatives, Mandates, and Standards (GAIMS) requirements.
- Began effort to develop Fleet-Wide Avionics Repository (F-WAR) requirements database.
- Assessed and determined candidate Embedded Global Positioning System/Inertial (EGI) avionics compliance as an ADS-B Out position source for the E-3 Airborne Warning and Control System aircraft.
- Completed ADS-B interoperability testbed allowing end-to-end ADS-B implementation and evaluation.
- Continued IPDS development/software module testing.
- Coordinated with the state of Ohio and Air Force Research Laboratory to implement RPA GBSAA capability in Springfield, OH, and Grand Forks AFB, ND.
- Validated GBSAA as a tool for collision avoidance at Cannon AFB.
- Conducted detailed reviews/updates of Federal Aviation Regulations to enable RPA integration into civil airspace (in support of RPA Aviation Rule Making Committee).

FY 2016 Plans:

- Continue development of NextGen ATS DoD Strategic Roadmap and IMS by executing analysis on 2-3 Performance Based Navigation (PBN) perspectives and capture results through charters. The PBN IMS and charters will be used as pathfinders for future areas of analysis.

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue to develop implementation schedules and establish priorities for NextGen ATS aircraft and ground system capabilities and incorporate into F-WAR, GAIMS, Strategic Roadmap, and IMS. -- GAIMS focus is on combining military Mode-5 Identification Friend or Foe (IFF), Global Positioning System (GPS) Military (M) Code, and civil ADS-B avionics upgrades. - Continue assessment of DoD GPS avionics and IFF transponders. - Begin to develop solutions to integrate DataComm equipage into DoD fleet, advance electronic flight bag applications and standardization, and analyze impacts to DoD of FAA radar divestiture plans. - Continue IPDS software testing, and certification. - Continue to coordinate with interagency partners to promote RPA integration. - Continue to support requests for implementation of GBSAA at new locations. - Begin preparation of engineering change proposal to integrate Mode-5 IFF and secure comm into D-RAPCON surveillance radar and automation system. ***FY 2017 Base Plans:*** - Will continue to execute analysis of NextGen ATS programs and capture results through charters and incorporate into NextGen ATS DoD Strategic Roadmap and IMS. Inputs will continue to include results of the following tasks: -- Development of implementation schedules and establishment of priorities for NextGen ATS aircraft and ground system capabilities and incorporation into F-WAR and GAIMS. -- Development of solutions to integrate Data Comm and electronic flight bag applications into DoD fleets -- Analysis/documentation of impacts to DoD of FAA radar divestiture plans. - Will refine D-RAPCON Mode 5 and secure comm integration/architecture and concept of operation and carry lessons learned over into fixed-base air traffic control facilities that use the same underlying radar and automation system as D-RAPCON. - Will continue ADS-B out end-to-end interoperability of assessment of DoD GPS avionics and IFF transponders. - Will continue to coordinate with interagency partners to promote RPA integration. - Will continue to support requests for implementation of GBSAA at new locations. - Will explore operational concepts and conduct operational utility evaluation (OUE) for remote virtual Air Traffic Control Tower capability. -- The OUE will assess if technology can reduce manpower requirements and need for traditional "brick and mortar" control tower buildings without impacting flight operations tempo and flight safety.					
Title: D-RAPCON	18.968	14.204	4.750	-	4.750

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Effort supports D-RAPCON engineering, manufacturing, and development effort and government developmental and operational testing of one Pre-Production Unit (PPU) leading to a production decision in FY17. ***FY 2015 Accomplishments:*** - Completed integration of the Pre-Production Unit (PPU). - Reviewed/approved contractor test plans and conducted Test Readiness Review. - Participated in contractor conducted system testing throughout FY15. - Prepared for DT and Federal Aviation Administration certifications efforts. ***FY 2016 Plans:*** - Complete contractor testing and begin conduct of DT and deficiency mitigation work as necessary. - Obtain frequency allocation and authority to radiate approvals. - Continue preparation of documentation to obtain six separate certifications required for entry into FRP: -- Air Traffic Control Radar Beacon System, Identification Friend or Foe, Mark XII/Mark XIIA Systems Certification. -- National Air Space Certification. -- Shelter/Transportability Certification. -- Electro-Magnetic Spectrum Certification. -- Information Assurance Certification. -- Accreditation and Interoperability and Supportability Certification. ***FY 2017 Base Plans:*** - Will complete DT. - Will obtain MS C decision & approval for production representative unit. - Will complete OT. - Will complete system certifications required prior to full rate. production decision: -- Air Traffic Control Radar Beacon System, Identification Friend or Foe, Mark XII/Mark XIIA Systems Certification. -- National Airspace System Certification. -- Shelter/Transportability Certification. -- Electro-Magnetic Spectrum Certification. -- Information Assurance Certification.					

