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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Air Force										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0305114F: Air Traffic Control, Approach, and Landing System (ATCALS)							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	20.644	43.187	35.674	-	35.674	26.811	9.432	5.162	5.255	Continuing	Continuing
673587: Air Traffic Control Systems	-	20.644	43.187	35.674	-	35.674	26.811	9.432	5.162	5.255	Continuing	Continuing
Quantity of RDT&E Articles		0	2	2		2	0	0	0	0		
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
^{##} The FY 2014 OCO Request will be submitted at a later date												
Note												
RDT&E articles are shown in year completed. In FY13 two Deployable Instrument Landing System (D-ILS) pre-production units are completed. In FY14 two Deployable Radar Approach Control (D-RAPCON) pre-produciton units are completed. The two D-ILS PPUs are funded in FY13. The two D-RAPCONs are incrementally funded in FY13 and FY14.												
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 surveillance, positioning, and precision approach 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 funding focuses on three main efforts as follows:												
Deployable Instrument Landing System (D-ILS). This effort develops a deployable Category I (200ft decision height/2400ft runway visual range) ILS with remote monitoring and maintenance capabilities. D-ILS will provide precision approach capability in adverse weather conditions for contingency operations and humanitarian or disaster relief operations. D-ILS will replace the current Air Force mobile Precision Approach Radar (PAR) system used to support operations at deployed locations which were procured in the 1970s, are manpower intensive, and logistically unsupportable. On average, only 18% (three of 17 systems) of the mobile PAR systems are operational on a daily basis. Development and deployment of D-ILS will support increased operations in the area of responsibility, allow phase out of the currently obsolete legacy systems and provide interoperability with the Civil Reserve Air Fleet (CRAF). FY14 funds complete engineering and manufacturing development (EMD) under the EMD contract awarded in Aug 11. Due to a contractor protest, the start of EMD execution was delayed until Dec 11. EMD execution includes assembling two EMD pre-production units for test and evaluation. D-ILS Milestone C is scheduled for FY14. Related OPAF funds are in program element (PE) 0305114F (Weapon System Code 833010).												
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. The D-RAPCON will be used to provide both a terminal and enroute surveillance capability. The D-RAPCON will also be used with the D-ILS 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 also provide a capability to support domestic disaster relief. The primary surveillance radar coverage (non-cooperative targets) is out												

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3600: Research, Development, Test & Evaluation, Air Force		PE 0305114F: Air Traffic Control, Approach, and Landing System (ATCALs)				
BA 7: Operational Systems Development						
to 60 nautical miles (nm) and the secondary surveillance radar coverage (cooperative targets) is out to 120 nm. FY14 funds continue EMD efforts which include the completion of two pre-production systems and the start of contractor testing. Related OPAF funds are in PE 0305114F (Weapon System Code 833010).						
Next Generation Air Transportation System (NextGen). 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 voice communications to digital data exchange. Per Deputy Secretary of Defense direction, the Air Force is the DoD lead Service for NextGen implementation and architecture development. NextGen 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 will also run in close parallel with the Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM) program in PE 0305099F. FY14 efforts will continue proof of concept demonstrations and analysis leading to Remotely Piloted Aircraft (RPA) Ground Based Sense and Avoid (GBSAA), RPA Pilot/Controller Communications, and Automatic Dependent Surveillance-Broadcast (ADS-B) ground system implementation. These efforts will improve the display of aircraft position to air traffic controllers, enhance flight safety, and support the seamless integration of RPAs into the National Airspace System and the airspaces of other nations. FY14 funding also begins development/test of new Instrument Procedures Development System (IPDS) software (joint effort with FAA and Services); upgrade of surveillance radar and automation systems with new capabilities such as Mode 5 Identification Friend or Foe; and continues NextGen Lead Service Office efforts which include preparation of NextGen Concept of Operations and Implementation Plans, PBN and ADS-B Benefits/Business Cases, a DoD Integrated Work Plan, RPA GBSAA Engagement Plan, and a DoD NextGen Enterprise Architecture Strategic Roadmap.						
Activities also include studies and analysis to support both current program planning and execution and future program planning.						
This program is in Budget Activity 7, Operational System Development, these budget activities include development efforts to upgrade systems currently fielded or has approval for full rate production and anticipate production funding in the current or subsequent fiscal year.						
B. Program Change Summary (\$ in Millions)		FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget		20.644	43.187	28.526	-	28.526
Current President's Budget		20.644	43.187	35.674	-	35.674
Total Adjustments		0.000	0.000	7.148	-	7.148
• Congressional General Reductions		-	0.000			
• Congressional Directed Reductions		-	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		-	0.000			
• Congressional Directed Transfers		-	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		0.000	0.000			
• Other Adjustments		0.000	0.000	7.148	-	7.148

