

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE June 2001	
BUDGET ACTIVITY 07 - Operational System Development					PE NUMBER AND TITLE 0305114F Air Traffic Control/Approach/Landing System (ATCALs)					
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6,023	47,651	26,982	3,608	5,929	6,046	6,174	6,304	Continuing	TBD
2026 System Support	230	249	0	0	0	0	0	0	1,497	TBD
3587 Air Traffic Control Systems	5,793	47,402	26,982	3,608	5,929	6,046	6,174	6,304	Continuing	TBD
Quantity of RDT&E Articles	0	5	0	0	0	0	0	0	0	0
FY03-FY07 budget numbers do not reflect the DoD strategic review results.										
<p>(U) <u>A. Mission Description</u></p> <p>The focus of RDT&E activities in this program is a comprehensive modernization of fixed and mobile Air Traffic Control and Landing Systems (ATCALs) that will bridge the gap between the current aging fleet of ground-based ATCALs and future space-based infrastructure. In particular, the program is focused on developing systems that increase commonality and interoperability, reduce manpower requirements, reduce logistics supportability problems, and posture the service to move to space-based aerospace navigation infrastructure when that becomes feasible and affordable (sometime after 2010). Additionally, this program investigates and exploits emerging technologies in critical ATCALs support areas such as air traffic controller training and terminal instrument procedures development. This program complements other safety of flight and airspace access programs such as Global Air Traffic Management and Global Access, Navigation, and Safety. Project 2026 funds ongoing liaison and interagency cooperative studies, between the USAF Air Traffic Control and Landing Systems program office and various organizations to include other Services, the Federal Aviation Administration (FAA) and International Civil Aviation Organization (ICAO). Beginning in FY02, funding for Project 2026 will be contained in Project 3587. Project 3587 funds research and development of new air traffic control surveillance, positioning, and precision approach capabilities. This project funds the development of the Mobile Approach Control System (MACS) and Air Force Terminal Instrument Procedures-Replacement (AFTERPS-R).</p> <p>(U) <u>B. Budget Activity Justification</u></p> <p>This program is in budget activity 7, Operational System Development, because it upgrades currently fielded weapon systems.</p>										

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

June 2001

BUDGET ACTIVITY

07 - Operational System Development

PE NUMBER AND TITLE

**0305114F Air Traffic Control/Approach/Landing
System (ATCALs)**(U) **C. Program Change Summary (\$ in Thousands)**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 2001 PBR)	5,588	18,093	12,279	TBD
(U) Appropriated Value	7,344	48,093		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-25			
b. Small Business Innovative Research	-221			
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogram	-361			
e. Rescissions	-714	-442		
(U) Adjustments to Budget Years Since FY 2001 PBR			14,703	
(U) Current Budget Submit/FY 2002 PBR	6,023	47,651	26,982	TBD

(U) **Significant Program Changes:**

FY00: \$1.756M was transferred from PE 0305137F, National Airspace System, in an effort to reduce the number of small-dollar program elements.

FY01: FY01 Appropriations Bill added \$30M to accelerate procurement of three Mobile Approach Control System (MACS) test assets for Air National Guard locations.

FY02: Air Force added \$17.728M to accelerate the core MACS development program and to integrate the various components of the three additional MACS test assets from FY01. Tower Simulator System (TSS) RDT&E funds, in the amount of \$3M were reprogrammed to the procurement appropriation. The TSS components will be competitively procured from off-the-shelf sources and require no RDT&E funds.

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0305114F Air Traffic Control/Approach/Landing
System (ATCALs)

PROJECT

2026

COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
2026 System Support	230	249	0	0	0	0	0	0	0	1,497

FY03-FY07 budget numbers do not reflect the DoD strategic review results. Beginning in FY02, funding for system support will be contained in Project 3587 vice Project 2026.

(U) **A. Mission Description**

This continuing effort funds ongoing liaison and interagency cooperative studies and interoperability analyses between the USAF Air Traffic Control and Landing Systems (ATCALs) Program Office and various organizations which include the other services, the Federal Aviation Administration (FAA), and the International Civil Aviation Organization (ICAO). This project provides Air Force mission support for the ATCALs programs including several joint efforts with the FAA. RDT&E funds are used to resolve or minimize technical interface problems associated with interoperability between existing or planned DoD/FAA ATCALs equipment and capabilities. This project ensures Air Force air traffic systems work collaboratively to provide safe and efficient Air Traffic Control services within the National Airspace System and in host nations overseas.

