Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Air Force										DATE: February 2012	
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/Landing System (ATCALS)*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	26.209	20.644	43.187	-	43.187	28.526	19.802	7.405	5.225	Continuing	Continuing
673587: *Air Traffic Control Systems*	26.209	20.644	43.187	-	43.187	28.526	19.802	7.405	5.225	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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). FY13 funding focuses on three main efforts as follows:

Deployable Instrument Landing System (D-ILS). This effort develops a deployable version of the fixed base ILS. D-ILS will be the standard precision approach and landing system for conducting Air Force contingency operations and humanitarian or domestic disaster restoral operations in adverse weather conditions. The current Air Force mobile precision approach radar system (PAR) used to support operations at deployed locations 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 will provide interoperability with the Civil Reserve Air Fleet (CRAF). FY13 funds continue engineering and manufacturing development (EMD) under the EMD contract awarded in Aug 11. Due to a contractor protest, EMD execution was delayed until Dec 11. EMD execution includes assembling two EMD units; as well as test and evaluation. D-ILS Milestone C is now scheduled for FY14. Related OPAF funds are in program element (PE) 0305114F.

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 have 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 humanitarian operations and also 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) is out to 120 nm. FY13 funds will continue contract award efforts to include conducting the preliminary and critical design reviews and assembly of two pre-production units to support developmental test/operational test (DT/OT). Related OPAF funds are in PE 0305114F.

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, transition from voice communications to digital data exchange, as well as advances in weather forecast delivery systems. 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. FY13 efforts will continue integration studies and demonstrations leading to the implementation of Automatic Dependent

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Air Force	DATE: February 2012
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/Landing System (ATCALS)*

Surveillance - Broadcast (ADS-B), Remotely Piloted Aircraft (RPA) Ground Based Sense and Avoid (GBSAA), RPA Pilot/Controller Communications, surveillance radar and automation system upgrades, and radar windfarm clutter mitigation technologies. These efforts will improve the display of aircraft position to air traffic managers, enhance flight safety, and support the seamless integration of RPAs into the National Airspace System and the airspaces of other nations. FY13 funding will also continue support of the NextGen Air Force and DoD Architect offices and development of the DoD NextGen overarching architecture. 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 RPAs); these efforts will run in close parallel with the Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM) program in PE 0305099F.

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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	33.268	63.367	15.667	-	15.667
Current President's Budget	26.209	20.644	43.187	-	43.187
Total Adjustments	-7.059	-42.723	27.520	-	27.520
• Congressional General Reductions	-	-0.723			
• Congressional Directed Reductions	-	-42.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-5.802	-			
• SBIR/STTR Transfer	-0.950	-			
• Other Adjustments	-0.307	-	27.520	-	27.520

Change Summary Explanation

FY11 Congressional General Reduction of 0.307M in Other Adjustment row.

FY12 Congressional General Reduction (FFRDC, Sec. 8023) of 0.723M.

FY12 Congressional Directed Reduction of 42.0M from FY12 Defense Appropriation Act

