PE NUMBER: 0603860F
PE TITLE: Joint Precision Approach and Landing Systems - Dem/Val

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2006
BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603860F Joint Precision Approach and Landing Systems - Dem/Val

	Cost ($ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
	Total Program Element (PE) Cost	12.623	10.951	10.011	10.169	19.130	4.845	4.357	Continuing	TBD
4652	Precision Landing Systems	12.623	10.951	10.011	10.169	19.130	4.845	4.357	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

Joint Precision Approach and Landing System (JPALS) is a joint effort among the USAF, Navy, and Army. The AF is designated as the lead service to develop the common system architecture. Following the Milestone B decision in FY07, the lead service responsibilities will transfer to the Navy. JPALS will define the future precision approach and landing system for the Department of Defense (DoD) to provide a joint operational capability for U.S. forces to perform assigned conventional and special operations missions from fixed-base, tactical, shipboard, and special mission environments under a wide range of meteorological conditions. Also, JPALS will enhance DoD's ability to obtain civil interoperability with current and projected Federal Aviation Administration (FAA) and North Atlantic Treaty Organization (NATO) member country landing systems. This program will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability. When complete, this effort will replace aging shipboard and ground-based precision landing systems (Instrument Landing System, Precision Approach Radar, Microwave Landing System, and Automated Carrier Landing Systems). JPALS will facilitate DoD missions and training by enabling US forces to land on any airfield worldwide (land and sea) under peacetime and hostile conditions. JPALS also decreases the time required for deploying forces to a theater by providing an assured landing capability. JPALS provides increased inter- and intra-theater logistics throughput and the ability to fight at night and in inclement weather. Furthermore, JPALS will provide a precision landing capability where none currently exists. It will enhance interoperability for naval aircraft landing at shore-based fields operated by other services and provide interoperability for the Civil Reserve Air Fleet at DoD airfields, especially in the expeditionary environment. The JPALS Analysis of Alternatives (AOA) reflected Local Area Differential Global Positioning System (LDGPS) as the most promising technology to meet the mission need. Development activities are initially focused on reducing technical risks. First, JPALS will employ quality guidance in the presence of Global Positioning System (GPS) jamming. Second, its architecture will be developed to integrate and synchronize with related Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM), GPS modernization initiatives, and net-centricity operations. Third, JPALS will develop and integrate encrypted data links and antenna sets. Finally, JPALS will harmonize with U.S. and international civil satellite navigation and ground navigation systems development. This effort will result in avionics modifications to over 13,000 DoD aircraft. Because JPALS will result in a family of systems, other technologies will be monitored and evaluated such as an Autonomous Landing Capability (ALC) and the FAA local and wide area differential GPS alternatives.

This program is in budget activity 4, Advanced Component Development and Prototypes Research Category 6.4B, because supportability and manufacturing process design considerations must be identified and integrated into the precision landing architecture.

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2006
BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603860F Joint Precision Approach and Landing Systems - Dem/Val

(U) B. Program Change Summary ($ in Millions)

		FY 2005	FY 2006	FY 2007
(U)	Previous President's Budget	16.784	11.211	18.684
(U)	Current PBR/President's Budget	12.623	10.951	10.011
(U)	Total Adjustments	-4.161	-0.260	
(U)	Congressional Program Reductions		-0.100	
	Congressional Rescissions	-0.667	-0.160	
	Congressional Increases			
	Reprogrammings	-3.000		
	SBIR/STTR Transfer	-0.494		

(U) Significant Program Changes:

FY05/FY07: Reductions to fund higher AF and DoD priorities. Milestone B moved from 3QFY06 to 3QFY07 to accommodate Navy Technology Maturation.

Exhibit R-2a, RDT&E Project Justification		DATE: February 2006
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0603860F Joint Precision Approach and Landing Systems - Dem/Val	PROJECT NUMBER AND TITLE: 4652 Precision Landing Systems

Cost ($ in Millions)	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
4652 Precision Landing Systems	12.623	10.951	10.011	10.169	19.130	4.845	4.357	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