(U) **FY 2000 (\$ in Thousands)**

(U) \$88 Support for all ATCALs projects
 (U) \$95 Continue national and international air traffic system interoperability and interface evaluations
 (U) \$47 Complete precision landing studies for Joint Special Operations Command
 (U) \$230 Total

(U) **FY 2001 (\$ in Thousands)**

(U) \$89 Support for all ATCALs projects
 (U) \$111 Continue national and international air traffic system interoperability and interface evaluations
 (U) \$49 Perform strategic planning for ATCALs deployment
 (U) \$249 Total

(U) **FY 2002 (\$ in Thousands)**

(U) \$0 Activities consolidated in PE 0305114F, Project 3587
 (U) \$0 Total

Project 2026

Page 3 of 12 Pages

Exhibit R-2A (PE 0305114F)

1479

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

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June 2001

BUDGET ACTIVITY

07 - Operational System Development

PE NUMBER AND TITLE

0305114F Air Traffic Control/Approach/Landing
System (ATCALs)

PROJECT

2026

(U) **B. Project Change Summary**

Beyond FY01, funding consolidated within PE 0305114F, Project 3587.

(U) **C. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	

(U) AF RDT&E

(U) Other APPN

N/A

(U) **D. Acquisition Strategy**

Engineering Manufacturing Development, Fixed Price Incentive Fee (FPIF), No Non-Developmental Items (NDI)

(U) **E. Schedule Profile**

	<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>			
	1	2	3	4	1	2	3	4	1	2	3	4

(U) Conduct Precision Landing Studies

* Denotes completed activity

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001																																																																																																																																																										
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Project 2026					Page 5 of 12 Pages			Exhibit R-3 (PE 0305114F)																																																																																																																																																									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE June 2001	
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
07 - Operational System Development		0305114F Air Traffic Control/Approach/Landing System (ATCALs)			2026	
(U) <u>Government Furnished Property Continued:</u>						
<u>Test and Evaluation Property</u>						
N/A						
<u>Subtotals</u>		<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>
Subtotal Product Development						
Subtotal Support and Management		1,018	230	249	0	0
Subtotal Test and Evaluation						
Total Project		1,018	230	249	0	0
Total Project		1,018	230	249	0	0
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PROJECT

3587

COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
3587 Air Traffic Control Systems	5,793	47,402	26,982	3,608	5,929	6,046	6,174	6,304	Continuing	TBD

FY03-FY07 budget numbers do not reflect the DoD strategic review results. Beginning in FY02, funding for system support will be contained in Project 3587 vice Project 2026.

(U) **A. Mission Description**

This project funds research and development of new air traffic control surveillance, positioning, and precision approach capabilities (including the Mobile Approach Control System (MACS) which replaces non-standard, unsupportable, large footprint mobile radar approach systems with a common, easily-transportable system for both the Air National Guard and USAF). This year, the project completed development of a multi-mode receiver (the Precision Landing System receiver) which will equip every C-17 with the capability to fly approaches using a variety of landing aids, including microwave landing systems and Instrument Landing Systems located close to sources of interference. This project conducts development and testing for the National Airspace System (NAS) to support fielding of NAS hardware and software for radar systems, digital voice switches, and specialized data automation systems (previously funded in PE0305137). Additionally, this project funds the development of a replacement system for automated development of terminal instrument procedures (the precisely-measured information that tell pilots how to fly during final approach to avoid obstacles). This project is also key to ensuring Air Force Air Traffic Systems work collaboratively to safely and efficiently provide ATC services within the NAS and in host nations overseas. For example, over the next 15 years, the FAA plans to implement new or improved capabilities into the NAS in an evolutionary manner. FY 2003-2007 will concentrate on deployment of the next generation of communications, navigation, and surveillance technologies and the automation upgrades necessary to accommodate new CNS capabilities. FY 2008-2015 will see additional capabilities being added to enable the concept of Free Flight throughout the NAS. Since the Air Force must provide the same level of air traffic service to the military and flying public, funds are required to conduct interoperability and architecture studies and analyses as necessary on a wide range of aviation concepts. This effort complements similar activities associated with other safety of flight and airspace access programs such as Global Air Traffic Management that predominately focus on aircraft issues.

