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

Exhibit R-2, RDT&E Budget Item Justification

DATE: February 2004

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 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
	Total Program Element (PE) Cost	10.470	13.621	18.385	25.781	21.260	21.650	21.980	Continuing	TBD
4652	Precision Landing Systems	10.470	13.621	18.385	25.781	21.260	21.650	21.980	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

Joint Precision Approach and Landing System (JPALS) is a joint effort among the Air Force (AF), Navy, and Army. The AF is designated as the lead Service. 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 ensure DoD maintains civil interoperability with current and projected Federal Aviation Administration (FAA) and North Atlantic Treaty Organization (NATO) member country landing systems. When complete, this effort will replace aging shipboard and ground-based precision landing systems (Instrument Landing System, Precision Approach Radar, Microwave Landing System, and Instrument 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 ensure interoperability for the Civil Reserve Air Fleet at DoD airfields, especially in the expeditionary environment. The 1997 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 Global Air Traffic Management (GATM) and GPS modernization initiatives. 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 14,000 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, Demonstration and Validation, 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 2004
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 2003	FY 2004	FY 2005
(U)	Previous President's Budget	11.267	13.847	18.798
(U)	Current PBR/President's Budget	10.470	13.621	18.385
(U)	Total Adjustments	-0.797	-0.226	
(U)	Congressional Program Reductions	-0.050	-0.108	
	Congressional Rescissions	-0.119	-0.118	
	Congressional Increases			
	Reprogrammings	-0.210		
	SBIR/STTR Transfer	-0.418		
(U)	Significant Program Changes:			

Exhibit R-2a, RDT&E Project Justification			DATE: February 2004
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 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
4652	Precision Landing Systems	10.470	13.621	18.385	25.781	21.260	21.650	21.980	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 Air Force (AF), Navy, and Army. The AF is designated as the lead Service. 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 ensure DoD maintains civil interoperability with current and projected Federal Aviation Administration (FAA) and North Atlantic Treaty Organization (NATO) member country landing systems. When complete, this effort will replace aging shipboard and ground-based precision landing systems (Instrument Landing System, Precision Approach Radar, Microwave Landing System, and Instrument 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 ensure interoperability for the Civil Reserve Air Fleet at DoD airfields, especially in the expeditionary environment. The 1997 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 Global Air Traffic Management (GATM) and GPS modernization initiatives. 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 14,000 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, Demonstration and Validation, 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 2003	FY 2004	FY 2005
(U) Continue aircraft risk (anti-jam) and integration analyses	2.965		
(U) Continue development of LDGPS test bed	2.768		
(U) Continue studies and analyses to refine local LDGPS architecture	2.000		
(U) Begin modeling & simulation	2.737		
(U) Complete aircraft risk (anti-jam) and integration analyses		3.458	
(U) Complete development of LDGPS test bed		3.496	
(U) Complete studies and analyses to refine local LDGPS architecture		4.314	
(U) Complete modeling & simulation		2.353	

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
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) Start development of JPALS Ground & Air System/Segments				15.200
(U) Complete Milestone B Preparation				0.200
(U) Start Demo System Preparation				0.670
(U) Start Aircraft Integration Studies				1.515
(U) Start Test Program Development				0.800
(U) Total Cost	10.470	13.621		18.385

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

	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
(U) Other APPN									

Not Applicable

(U) D. Acquisition Strategy

Perform Demonstration and Validation through award of multiple contracts (Firm Fixed Price (FFP), Indefinite Delivery/Indefinite Quantity (IDIQ), Cost Plus Fixed Fee (CPFF), Time and Material (T&M), Cost Plus Award Fee (CPAF).