Joint Precision Approach and Landing System (JPALS) is a joint effort among the USAF, Navy, and Army. The AF is designated as the lead service to develop the common system architecture. Following the Milestone B decision in FY07, the lead service responsibilities will transfer to the Navy. JPALS will define the future precision approach and landing system for the Department of Defense (DoD) to provide a joint operational capability for U.S. forces to perform assigned conventional and special operations missions from fixed-base, tactical, shipboard, and special mission environments under a wide range of meteorological conditions. Also, JPALS will enhance DoD's ability to obtain civil interoperability with current and projected Federal Aviation Administration (FAA) and North Atlantic Treaty Organization (NATO) member country landing systems. This program will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability. When complete, this effort will replace aging shipboard and ground-based precision landing systems (Instrument Landing System, Precision Approach Radar, Microwave Landing System, and Automated Carrier Landing Systems). JPALS will facilitate DoD missions and training by enabling US forces to land on any airfield worldwide (land and sea) under peacetime and hostile conditions. JPALS also decreases the time required for deploying forces to a theater by providing an assured landing capability. JPALS provides increased inter- and intra-theater logistics throughput and the ability to fight at night and in inclement weather. Furthermore, JPALS will provide a precision landing capability where none currently exists. It will enhance interoperability for naval aircraft landing at shore-based fields operated by other services and provide interoperability for the Civil Reserve Air Fleet at DoD airfields, especially in the expeditionary environment. The JPALS Analysis of Alternatives (AOA) reflected Local Area Differential Global Positioning System (LDGPS) as the most promising technology to meet the mission need. Development activities are initially focused on reducing technical risks. First, JPALS will employ quality guidance in the presence of Global Positioning System (GPS) jamming. Second, its architecture will be developed to integrate and synchronize with related Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM), GPS modernization initiatives, and net-centricity operations. Third, JPALS will develop and integrate encrypted data links and antenna sets. Finally, JPALS will harmonize with U.S. and international civil satellite navigation and ground navigation systems development. This effort will result in avionics modifications to over 13,000 DoD aircraft. Because JPALS will result in a family of systems, other technologies will be monitored and evaluated such as an Autonomous Landing Capability (ALC) and the FAA local and wide area differential GPS alternatives.

This program is in budget activity 4, Advanced Component Development and Prototypes Research Category 6.4B, because supportability and manufacturing process design considerations must be identified and integrated into the precision landing architecture.

(U) B. Accomplishments/Planned Program ($ in Millions)	FY 2005	FY 2006	FY 2007
(U) Develop land-based specifications	2.367		
(U) Develop JPALS common documents	0.067		
(U) Develop JPALS CONOPS	0.750		
(U) Perform Modeling & simulation studies	2.476	0.750	

Exhibit R-2a, RDT&E Project Justification		DATE: February 2006
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0603860F Joint Precision Approach and Landing Systems - Dem/Val	PROJECT NUMBER AND TITLE: 4652 Precision Landing Systems

(U) B. Accomplishments/Planned Program ($ in Millions)

		FY 2005	FY 2006	FY 2007
(U)	Perform Aircraft risk (anti-jam) analysis	3.327	0.350	
(U)	Perform studies and analyses to refine LDGPS architecture	0.238	1.000	
(U)	MS B preparation	0.700	2.911	
(U)	Prepare for system demonstration	0.670	0.250	
(U)	Perform aircraft integration studies	1.515	1.000	
(U)	Develop test program	0.513	0.250	0.250
(U)	Develop land based allocation requirements		2.220	3.970
(U)	Design land based functionality		2.220	3.970
(U)	Perform airborne system upgrade demonstration			1.821
(U)	Total Cost	12.623	10.951	10.011

(U) C. Other Program Funding Summary ($ in Millions)

	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
(U) Other APPN									

(U) D. Acquisition Strategy

All contracts will be competitively awarded. For Technology Demonstration (TD) efforts leading to Milestone B, we awarded multiple Time and Materials (T&M) contracts. After Milestone B, we will award one or more Cost Plus Award Fee (CPAF) contracts to complete the Systems Demonstration & Development (SDD) efforts.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: **February 2006**

BUDGET ACTIVITY: **04 Advanced Component Development and Prototypes (ACD&P)**

PE NUMBER AND TITLE: **0603860F Joint Precision Approach and Landing Systems - Dem/Val**