(U) **FY 2000 (\$ in Thousands)**

- (U) \$2,609 Begin Mobile Approach Control System Development
- (U) \$577 Support field to ensure USAF ATC interoperability with FAA and NATO
- (U) \$850 Begin development of Air Force Terminal Instrument Procedures System
- (U) \$85 Identify interface improvements for NAS systems
- (U) \$139 Complete NAS risk reduction studies/software interoperability analyses
- (U) \$731 Complete NAS radar/automation testing

Project 3587

Page 7 of 12 Pages

Exhibit R-2A (PE 0305114F)

1483

UNCLASSIFIED

UNCLASSIFIED

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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305114F Air Traffic Control/Approach/Landing System (ATCALs)	
		PROJECT 3587
<p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2000 (\$ in Thousands) Continued</u></p> <p>(U) \$802 Complete development of NAS Military Airspace Management System</p> <p>(U) \$5,793 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <p>(U) \$45,183 Continue Mobile Approach Control System Development</p> <p>(U) \$664 Continue the support of field activities to ensure USAF ATC interoperability with FAA and NATO</p> <p>(U) \$1,555 Continue development of Air Force Terminal Instrument Procedures System</p> <p>(U) \$47,402 Total</p> <p style="margin-left: 40px;">The following net transactions are reflected in the FY01 program total: BTR= -81K, and SBIR= -1,473K. These transactions are not reflected in other sections of the R-docs where an FY01 total is shown.</p> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <p>(U) \$24,618 Continue Mobile Approach Control System Development</p> <p>(U) \$755 Complete development of Air Force Terminal Instrument Procedures System</p> <p>(U) \$599 Continue the support of field activities to ensure USAF ATC interoperability with FAA and NATO</p> <p>(U) \$572 Conduct technology insertion studies to determine USAF ATC applicability with coalition allies</p> <p>(U) \$93 Continue support for all ATCALs Projects</p> <p>(U) \$235 Conduct national/international Air Traffic System compatibility and interface evaluations</p> <p>(U) \$58 Conduct strategic planning analyses for future deployment of Air Traffic Systems</p> <p>(U) \$52 Conduct future system architecture analyses and definitions</p> <p>(U) \$26,982 Total</p> <p>(U) <u>B. Project Change Summary</u></p> <p style="margin-left: 40px;">FY00: \$1.756M was transferred from PE 0305137F, NAS, in an effort to reduce the number of small-dollar program elements. The funds will be used to complete testing and fielding of NAS systems.</p> <p style="margin-left: 40px;">FY01: FY01 Appropriations Bill added \$30M to accelerate procurement of three MACS test assets for Air National Guard locations.</p> <p style="margin-left: 40px;">FY02: Air Force added \$17.728M to accelerate the core MACS development program and to integrate the various components of the three additional MACS test assets from FY01. Tower Simulator System (TSS) funds in the amount of \$3M were reprogrammed to the ATCALs procurement appropriation. The TSS components will be</p>		
<div style="display: flex; justify-content: space-between;"> Project 3587 Page 8 of 12 Pages Exhibit R-2A (PE 0305114F) </div>		

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

June 2001

BUDGET ACTIVITY

07 - Operational System Development

PE NUMBER AND TITLE

0305114F Air Traffic Control/Approach/Landing
System (ATCALs)

PROJECT

3587

(U) **B. Project Change Summary Continued**

competitively procured from off-the-shelf sources and require no RDT&E funds.

(U) **C. Other Program Funding Summary (\$ in Thousands)**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) AF RDT&E										
(U) Other APPN										
(U) OPAF - BA 3 (PE 305114F)	0	5,958	1,488	49,693	80,239	81,286	25,973	24,648	Continuing	TBD
Weapon System Code										
833010										
(U) OPAF, BA 3, (PE 305137F)	44,897	58,252	71,512	62,242	50,430	47,467	48,267	49,245	Continuing	TBD
Weapon System Code										
833020										
(U) OPAF, BA 5, (PE 305137F)	4,237	4,907	5,258	4,379	3,756	3,997	4,137	4,220	Continuing	TBD
Weapon System Code										
86190A Initial Spares										
(U) MILCON, AF	4,000	0	0	0	0	0	0	0	0	4,000

(U) **D. Acquisition Strategy**

Engineering Manufacturing Development, Fixed Price Incentive Fee (FPIF), No Non-Developmental Items (NDI)

(U) **E. Schedule Profile**

	<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Contract Milestones												
(U) MACS												
(U) PAR Contract Award					*							
(U) ASR/OPS Contract Award						*						
(U) Operational Testing										X		
(U) AFTERPS-R Contract Award							*					