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
-- Accreditation and Interoperability and Supportability Certification.					
Accomplishments/Planned Programs Subtotals	22.309	19.392	9.770	-	9.770

	FY 2015	FY 2016
Congressional Add: Ground Based Sense and Avoid (GBSAA)	3.000	0.000
FY 2015 Accomplishments: - Continued development and procurement of a transportable GBSAA system for the ANG. - Purchased 3 dimensional radar and hardware systems through existing Army contracts. - Developed architecture for transportable GBSAA for ANG to include integration with Ground Control Station and existing air traffic control radar. - Initiated development and procurement of GBSAA system for Global Hawk at Beale AFB, CA.		
FY 2016 Plans: - With FY15 funds, continue development of a transportable GBSAA system for the ANG. -- Tasks include test and evaluation of a pre-production system, integration of a satellite communication capability, and pursuit of FAA approval for operations. - Continue development and procurement of GBSAA system for RPA operations at Beale AFB, CA. -- Tasks include analysis of operations, creation of documentation for FAA safety case, finalization of architecture, procurement of hardware, test and evaluation, and pursuit of FAA approval for operations.		
Congressional Adds Subtotals	3.000	0.000

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPAF: BA03: Line Item # 833010: *Air Traffic Control and Landing Systems*	23.912	28.823	55.803	46.870	102.673	62.739	59.049	56.533	47.198	Continuing	Continuing
• OPAF: BA 05: Line Item # 861900: *Spares and Repair Parts*	5.987	2.775	4.964	0.000	4.964	4.705	2.093	2.430	4.622	Continuing	Continuing

Remarks

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*

E. Acquisition Strategy

ATCALS is a basket program element with multiple programs in various stages of acquisition which provide the air traffic control infrastructure to support peacetime and wartime missions. The current acquisition strategy is focused on replacing 1960/70s era deployable and fixed based equipment with mature off-the-shelf technology with remote maintenance capability while also looking to the future under the NextGen ATS initiative.

Current contracting efforts include D-RAPCON development and GBSAA/NextGen ATS planning/implementation. The contracting strategy for D-RAPCON development is based on award of a competitive fixed price incentive firm contract emphasizing off-the-shelf technology and maximizing the use of non-developmental items. The contract includes engineering, manufacturing, and development and test with follow-on production options. GBSAA and NextGen ATS Enterprise Architecture Implementation Tasks are being executed via Military Inter-Departmental Purchase Requests, and Project Orders with various organizations (FAA, MITRE, Army, AFRL, and Air Force Flight Standards Agency).

The Air Force Program Executive Officer (PEO) for Battlefield Management (BM) is the PEO for ATCALS. PEO/BM is also the delegated milestone decision authority for ATCALS. Under PEO/BM is the Air Force Life Cycle Management Center Airspace Management Systems Division (AFLCMC/HBA) which includes program management, contracts, legal, and financial management support.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*	**Project (Number/Name)** 673587 / *Air Traffic Control Systems*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NextGen ATS Instrument Procedure Development System (IPDS)	MIPR	FAA : Washington, DC	-	1.397	Mar 2015	1.000	Apr 2016	0.000		0.000		0.000	0.000	2.397	4.207
GBSAA ANG	MIPR	Army : Various, MA	-	0.700	Nov 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
GBSAA Beale	MIPR	Various : Various	-	2.300	Nov 2015	0.000		0.000		0.000		0.000	0.000	2.300	-
D-RAPCON	C/FPIF	Raytheon : Marlborough, MA	-	12.615	Nov 2014	6.789	Nov 2015	1.713	Nov 2016	0.000		1.713	0.000	21.117	54.980
		Subtotal	-	17.012		7.789		1.713		0.000		1.713	-	-	-

Remarks

IPDS and D-RAPCON total cost and target value of contract differ as target value of contract includes prior years costs and the total cost only includes FY15-FY17. Total cost with prior years does not differ from the contract target value.