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Change Summary Explanation FY14 funding adjustment reflects requested funds for D-RAPCON to fully fund development which will lead to a Milestone C in FY16.				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Title: NextGen Description: Includes efforts to implement NextGen efficiencies and capabilities. Focus is on seamlessly integrating Remotely Piloted Aircraft (RPAs) into civil airspace, ADS-B implementation, windfarm clutter mitigation, Instrument Procedures Development System software development, and Lead Service Office technical support/architecture development. FY 2012 Accomplishments: Continued efforts to implement NextGen efficiencies focusing on integrating RPAs into civil airspace (GBSAA at Cannon AFB), ADS-B ground system integration, radar windfarm clutter mitigation, initiation of pilot/controller RPA communications demo, preparation of CNS/ATM Initial Capability Document, NextGen Concept of Operations and Implementation Plans, NextGen architecture development/capability mapping and benefits/ business case development for Performance Based Navigation and ADS-B. FY 2013 Plans: Continues efforts to implement NextGen efficiencies. Tasks include RPA GBSAA demo at Cannon AFB, pilot/controller RPA communications demo at Creech, Nellis, and Cannon AFBs, installation of ADS-B equip for capability assessment at McGuire/ Nellis, continuation of CNS/ATM ICD preparation, radar windfarm clutter mitigation flight tests, NextGen architecture development, capability mapping, preparation of implementation roadmaps, Concept of Operations Implementation Plans, and Performance Based Navigation and ADS-B benefits/business case development. FY 2014 Plans: Will continue maturing GBSAA technology at Cannon AFB, refinement of pilot/controller communications procedures (demo at Cannon/Creech/Nellis) and civil approval of the GBSAA concept of operations (GBSAA Engagement Plan), and completion of ADS-B CNS/ATM ICD efforts. Additional tasks will include start of development of the Instrument Procedures Development System (IPDS) with the other Services and FAA, integration of Mode 5 IFF into legacy surveillance radars and automation systems, and through the Lead Service Office, refinement of NextGen implementation roadmaps, Concept of Operations and Implementation Plans, and NextGen benefits/business cases.		7.945	3.512	2.914
Title: D-RAPCON Description: Effort leads to award of D-RAPCON engineering, manufacturing and development (EMD) contract and test of two pre-production units and two automation system test units. FY 2012 Accomplishments:		0.937	27.888	25.149

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Finalized SRD and Draft Request for Proposal (RFP) package; analyzed vendor feedback; completed the RFP package to include conducting the appropriate Multi-Independent Review Teams (MIRTs); released revised RFP package to industry; continued Milestone (MS) B documentation preparation, preparation and start of source selection. FY 2013 Plans: Continues source selection briefings to the Source Selection Authority and completion of source selection efforts; supports obtaining MS B approval from the Milestone Decision Authority (MDA)/award of the EMD contract, conduct of the preliminary and critical design reviews, begins fabrication/integration/assembly of two pre-production units and continues development and coordination of test, evaluation and certification related plans and procedures. FY 2014 Plans: Will continue fabrication, integration and assembly of two D-RAPCON pre-production systems and two automation system test units, begin contractor testing and continue support of government test plans, procedures and certifications.				
Title: D-ILS Description: Includes conduct of design, development, and testing of pre-production units leading to the fielding of the new Deployable Instrument Landing System (D-ILS). FY 2012 Accomplishments: Continued Engineering Manufacturing Development (EMD) tasks which included successful completion of the functional, preliminary, and critical design reviews. FY 2013 Plans: Supports execution of the EMD phase to include development/integration/assembly of two pre-production units for contractor testing and preparation/review of Government DT/OT test plans and procedures. FY 2014 Plans: Will support and conduct Government developmental and operational testing and preparation of all required documentation to achieve Production Readiness Review and Milestone C decision. Also includes initial preparation of the production line for units ordered in the FY14 timeframe.		2.049	2.667	0.955
Title: Program Management Administration Description: Provides engineering, cost, test, logistics, and implementation planning and analysis support as applicable for the D-RAPCON, D-ILS, and NextGen programs. FY 2012 Accomplishments:		9.713	9.120	6.656