FY13 funding adjustment reflects requested funds for D-RAPCON to fully fund development which will lead to a Milestone C in FY16.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Air Force	DATE: February 2012
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/Landing System (ATCALS)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: NextGen ***Description:*** Includes efforts to implement NextGen efficiencies and capabilities. Efforts focus on integrating Remotely Piloted Aircraft (RPAs) in to the NAS, ADS-B implementation, windfarm clutter mitigation, and architecture development. ***FY 2011 Accomplishments:*** Continued GBSAA development and ADS-B analysis/demos. Began pilot/controller RPA communications demonstrations. Completed multilateration deployment/surveillance capability demonstration. Provided resources for NextGen capability mapping and architecture development and integration efforts. ***FY 2012 Plans:*** Continues FY11 efforts to implement NextGen efficiencies focusing on integrating RPAs into the NAS, pilot/controller RPA communications, ADS-B integration, radar windfarm clutter mitigation, and continuing NextGen architecture development, capability mapping and preparation of implementation roadmaps, cost estimates and acquisition strategies. ***FY 2013 Plans:*** Will continue efforts to implement NextGen efficiencies. Focus will be on integrating RPAs into the NAS, pilot/controller RPA communications, ADS-B integration, and continuing NextGen architecture development, capability mapping and preparation of implementation roadmaps, cost estimates and acquisition strategies. Will deliver report concluding radar windfarm clutter mitigation study for further analysis.	7.661	9.969	4.930
Title: D-RAPCON ***Description:*** Effort leads to award of D-RAPCON engineering, manufacturing and test of two pre-production units and two automation system test units. ***FY 2011 Accomplishments:*** Finalized SRD and Draft Request for Proposal (RFP) package; analysis of vendor feedback; preparation of revised RFP package ***FY 2012 Plans:*** Continues Milestone (MS) B documentation preparation and completes the request for proposal (RFP) package to include conducting the appropriate Multi-Independenr Review Teams (MIRTs) ***FY 2013 Plans:*** Will support award of the engineering, manufacturing and development contract, conduct of the preliminary and critical design reviews and the start of fabrication of two D-RAPCON prepoduction systems and two automation system test units to support DT/OT	7.620	5.414	32.665
Title: D-ILS	10.928	5.261	5.592

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Air Force	DATE: February 2012
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/Landing System (ATCALS)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
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 2011 Accomplishments:*** Completed source selection and briefings to the Source Selection Authority. Obtained Milestone B approval from the Milestone Decision Authority (MDA), awarded the Engineering Manufacturing Development (EMD) contract. ***FY 2012 Plans:*** Supports execution of the EMD phase to include conduct of system functional, preliminary, and critical design reviews. Also supports development and integration of two pre-production units for contractor and development testing. ***FY 2013 Plans:*** Will support completion of contractor, development and operational testing as well as drafting of all required documentation to achieve a Milestone C decision. Also includes initial preparation of the production line for units ordered in the FY14 timeframe			
Accomplishments/Planned Programs Subtotals	26.209	20.644	43.187

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• OPAF, PE 0305114F: *Air Traffic Control and Landing Systems*	8.470	44.634	34.788	0.000	34.788	75.359	91.157	140.367	149.846	Continuing	Continuing

E. Acquisition Strategy

Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs).

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-4, RDT&E Schedule Profile: PB 2013 Air Force		DATE: February 2012
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/ Landing System (ATCALS)*	**PROJECT** 673587: *Air Traffic Control Systems*

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Air Force		DATE: February 2012
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/ Landing System (ATCALS)*	PROJECT 673587: *Air Traffic Control Systems*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Next Generation Air Traffic Control (NextGen)	1	2011	4	2017
ADS-B Integration Study and Demonstration	1	2011	1	2014
RPA Ground Based Sense and Avoid Technology (GBSAA) Tech Dev	1	2011	4	2014
RPA Pilot/Controller Communications Demonstration	2	2011	2	2014
Terminal Flight Data Mgr Sys OUE	2	2013	2	2015
Studies and Analysis (AFFSA)	1	2011	4	2017
Surveillance Radar and Automation System Upgrade	1	2014	4	2017
AF/DoE Joint Wind Farm Clutter Mitigation	1	2011	3	2013
D-RAPCON	1	2011	4	2017
D-RAPCON Milestone B	4	2012	4	2012
D-RAPCON Combined Developmental & Operational Testing	1	2014	4	2015
D-RAPCON Milestone C	1	2016	1	2016
D-RAPCON IOC	2	2016	2	2016
D-ILS	1	2011	4	2015
D-ILS Milestone B	4	2011	4	2011
D-ILS Combined Developmental & Operational Testing	3	2013	1	2014
D-ILS Milestone C	2	2014	2	2014
D-ILS Initial Operational Capability (IOC)	3	2014	3	2014
D-ILS Full Operational Capability (FOC)	4	2015	4	2015