Current GBSAA ANG funding completes a non-transportable system.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NextGen ATS LSO/JPO Enterprise Architecture Implementation Support	MIPR	FAA : Washington, DC	-	1.320	Apr 2015	2.220	Apr 2016	2.273	Apr 2017	0.000		2.273	Continuing	Continuing	-
NextGen ATS AFFSA Strategic Planning	WR	MITRE : Hanscom AFB, MA	-	0.307	Jan 2015	0.307	Jan 2016	0.307	Jan 2017	0.000		0.307	Continuing	Continuing	-
NextGen ATS Support Cost	WR	Various : Various	-	0.212	Dec 2014	0.899	Dec 2015	0.000		0.000		0.000	Continuing	Continuing	-
NextGen ATS GBSAA Support	MIPR	Various : Various	-	0.100	Apr 2015	0.200	May 2016	0.150	Apr 2017	0.000		0.150	Continuing	Continuing	-
D-RAPCON Support Cost	MIPR	Various : Various	-	0.772	Oct 2014	0.779	Oct 2015	0.740	Oct 2016	0.000		0.740	Continuing	Continuing	-
		Subtotal	-	2.711		4.405		3.470		0.000		3.470	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*	Project (Number/Name) 673587 / *Air Traffic Control Systems*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Various contract types, performing activity and city/states are result of the use of Military Interdepartmental Purchase Requests, Purchase Requests, Project Orders, etc that are sent to multiple agencies in support of some tasks.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NextGen ATS Surveillance Radar/Automation System Upgrades	WR	Various : Various	-	0.000		0.562	Feb 2016	1.520	Nov 2016	0.000		1.520	Continuing	Continuing	-
Remote Virtual Air Traffic Control Tower Capability OUE	WR	Various : Various	-	0.000		0.000		0.767	Apr 2017	0.000		0.767	Continuing	Continuing	-
D-RAPCON	WR	Various : Various	-	0.689	Mar 2015	1.316	Nov 2015	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.689		1.878		2.287		0.000		2.287	-	-	-

Remarks

Various contract types, performing activity and city/states are result of the use of Military Interdepartmental Purchase Requests, Purchase Requests, Project Orders, etc that are sent to multiple agencies in support of some tasks.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration (PMA) - D-RAPCON	WR	Various : Bedford, MA	-	4.897	Oct 2014	5.320	Oct 2015	2.300	Oct 2016	0.000		2.300	Continuing	Continuing	-
		Subtotal	-	4.897		5.320		2.300		0.000		2.300	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*	Project (Number/Name) 673587 / *Air Traffic Control Systems*	

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	25.309		19.392		9.770		0.000		9.770	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*	**Project (Number/Name)** 673587 / *Air Traffic Control Systems*