Project 3587

Page 9 of 12 Pages

Exhibit R-2A (PE 0305114F)

1485

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

June 2001

BUDGET ACTIVITY

07 - Operational System Development

PE NUMBER AND TITLE

0305114F Air Traffic Control/Approach/Landing
System (ATCALs)

PROJECT

3587

(U) E. Schedule Profile Continued

	<u>FY 2000</u>					<u>FY 2001</u>					<u>FY 2002</u>			
	1	2	3	4	1	2	3	4	1	2	3	4		
(U) Complete Radar OT&E							*							
(U) Complete Automation OT&E							*							
(U) Radar and Automation Milestone III								*						
(U) NAS IOC							*							
* Denotes completed activity														
X Denotes scheduled activity														

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001				
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT			
07 - Operational System Development				0305114F Air Traffic Control/Approach/Landing System (ATCALs)				3587			
(U) <u>A. Project Cost Breakdown (\$ in Thousands)</u>											
				FY 2000		FY 2001		FY 2002			
(U) Primary Hardware Development for the MACS				2,774		45,183		24,618			
(U) Primary Hardware Test and Evaluation to support NAS Milestone III				1,533		0		0			
(U) Studies/field/integration activities to support on-going Air Traffic Control				352		499		1,434			
(U) NAS Interoperability/Software Analyses to support Milestone III				139		0		0			
(U) AFTERPS-R development				850		1,555		755			
(U) Government Program Management Support and Travel for ATCALs activities				145		165		175			
(U) Total				5,793		47,402		26,982			
NOTE: Until FY00, NAS RDT&E costs were captured in PE 305137F. As of FY00, those costs are captured in this program element.											
(U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>											
(U) <u>Performing Organizations:</u>											
<u>Contractor or Government</u>		<u>Contract Method/Type or Funding</u>	<u>Award or Obligation</u>	<u>Performing Activity</u>	<u>Project Office</u>	<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Performing Activity</u>		<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
<u>Product Development Organizations</u>											
AFTERPS-R - Canadian Commercial Corp		FPAF	Apr 01	N/A	N/A	0	850	1,555	755	Continuing	TBD
MACS PAR Development - Lockheed Martin		FPIF	Jun 00	N/A	N/A	0	1,519	11,766	5,822	Continuing	TBD
ASR Development - ITT Gilfillan		FPAF	Oct 00	N/A	N/A	0	0	30,519	17,053	Continuing	TBD
MITRE Corp		FFP	Oct 00	N/A	N/A	210	217	980	980	Continuing	TBD
Horizons Technology Inc.		FFP	Feb 99	N/A	N/A	343	1,084	1,818	1,513	Continuing	TBD
MCR Federal Inc.		FFP	Apr 99	N/A	N/A	350	200	200	200	Continuing	TBD
Raytheon Corp		FFP	Multiple	N/A	N/A	0	668	0	0	0	668
Various		Multiple	Multiple	Continuing	Continuing	1,303	638	249	334	Continuing	TBD
Project 3587				Page 11 of 12 Pages				Exhibit R-3 (PE 0305114F)			

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE June 2001			
BUDGET ACTIVITY					PE NUMBER AND TITLE				PROJECT		
07 - Operational System Development					0305114F Air Traffic Control/Approach/Landing System (ATCALs)				3587		
(U) <u>Performing Organizations Continued:</u>											
<u>Support and Management Organizations</u>											
Various		Multiple	Multiple	Continuing	Continuing	378	145	165	175	Continuing	TBD
<u>Test and Evaluation Organizations</u>											
46th Test Wing, Eglin AFB		PO	Multiple	N/A	N/A	155	472	150	150	Continuing	TBD
FL											
(U) <u>Government Furnished Property:</u>											
<u>Contract</u>											
<u>Method/Type</u>		<u>Award or</u>									
<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>			<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>			<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>											
N/A											
<u>Support and Management Property</u>											
N/A											
<u>Test and Evaluation Property</u>											
N/A											
						<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Subtotals</u>						<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development						2,206	5,176	47,087	26,657	TBD	TBD
Subtotal Support and Management						378	145	165	175	TBD	TBD
Subtotal Test and Evaluation						155	472	150	150	TBD	TBD
Total Project						2,739	5,793	47,402	26,982	TBD	TBD
Project 3587											
Page 12 of 12 Pages											
Exhibit R-3 (PE 0305114F)											