PROJECT NUMBER AND TITLE: **4652 Precision Landing Systems**

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2005 Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
NAVY PM and Eng Support	MIPR	Navy OMA21381, NAS Pax River, MD	16.499	0.083	Jan-05	0.105	Jan-06	0.107	Jan-07	Continuing	TBD	TBD
ESC FFRDC Engineering Support	C/CPAF	MITRE Corporation, Bedford, MA	5.052	0.952	Jan-05	1.277	Jan-06	1.415	Jan-07	Continuing	TBD	TBD
Specialized Cost Services	C/IDIQ	MCR, Lexington, MA	1.033	0.487	May-05	0.631	May-06	0.086	May-07	Continuing	TBD	TBD
Initial Capabilities Document (ICD) Prep/Capabilities Development Document (CDD) Prep	C/T&M	Whitney, Bradley & Brown Inc., Vienna, VA	1.100	0.550	Apr-05					0.000	1.650	1.650
Common Documents Task	C/T&M	AES, California, MD		0.680	Aug-04					0.000	0.680	0.680
Common Architecture Task	C/T&M	AES, California, MD		0.238	Sep-04					0.000	0.238	0.238
Modeling & Simulation	C/T&M	AES, California, MD		0.769	Jan-05					0.000	0.769	0.769
Finalize Land-Based Specifications	C/T&M	AES, California, MD		2.369	Nov-04					0.000	2.369	2.974
POE Software Sizing	C/T&M	Galorath, El Segundo, CA		0.500	Apr-05					0.000	0.500	0.500
Develop JPALS CONOPS	C/T&M	AES, California, MD		0.750	Feb-05					0.000	0.750	0.750
Aircraft Integration Studies	C/T&M	AES, California, MD		1.515	Apr-05					0.000	1.515	1.515
Develop JPALS Ground & Air Segments	TBD	TBD				4.865	May-06	3.522	May-07	Continuing	TBD	TBD
Demonstration Airborne System Upgrade	TBD	TBD						1.821	Jan-07	Continuing	TBD	TBD
Subtotal Product Development			23.684	8.893		6.878		6.951		Continuing	TBD	TBD
Remarks:												
(U) Test & Evaluation												
Flight Test Support	MIPR	46TG/XPRF, Holloman, NM	1.118	0.005	Mar-05	0.250	Mar-06	0.200	Mar-07	0.000	1.573	4.087
Subtotal Test & Evaluation			1.118	0.005		0.250		0.200		0.000	1.573	4.087
Remarks:												
(U) Management												
ESC FFRDC	C/T&M	MITRE Corp,	1.286	0.285	Jan-05	0.290	Jan-06	0.295	Jan-07	Continuing	TBD	TBD

Exhibit R-3, RDT&E Project Cost Analysis

DATE: **February 2006**

BUDGET ACTIVITY: **04 Advanced Component Development and Prototypes (ACD&P)**

PE NUMBER AND TITLE: **0603860F Joint Precision Approach and Landing Systems - Dem/Val**

PROJECT NUMBER AND TITLE: **4652 Precision Landing Systems**

	Program Management Support	C/T&M	Bedford, MA ESC/ITSP II (Various), Bedford, MA	12.829	1.540	May-05	1.798	May-06	2.033	May-07	Continuing	TBD	TBD
	GA SPO Operations	Various	Various	2.019	1.900	May-05	1.735	May-06	0.532	May-07	Continuing	TBD	TBD
	Subtotal Management			16.134	3.725		3.823		2.860		Continuing	TBD	TBD
	Remarks:												
(U)												0.000	
	Subtotal			0.000	0.000		0.000		0.000		0.000	0.000	0.000
	Remarks:												
(U)	Total Cost			40.936	12.623		10.951		10.011		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE February 2006
BUDGET ACTIVITY **04 Advanced Component Development and Prototypes (ACD&P)**	PE NUMBER AND TITLE **0603860F Joint Precision Approach and Landing Systems - Dem/Val**	PROJECT NUMBER AND TITLE **4652 Precision Landing Systems**