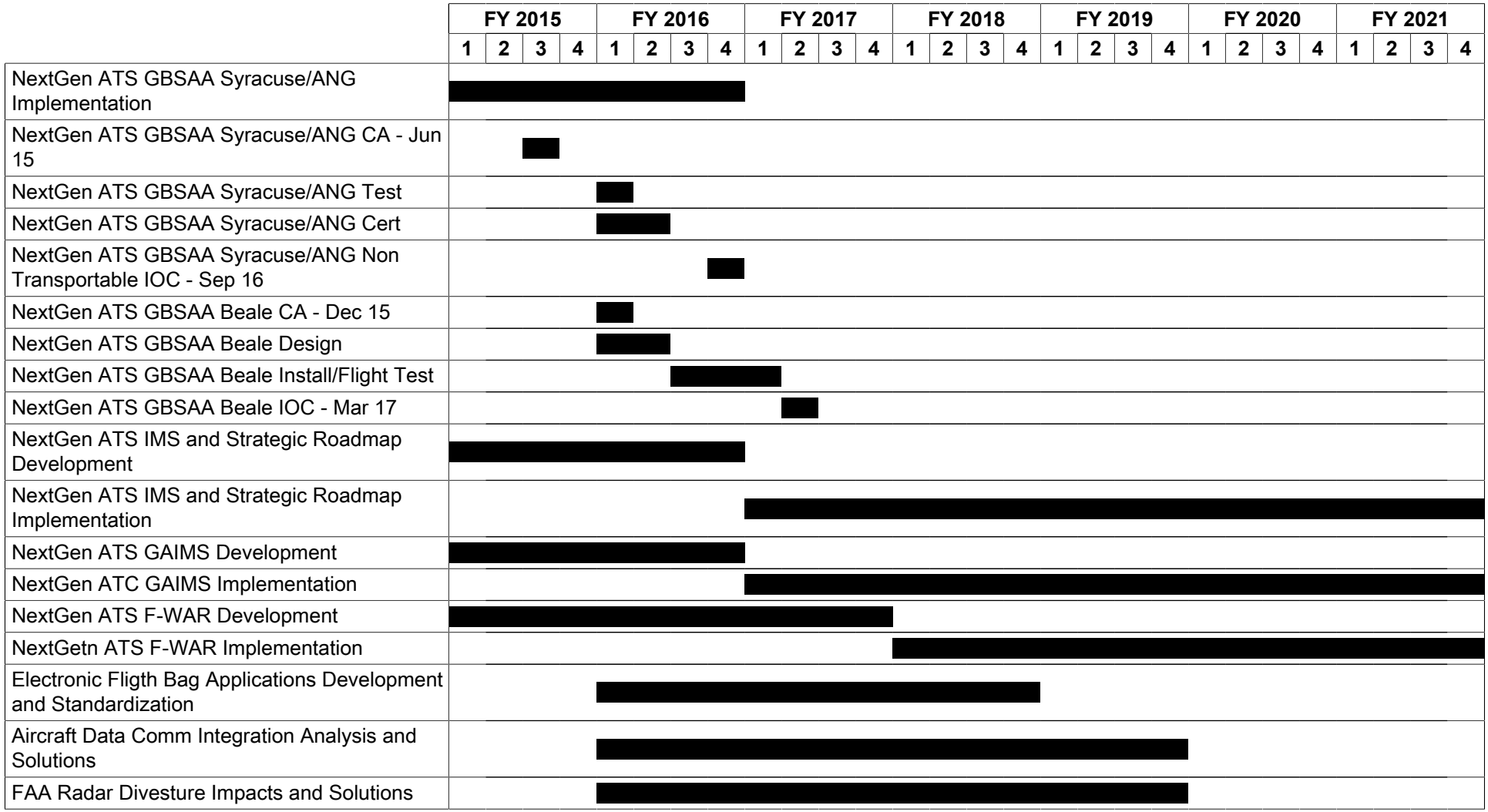

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*	**Project (Number/Name)** 673587 / *Air Traffic Control Systems*

