

**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2002			
BUDGET ACTIVITY 04 - Demonstration and Validation				PE NUMBER AND TITLE 0603860F Joint Precision Approach and Landing Systems - Dem/Val				PROJECT 4652			
COST (\$ in Thousands)		FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost	
4652	Precision Landing Systems	18,164	9,342	13,267	14,164	14,684	27,209	22,502	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
<p>(U) <b>A. Mission Description</b></p> <p>Joint Precision Approach and Landing System (JPALS) is a joint effort among the United States (U.S.) 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 operational 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 ship-board 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 exist. 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 GPS jamming. Second, it's 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 15,000 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.</p>											
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		February 2002
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
<b>04 - Demonstration and Validation</b>	<b>0603860F Joint Precision Approach and Landing Systems - Dem/Val</b>	<b>4652</b>
<p>(U) <b><u>A. Mission Description Continued</u></b></p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <p>(U) \$587 Completed Architecture Definition</p> <p>(U) \$997 Continued aircraft risk (anti-jam) reduction studies and integration analyses</p> <p>(U) \$8,901 Completed SRGPS risk reduction prototypes, studies and integration analyses</p> <p>(U) \$7,467 Continued development of LDGPS test bed</p> <p>(U) \$212 Completed LDGPS flight test and evaluation and modeling and simulation activities</p> <p>(U) \$18,164 Total</p> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <p>(U) \$3,553 Continue aircraft risk (anti-jam) reduction studies and integration analyses</p> <p>(U) \$1,183 Begin and complete ALC studies and deployable ground stations miniaturization</p> <p>(U) \$3,234 Continue development of LDGPS test bed</p> <p>(U) \$1,372 Begin studies and analyses to refine local LDGPS architecture</p> <p>(U) \$9,342 Total</p> <p>(U) <u>FY 2003 (\$ in Thousands)</u></p> <p>(U) \$1,190 Continue aircraft risk (anti-jam) reduction studies and integration analyses</p> <p>(U) \$3,286 Continue development of LDGPS test bed</p> <p>(U) \$5,295 Continue studies and analyses to refine local LDGPS architecture</p> <p>(U) \$3,496 Begin modeling &amp; simulation</p> <p>(U) \$13,267 Total</p> <p>(U) <b><u>B. Budget Activity Justification</u></b></p> <p>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.</p>		
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<b>BUDGET ACTIVITY</b> <b>04 - Demonstration and Validation</b>					<b>PE NUMBER AND TITLE</b> <b>0603860F Joint Precision Approach and Landing</b>						<b>PROJECT</b> <b>4652</b>											
					<b>Systems - Dem/Val</b>																	
<b>(U) <u>C. Program Change Summary (\$ in Thousands)</u></b>																						
					<u>FY 2001</u>		<u>FY 2002</u>		<u>FY 2003</u>		<u>Total Cost</u>											
(U) Previous President's Budget					18,092		9,554		13,032		TBD											
(U) Appropriated Value					18,092		9,554															
(U) Adjustments to Appropriated Value																						
a. Congressional/General Reductions							-212															
b. Small Business Innovative Research					-638																	
c. Omnibus or Other Above Threshold Reprogram																						
d. Below Threshold Reprogram					876																	
e. Rescissions					-166																	
(U) Adjustments to Budget Years Since FY 2002 PBR									235													
(U) Current Budget Submit/FY 2003 PBR					18,164		9,342		13,267		TBD											
(U) <u>Significant Program Changes:</u>																						
<b>(U) <u>D. Other Program Funding Summary (\$ in Thousands)</u></b>																						
					<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>Complete</u>			
(U) Other APPN																						
<b>(U) <u>E. Acquisition Strategy</u></b>																						
Demonstration and Validation, multiple contracts, Fixed Price Incentive Fee (FPIF), Firm Fixed Priced contracts (FFP); no Non-Developmental Items (NDI)																						
<b>(U) <u>F. Schedule Profile</u></b>																						
					<u>FY 2001</u>		<u>FY 2002</u>		<u>FY 2003</u>													
					1 2 3 4		1 2 3 4		1 2 3 4													
(U) Architecture and Requirements Definition																						
(U) SRGPS test bed delivery (risk reduction prototype)																						
(U) LDGPS demonstration system flight test																						
(U) SRGPS demonstration system flight test																						

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<b>BUDGET ACTIVITY</b> <b>04 - Demonstration and Validation</b>	<b>PE NUMBER AND TITLE</b> <b>0603860F Joint Precision Approach and Landing Systems - Dem/Val</b>	<b>PROJECT</b> <b>4652</b>
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(U) **F. Schedule Profile Continued**

	<u>FY 2001</u>				<u>FY 2002</u>				<u>FY 2003</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) ALC development studies					X							
(U) Ground station miniaturization						X						
(U) LDGPS test bed upgrade					X							
(U) LDGPS architecture refinement						X						
(U) Modeling and simulation activities									X			