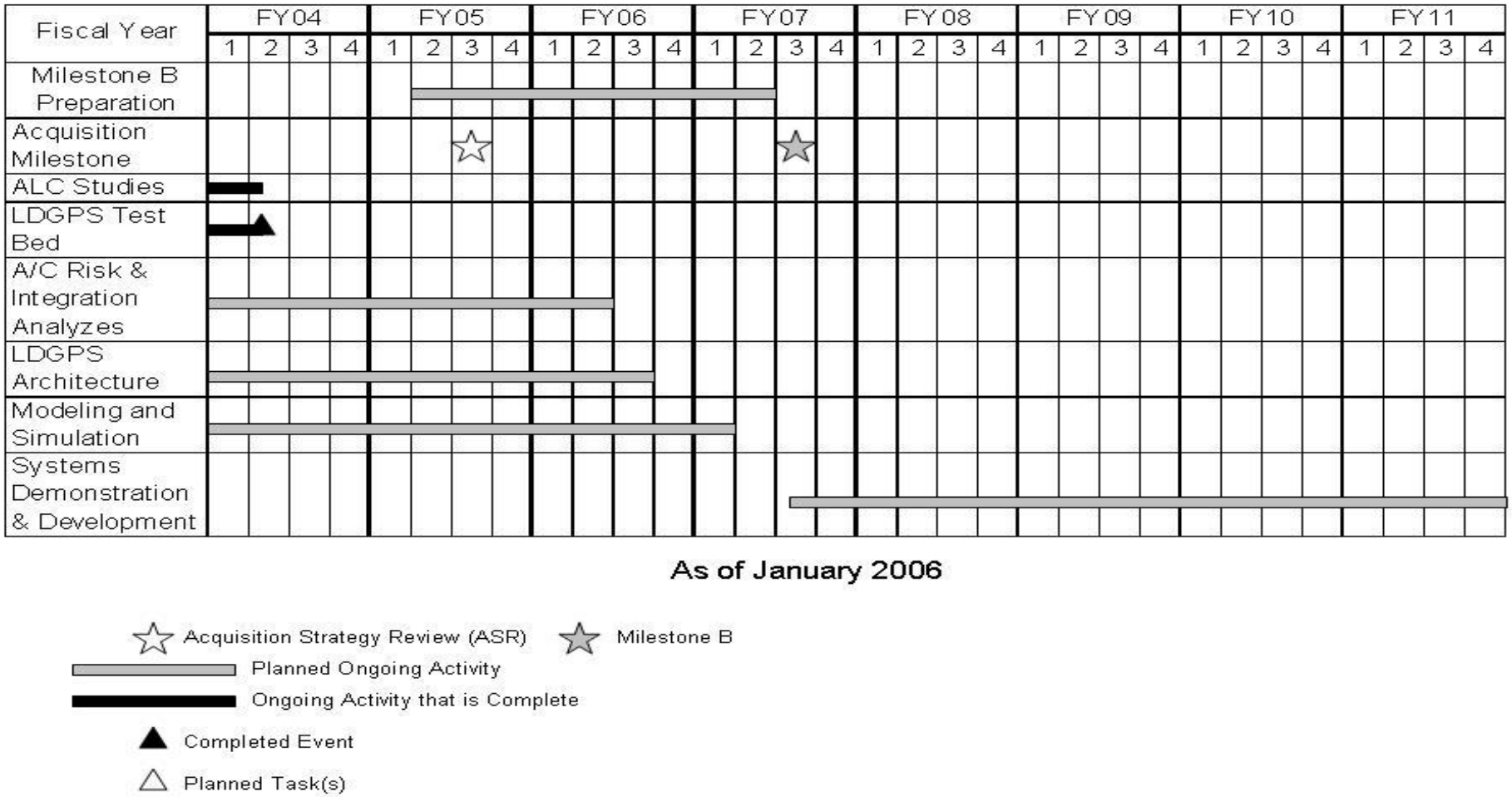

Exhibit R-4a, RDT&E Schedule Detail		DATE February 2006
BUDGET ACTIVITY **04 Advanced Component Development and Prototypes (ACD&P)**	PE NUMBER AND TITLE **0603860F Joint Precision Approach and Landing Systems - Dem/Val**	PROJECT NUMBER AND TITLE **4652 Precision Landing Systems**

(U) **Schedule Profile**	FY 2005	FY 2006	FY 2007
(U) Begin Milestone B prep work	2Q		
(U) Acquisition Strategy Review (ASR)	3Q		
(U) Complete aircraft risk (anti-jam) and integration analyses		2Q	
(U) Complete LDGPS architecture studies and analyses		3Q	
(U) Complete modeling and simulation			1Q
(U) Complete Milestone B prep work			2Q
(U) Milestone B			3Q
(U) Begin Systems Development and Design (SDD)			3Q