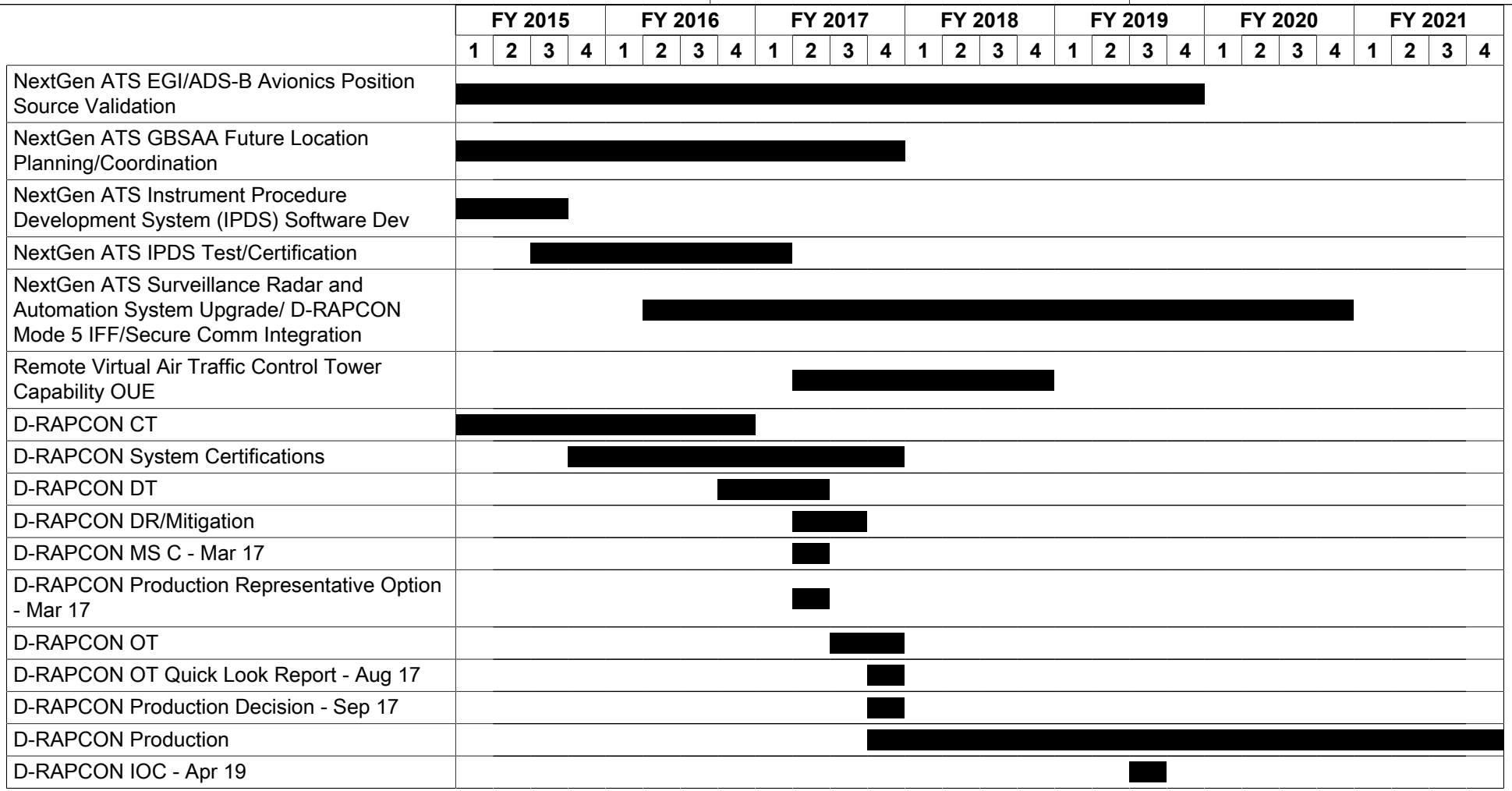

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*	**Project (Number/Name)** 673587 / *Air Traffic Control Systems*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NextGen ATS GBSAA Syracuse/ANG Implementation	1	2015	4	2016
NextGen ATS GBSAA Syracuse/ANG CA - Jun 15	3	2015	3	2015
NextGen ATS GBSAA Syracuse/ANG Test	1	2016	1	2016
NextGen ATS GBSAA Syracuse/ANG Cert	1	2016	2	2016
NextGen ATS GBSAA Syracuse/ANG Non Transportable IOC - Sep 16	4	2016	4	2016
NextGen ATS GBSAA Beale CA - Dec 15	1	2016	1	2016
NextGen ATS GBSAA Beale Design	1	2016	2	2016
NextGen ATS GBSAA Beale Install/Flight Test	3	2016	1	2017
NextGen ATS GBSAA Beale IOC - Mar 17	2	2017	2	2017
NextGen ATS IMS and Strategic Roadmap Development	1	2015	4	2016
NextGen ATS IMS and Strategic Roadmap Implementation	1	2017	4	2021
NextGen ATS GAIMS Development	1	2015	4	2016
NextGen ATC GAIMS Implementation	1	2017	4	2021
NextGen ATS F-WAR Development	1	2015	4	2017
NextGetn ATS F-WAR Implementation	1	2018	4	2021
Electronic Fligth Bag Applications Development and Standardization	1	2016	4	2018
Aircraft Data Comm Integration Analysis and Solutions	1	2016	4	2019
FAA Radar Divesture Impacts and Solutions	1	2016	4	2019
NextGen ATS EGI/ADS-B Avionics Position Source Validation	1	2015	4	2019
NextGen ATS GBSAA Future Location Planning/Coordination	1	2015	4	2017
NextGen ATS Instrument Procedure Development System (IPDS) Software Dev	1	2015	3	2015
NextGen ATS IPDS Test/Certification	3	2015	1	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305114F / *Air Traffic Control, Approach, and Landing System (ATCALS)*	**Project (Number/Name)** 673587 / *Air Traffic Control Systems*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NextGen ATS Surveillance Radar and Automation System Upgrade/ D-RAPCON Mode 5 IFF/Secure Comm Integration	2	2016	4	2020
Remote Virtual Air Traffic Control Tower Capability OUE	2	2017	4	2018
D-RAPCON CT	1	2015	4	2016
D-RAPCON System Certifications	4	2015	4	2017
D-RAPCON DT	4	2016	2	2017
D-RAPCON DR/Mitigation	2	2017	3	2017
D-RAPCON MS C - Mar 17	2	2017	2	2017
D-RAPCON Production Representative Option - Mar 17	2	2017	2	2017
D-RAPCON OT	3	2017	4	2017
D-RAPCON OT Quick Look Report - Aug 17	4	2017	4	2017
D-RAPCON Production Decision - Sep 17	4	2017	4	2017
D-RAPCON Production	4	2017	4	2021
D-RAPCON IOC - Apr 19	3	2019	3	2019