Exhibit R-3, RDT&E Project Cost Analysis

DATE: February 2004

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 2003 Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Architecture Requirements Definition LDGPS (ARD)	C/CPAF	Raytheon Systems (LDGPS), Tewksbury, MA	13.847							0.000	13.847	
SRGPS ARD	C/CPFF	Raytheon Systems (SRGPS), Salt Lake City, UT	3.340							0.000	3.340	
SRGPS ARD	C/CPFF	Sierra Nevada Corp, Salt Lake City, UT	0.976								0.976	
NAVY Eng Support	C/FFP	ARINC Inc., California, MD	1.757							0.000	1.757	
ESC ITSP 1	C/IDIQ	Horizons Technology Inc, Billerica, MA	5.876							0.000	5.876	
NAVY Datalink Research	C/FFP	Rockwell Collins Inc., Cedar Rapids. IA	1.800							0.000	1.800	
NAVY PM and Eng Support	Reimbursable	Navy PMA21381, NAS Pax River, MD	16.336	0.085	Oct-02	0.078	Jan-04	0.100	Oct-04	Continuing	TBD	
ESC FFRDC Engineering Support	C/CPAF	MITRE Corporation, Bedford, MA	3.049	1.072	Oct-02	0.931	Oct-03	1.192	Oct-04	Continuing	TBD	
NAVY Eng Studies	C/FFP	PRC Corporation, Lexington Park, MD	0.451							0.000	0.451	
NAVY Eng Studies	C/FPFF	Pacer Infotech Inc., Lexington Park, MD	0.512							0.000	0.512	
Specialized Cost Services	C/IDIQ	MCR, Lexington, MA	0.579	0.131	Apr-03	0.323	May-04	0.250	May-05	Continuing	TBD	
Falcon Star (F16 Intregration) Study	C/FFP	Lockheed Martin Services, Ft Worth, TX	0.370	0.081	Mar-03					0.000	0.451	
Various	Various	Various	5.121	0.504	Oct-02	0.969	Oct-03	0.987	Oct-04	0.000	7.581	
SDD Ground and Air Segment Contract	TBD	TBD						9.972	Feb-05	11.173	21.145	
LDGPS Technology Development	C/T&M	ARINC Eng Services,	4.681	6.500	Dec-02	4.603	Dec-03	1.252	Dec-04	0.000	17.036	

Exhibit R-3, RDT&E Project Cost Analysis

DATE: February 2004

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

	Air Force EGI Studies	SS/T&M	LLC, California, MD Honeywell, Clearwater, FL	1.000			1.357	Jun-04			0.000	2.357	
	Subtotal Product Development			59.695	8.373		8.261		13.753		Continuing	TBD	0.000
	Remarks:												
(U)	Test & Evaluation												
	Responsible Test Organization	Reimbursable	Navy - NAWCAD, NATC Pax River, MD	1.041							0.000	1.041	
	Flight Test Support	Reimbursable	46TG/XPRF, Holloman, NM	0.506	0.100	May-03	1.463	Mar-04	0.800	Mar-05	0.000	2.869	
	Subtotal Test & Evaluation			1.547	0.100		1.463		0.800		0.000	3.910	0.000
	Remarks:												
(U)	Management and Operations												
	ESC FFRDC	C/T&M	MITRE Corp, Bedford, MA	0.886	0.200	Oct-02	0.200	Oct-03	0.285	Oct-04	Continuing	TBD	
	Program Management Support	C/T&M	ESC/ITSP II (Various), Bedford, MA	9.354	1.072	May-03	2.403	May-04	2.260	May-05	Continuing	TBD	
	GA SPO Operations	Various	Various		0.725	May-03	1.294	May-04	1.287	May-05	Continuing	TBD	
	Subtotal Management and Operations			10.240	1.997		3.897		3.832		Continuing	TBD	0.000
	Remarks:												
(U)	Total Cost			71.482	10.470		13.621		18.385		Continuing	TBD	0.000

Exhibit R-4, RDT&E Schedule Profile		DATE: February 2004
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