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C. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
Provided analysis and supported preparation of D-RAPCON system requirements document, request for proposal package, and Milestone B approval documents. Supported D-ILS and D-RAPCON source selections. Continued to support NextGen RPA Ground Based Sense and Avoid, ADS-B integration demonstrations and NextGen program office. FY 2013 Plans: Supports D-RAPCON sources selection, preparation of Milestone B approval document and follow-on EMD efforts to include preliminary and critical design reviews. Provides technical support for fabrication of two D-ILS pre-production units and follow-on developmental and operational testing. Continues NextGen efforts to develop technical solution for integration of RPAs into civil airspace and develop NextGen implementation plans and roadmaps. FY 2014 Plans: Will continue engineering and program support for: D-RAPCON pre-production system integration and preparation/review of DT/OT test plans and procedures; completion of D-ILS DT/OT; and continue with implementation of NextGen GBSAA solutions (GBSAA, pilot controller communications), assessment of surveillance and air traffic control automation upgrades, and updates to NextGen Enterprise Architecture and benefits/business cases.												
Accomplishments/Planned Programs Subtotals										20.644	43.187	35.674
D. Other Program Funding Summary (\$ in Millions)												
<u>Line Item</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u> <u>Base</u>	<u>FY 2014</u> <u>OCO</u>	<u>FY 2014</u> <u>Total</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>	
• OPAF: BA03: 833010: <i>Air Traffic Control and Landing Systems</i>	0.000	0.000	22.170		22.170	30.738	65.612	89.804	86.313	Continuing	Continuing	
• OPAF: BA 05: 861900: <i>Spares and Repair Parts</i>	0.000	0.000	0.000		0.000	0.135	2.340	3.420	2.260	Continuing	Continuing	
Remarks												
E. Acquisition Strategy Acquisition strategy includes the award of competitive fixed price incentive firm contracts for the D-ILS and D-RAPCON acquisitions emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs). Contracts will include production options.												
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.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development						R-1 ITEM NOMENCLATURE PE 0305114F: Air Traffic Control, Approach, and Landing System (ATCALs)						PROJECT 673587: Air Traffic Control Systems			
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Instrument Procedure Development System (IPDS)	SS/T&M	FAA:Washington, DC	-	0.000		0.000		1.810	Jan 2014	-		1.810	0.000	1.810	TBD
D-RAPCON	C/FPIF	TBD:TBD,	-	0.000		26.125	Mar 2013	23.342	Feb 2014	-		23.342	0.000	49.467	TBD
D-ILS	C/FPIF	Northrop Grumman:San Diego, CA	-	1.787	Mar 2012	1.667	Mar 2013	0.000		-		0.000	0.000	3.454	TBD
Subtotal			0.000	1.787		27.792		25.152		0.000		25.152	0.000	54.731	
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Lead Service Office Technical Support/ Requirements Documentation	Various	Various:,	-	2.410	Jul 2012	2.153	Apr 2013	0.441	Feb 2014	-		0.441	Continuing	Continuing	TBD
D-RAPCON Support Cost	Various	Various:,	-	0.611	Nov 2012	0.161	Apr 2013	0.000		-		0.000	0.000	0.772	TBD
D-ILS Support Cost	Various	Various:,	-	0.000		0.500	Mar 2013	0.116	Feb 2014	-		0.116	0.000	0.616	TBD
Subtotal			0.000	3.021		2.814		0.557		0.000		0.557			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NextGen ADS-B Integration/Demo	SS/FFP	ITT/Volpe Center:Herdon, VA	-	0.235	Jul 2012	0.165	Apr 2013	0.165	Feb 2014	-		0.165	0.000	0.565	TBD
RPA GBSAA Demo	SS/T&M	Volpe Center:Cambridge, MA	-	3.274	Mar 2012	1.094	May 2013	0.100	Jan 2014	-		0.100	0.000	4.468	TBD