X Denotes a new activity      \* Denotes a completed activity

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2002			
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT		
<b>04 - Demonstration and Validation</b>				<b>0603860F Joint Precision Approach and Landing Systems - Dem/Val</b>				<b>4652</b>		
<b>(U) A. Project Cost Breakdown (\$ in Thousands)</b>										
						<u>FY 2001</u>		<u>FY 2002</u>		<u>FY 2003</u>
(U)	Prototype Developments - LDGPS test bed and SRGPS					16,368		3,234		3,286
(U)	Prototype studies and analyses, ant-jam studies and analyses, LDGPS architecture definitions					322		3,698		5,051
(U)	ALC studies and deployable ground station miniaturizations							1,183		
(U)	Modeling, simulation and flight test of LDGPS test bed upgrades									3,496
(U)	Systems Engineering/Technical Support for architecture refinement					603		616		634
(U)	Responsible Test Organization activities to support prototype lab, van and flight testing					600		356		475
(U)	Program Management Support					228		200		250
(U)	Travel					43		55		75
(U)	Total					18,164		9,342		13,267
<b>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>										
<b>(U) Performing Organizations:</b>										
<u>Contractor or</u>	<u>Contract</u>									
<u>Government</u>	<u>Method/Type</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>						
<u>Performing</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Activity</u>	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Organizations</u>										
Raytheon Systems (LDGPS)	CPAF	May 99	N/A	N/A	7,395	5,612	840	1,495	Continuing	TBD
Raytheon Systems (SRGPS)	CPFF	June 99	N/A	N/A	3,340	0	0		0	3,340
ARINC Inc.	FFP	Jan 99	N/A	N/A	1,757	0	0		0	1,757
Horizons Technology Inc	IDIQ	Feb 99	N/A	N/A	4,346	857	1,073	1,496	Continuing	TBD
Rockwell Collins Inc.	FFP	Apr 99	N/A	N/A	1,100	700	0		0	1,800
Navy PMA21381	Reimbursable	Nov 99	N/A	N/A	9,087	7,249	0		0	16,336
MITRE Corporation	CPAF	Oct 99	N/A	N/A	1,197	752	616	729	Continuing	TBD
PRC Corporation	FFP	Jan 99	N/A	N/A	451	0	0		0	451
Pacer Infotech Inc.	FPPF	May 99	N/A	N/A	512	0	0		0	512
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BUDGET ACTIVITY										PROJECT
<b>04 - Demonstration and Validation</b>										<b>4652</b>
PE NUMBER AND TITLE										
<b>0603860F Joint Precision Approach and Landing</b>										
<b>Systems - Dem/Val</b>										
<b>(U) Performing Organizations Continued:</b>										
<u>Product Development Organizations</u>										
MCR	IDIQ	Apr 99	N/A	N/A	347	107	112	119	Continuing	TBD
Sierra Nevada Corp	CPFF	Mar 99	N/A	N/A	276	700	0	0	0	976
Lockheed Martin Services	FFP	Mar 99	N/A	N/A	243	0	0	0	0	243
Litton Corp	FFP	May 01	N/A	N/A	0	180	0	0	0	180
Various	Various	Various	N/A	N/A	3,696	1,136	289	808	0	5,929
TBD Contracts										
Modeling/Simulation	FFP	1Qtr FY02	N/A	N/A	0	0	1,511	3,496	Continuing	TBD
LDGPS Test Bed Upgrade	FPIF	1Qtr FY02	N/A	N/A	0	0	3,107	3,286	Continuing	TBD
Ground Station	FFP	1Qtr FY02	N/A	N/A	0	0	1,183	1,038	Continuing	TBD
Miniaturization										
<u>Support and Management Organizations</u>										
MITRE Corp	FFP	Various	N/A	N/A	423	228	200	250	Continuing	TBD
Various	FFP	Various	N/A	N/A	259	43	55	75	Continuing	TBD
<u>Test and Evaluation Organizations</u>										
Navy - NAWCAD	Reimbursable	Nov 99	N/A	N/A	591	450	0	0	0	1,041
48TG/XPRF	Reimbursable	May 01	N/A	N/A	0	150	356	475	0	981
<b>(U) Government Furnished Property:</b>										
<u>Contract</u>										
<u>Item</u>	<u>Method/Type</u>	<u>Award or</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 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>										
N/A										
<u>Support and Management Property</u>										
N/A										
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<b>04 - Demonstration and Validation</b>		<b>4652</b>				
PE NUMBER AND TITLE		PROJECT				
<b>0603860F Joint Precision Approach and Landing Systems - Dem/Val</b>		<b>4652</b>				
<b>(U) Government Furnished Property Continued:</b>						
<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 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development	33,747	17,293	8,731	12,467	TBD	TBD
Subtotal Support and Management	682	271	255	325	TBD	TBD
Subtotal Test and Evaluation	591	600	356	475	0	2,022
Total Project	35,020	18,164	9,342	13,267	TBD	TBD
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