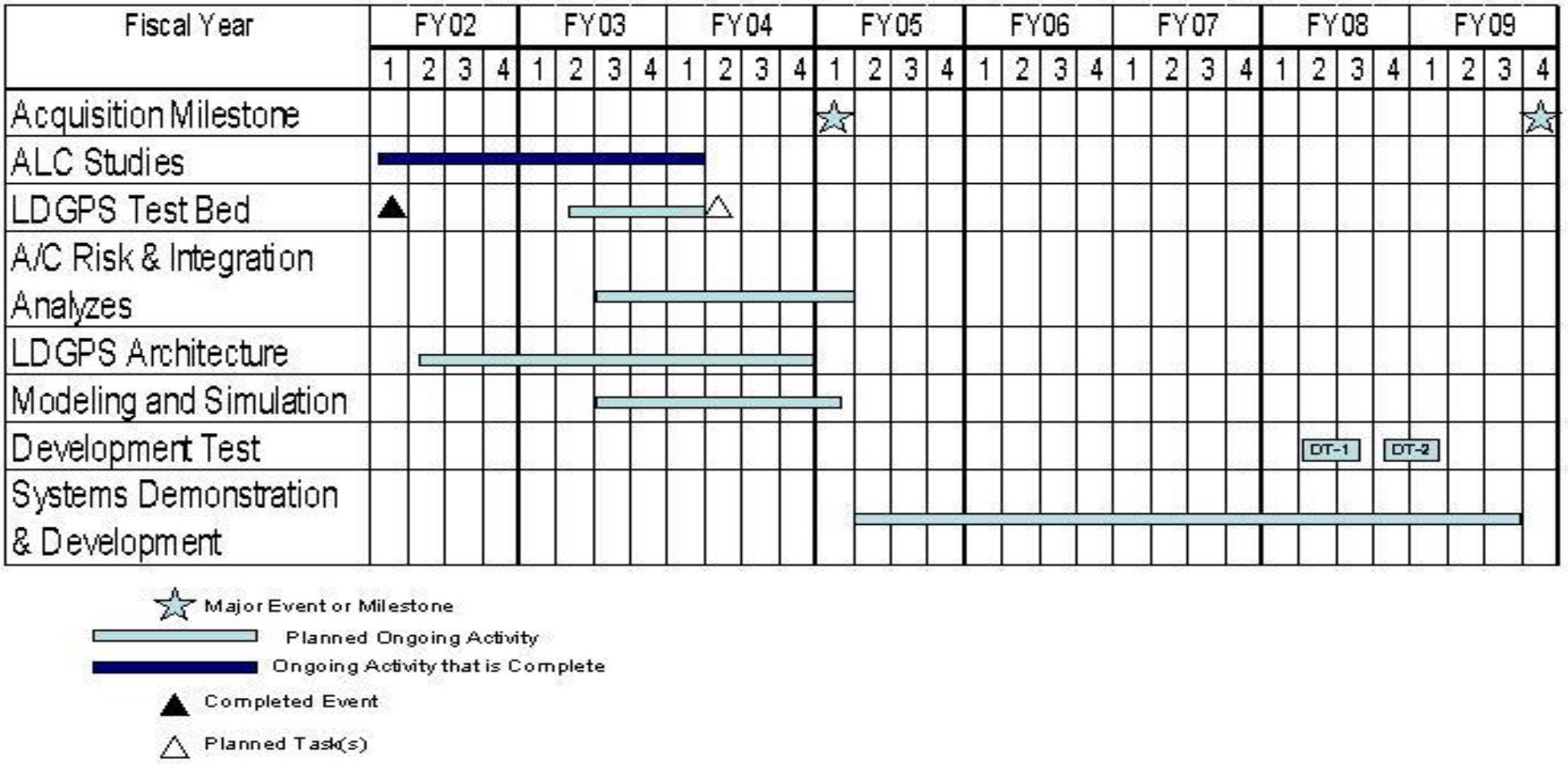

Exhibit R-4a, RDT&E Schedule Detail		DATE: February 2004
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0603860F Joint Precision Approach and Landing Systems - Dem/Val	PROJECT NUMBER AND TITLE: 4652 Precision Landing Systems

(U) Schedule Profile	FY 2003	FY 2004	FY 2005
(U) Complete development of LDGPS test bed		3Q	
(U) Complete aircraft risk (anti-jam) and integration analyzes		4Q	
(U) Begin studies and analyses to refine local LDGPS architecture	4Q		
(U) Complete studies and analyses to refine local LDGPS Architecture		4Q	
(U) Begin modeling and simulation	3Q		
(U) Complete modeling and simulation effort		4Q	
(U) Begin M/S B prep work		2Q	
(U) JPALS ground station development			3Q