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Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
RPA Pilot/Controller Comm Demo	SS/T&M	412th Test Wing:Edwards AFB, CA	-	0.526	Mar 2013	0.100	May 2013	0.100	Jan 2014	-		0.100	0.000	0.726	TBD
Surveillance Radar/ Automation System Upgrades	C/T&M	FAA:Washington, DC	-	0.000		0.000		0.350	Feb 2014	-		0.350	0.000	0.350	TBD
AF/DoE Joint Windfarm Clutter Mitigation	SS/T&M	Massachusetts Institute of Technology Lincoln Labs:Bedford, MA	-	1.500	Apr 2012	0.000		0.000		-		0.000	0.000	1.500	TBD
D-RAPCON	MIPR	Various:Various,	-	0.326	Mar 2012	1.602	Mar 2013	1.807	Mar 2014	-		1.807	0.000	3.735	TBD
D-ILS	MIPR	46th Test Wing:Eglin AFB, FL	-	0.262	Jan 2012	0.500	Jan 2013	0.839	Oct 2013	-		0.839	0.000	1.601	TBD
Subtotal			0.000	6.123		3.461		3.361		0.000		3.361	0.000	12.945	
Remarks															
D-RAPCON contract award delayed due to funding changes which caused reassessment of user requirements, update of the acquisition strategy, and preparation of a revised request for proposal.															
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration (PMA) - NextGen	Various	ESC/HBA:Bedford, MA	-	3.073	Oct 2011	1.418	Apr 2013	0.835	Oct 2013	-		0.835	Continuing	Continuing	TBD
Program Management Administration (PMA) - D-RAPCON	Various	ESC/HBA:Bedford, MA	-	3.823	Oct 2011	4.777	Oct 2012	5.031	Oct 2013	-		5.031	0.000	13.631	TBD
Program Management Administration (PMA) - D-ILS	Various	ESC/HBA:Bedford, MA	-	2.817	Oct 2011	2.925	Oct 2012	0.738	Oct 2013	-		0.738	0.000	6.480	TBD
Subtotal			0.000	9.713		9.120		6.604		0.000		6.604			

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	All Prior Years	FY 2012	FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	20.644		43.187		35.674		0.000	35.674			
Remarks												

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Air Force

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

3600: Research, Development, Test & Evaluation, Air Force
BA 7: Operational Systems Development

R-1 ITEM NOMENCLATURE

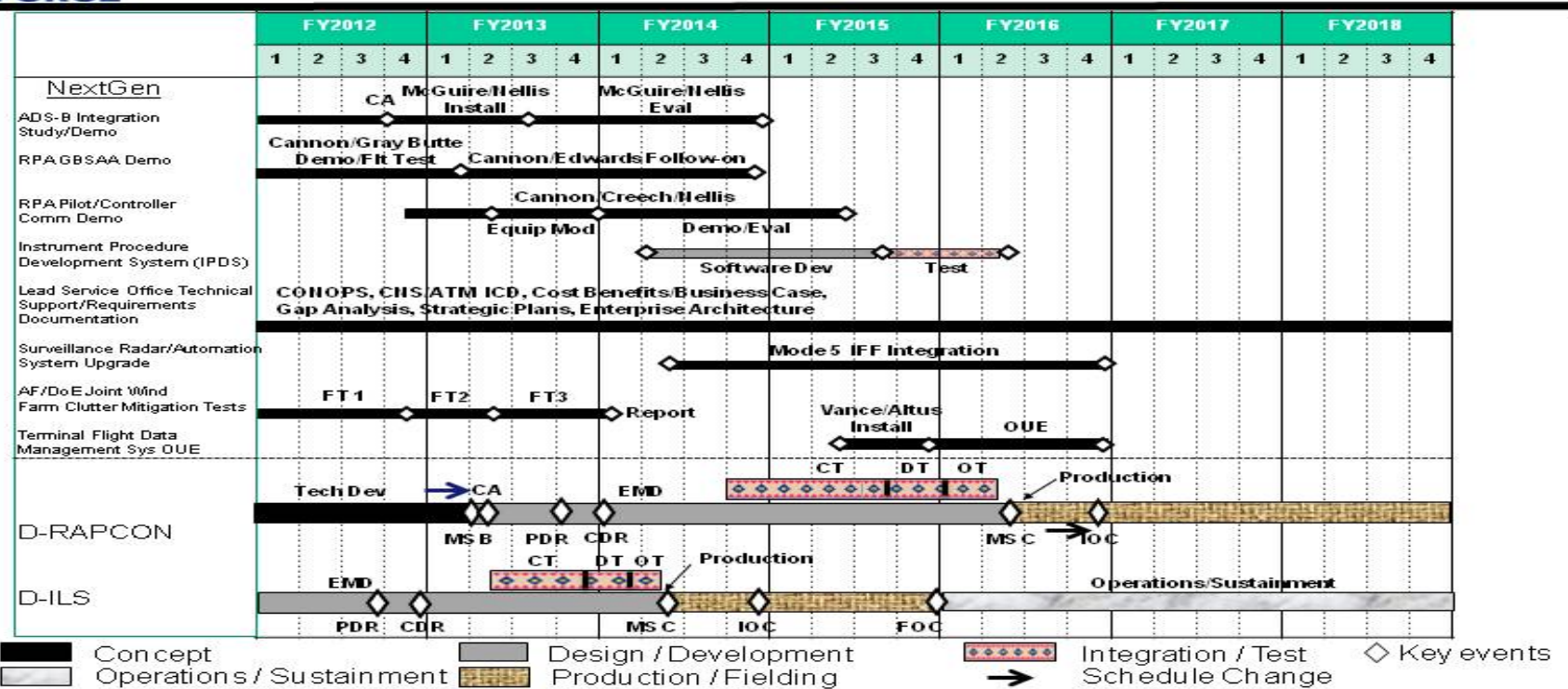
PE 0305114F: Air Traffic Control, Approach, and Landing System (ATCALS)

PROJECT

673587: Air Traffic Control Systems



Air Traffic Control and Landing Systems (ATCALS)



CA—Contract Award CNS/ATM—Communications, Navigation, Surveillance/Air Traffic Management CDR—Critical Design Review CT—Contractor Test
CONOPS—Concept of Operations DT—Developmental Test EMD—Engineering, Manufacturing, and Development FT—Flight Test ICD—Initial
Capability Document IOC/FOC—Initial/Full Operational Capability MS—Milestone OT—Operational Test OUE—Operational Utility Evaluation
PDR—Preliminary Design Review

Integrity - Service - Excellence

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Air Force			DATE: April 2013
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ADS-B Integration Study/Demo Contract Award	4	2012	4	2012
ADS-B Integration Study/Demo Install	4	2012	3	2013
ADS-B Integration Study/Demo Data Collection/Eval	3	2013	4	2014
RPA GBSAA Demo Cannon/Gray Butte Demo/Flt Test	1	2012	1	2013
RPA GBSAA Demo Cannon/Edwards Follow-on	1	2013	4	2014
RPA Pilot/Controller Comm Demo	4	2012	2	2015
RPA Pilot/Controller Comm Demo Equip Mod	2	2013	4	2013
RPA Pilot/Controller Comm Demo/Eval	1	2014	2	2015
Instrument Procedure Development System (IPDS) Software Dev	2	2014	3	2015
IPDS Test	3	2015	2	2016
Lead Service Office Technical Support/Requirements Documentation	1	2012	4	2018
Surveillance Radar and Automation System Upgrade	2	2014	4	2016
AF/DOE Joint Wind Farm Clutter Mitigation Tests 1, 2, and 3	1	2012	1	2014
AF/DoE Joint Wind Farm Clutter Mitigation Report	1	2014	1	2014
Terminal Flight Data Management Sys OUE Vance/Altus Install	2	2015	4	2015
Terminal Flight Data Management Sys OUE	4	2015	4	2016
D-RAPCON	1	2012	4	2018
D-RAPCON Milestone B	2	2013	2	2013
D-RAPCON PDR	4	2013	4	2013
D-RAPCON CDR	1	2014	1	2014
D-RAPCON CT/DT/OT	4	2014	2	2016
D-RAPCON Milestone C	2	2016	2	2016

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Air Force			DATE: April 2013	
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		Start		End
Events		Quarter	Year	Quarter
				Year
D-RAPCON IOC		4	2016	4
D-ILS		1	2012	4
D-ILS PDR		3	2012	3
D-ILS CDR		4	2012	4
D-ILS CT/DT/OT		2	2013	2
D-ILS Milestone C		2	2014	2
D-ILS Initial Operational Capability (IOC)		4	2014	4
D-ILS Full Operational Capability (FOC)		4	2015	4
D-ILS Operations/Sustainment		1	2016	4
				2018