ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604201A - AIRCRAFT AVIONICS

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	45499	79356	23451	34714	53400	54325	62809	39356	0	428881
C94 JT AVIONICS STNDRDZN	0	13393	0	0	0	0	0	0	0	13393
C97 ACFT AVIONICS	45499	65963	23451	34714	53400	54325	62809	39356	0	415488

A. Mission Description and Budget Item Justification: This Program Element (PE) funds the development of avionics systems required to horizontally and vertically integrate the battlefield. Tasks in this PE support research efforts in the engineering and manufacturing development phases of these systems.

The Joint Avionics Standardization program supports the Fly by Wire Flight Control System (FBWFCS) which is a triple redundant flight control system. The system provides advanced aircraft flight handling qualities for degraded visual environments (DVE), agility and maneuverability. This system improves safety (pilot workload reduction), provides enhanced mission performance and enhanced survivability.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	68857	59571	38651
Current Budget (FY 2006/2007 PB)	79356	23451	34714
Total Adjustments	10499	-36120	-3937
Net of Program/Database Changes			
Congressional Program Reductions	-1191		
Congressional Rescissions			
Congressional Increases	13970		
Reprogrammings			
SBIR/STTR Transfer	-2280		
Adjustments to Budget Years		-36120	-3937

Change Summary Explanation:
FY 05 Congressional plus up of $2.0M for IDM on project C97 and $11,970 for Fly by Wire on project C94
FY 06/07 funds realigned to higher priority requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604201A - AIRCRAFT AVIONICS**	**C□□**

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
C97 ACFT AVIONICS	45499	65963	23451	34714	53400	54325	62809	39356	0	415488

A. Mission Description and Budget Item Justification: This Program Element (PE) funds the development of avionics systems required to horizontally and vertically integrate the battlefield. Tasks in this PE support research efforts in the engineering and manufacturing development phases of these systems.

The Joint Tactical Radio System (JTRS) aircraft installation is the transformational system that will provide Army Aviation the required interoperability capability for Future Force and Joint Force operations. The JTRS is a DoD directed replacement for all legacy radio systems. The JTRS provides the foundation for achieving network centric warfare operations across the radio frequency spectrum providing digital information exchange for situational awareness, both vertically and horizontally, between Joint Warfighting elements, while enabling connectivity to civil and national authorities in support of Homeland Defense. The JTRS will provide an internal capability through an open systems architecture approach in compliance with the Joint Technical Architecture which improves system performance and provides a growth capability for technology insertion at a minimal cost and effort. These RDT&E funds are required to design, develop, integrate, and qualify the aircraft installation kits (A Kits), to obtain an Airworthiness Release, to use the JTRS in Army rotary wing aircraft. The installed JTRS will provide the AH-64D, CH-47F, UH/HH-60M, and Special Operations Aircraft (SOA) with the critically needed interoperability capability to support the War fighter.

The Improved Data Modem (IDM) is the key link to joining Army Aviation with the digital battlefield and provides digital communication interoperability and flexibility on a fluid battlefield. Developed as an open system architecture, the IDM takes advantage of commercially available software and hardware solutions to enforce common communications protocols and the Joint Variable Message Format (JVMF). The IDM provides a flexible, software-driven digital messaging system interoperable with existing Battlefield Operating Systems and the Joint Forces. IDM improves Army Aviation's lethality and operational tempo through the exchange of fast and accurate data-burst communications through the Army's Fire Support and Tactical Internet (TI), providing seamless communications across the digital battlefield. These RDT&E funds are required to initiate development and integration of an Open Systems Architecture IDM solution for AH-64D Block III Manned/Unmanned Common Architecture Program (MCAP) and CH-47F/UH-60M/SOA Common Avionics Architecture System (CAAS). Funds also begin development and integration of the Future Combat System (FCS) database-to-database exchange interoperability standard.

The Joint Precision Approach and Landing System (JPALS) is a precision approach and landing system providing joint operational capability for U.S. forces assigned to conventional and special operations missions including those operating from fixed base, ship, tactical, and austere environments. This effort evaluates technical approaches for incorporating JPALS into Army aircraft while considering aircraft environment, electrical power, system space, weight, antenna placement, and electromagnetic compatibility without nullifying low observable capability requirements; also procures fixed base and tactical ground stations. JPALS supports research efforts in the Technology Development (TD) phase of the modified acquisition life cycle approved by the Defense Acquisition Executive in September of 1998.

Beginning in FY05 funds from PE 0305114A (711) - JPALS have been combined with this PE.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Continue development of JTRS A-Kit and begin system testing for AH-64D, CH-47F, and UH-60M/Q (JTRS)	33291	49147	8732	11232
Continue Systems Engineering and Logistics efforts (JTRS)	5207	3203	3363	3531
Continue Program Management support for the JTRS A-Kit development (JTRS)	2292	2166	877	1000
Complete Integrated Communication, Navigation, and Identification Avionics (ICNIA) compliance to JTRS requirements (JTRS)	1100	4000	0	0
Continue antenna effort (JTRS).	3200	1806	1896	1991
Continue Test and Evaluation Support(JTRS)	409	1912	2095	2200
Continue to provide system engineering, logistics, programmatic, and technical documentation for JPALS land and sea based development efforts and execute joint Army/Navy/Air Force effort to develop a JPALS capable Embedded GPS Inertial (EGI) receiver. (JPALS)	0	1774	1780	1817
Continue Program Management Support (JPALS)	0	39	97	96
Begin development and integration of an open systems architecture IDM solution and FCS database-to-database exchange (IDM)	0	1729	4372	12073
Complete Program Management Support (IDM)	0	0	143	517
Complete Systems Engineering and Logistics efforts (IDM)	0	187	96	257
Totals	45499	65963	23451	34714

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February 2005

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B. Other Program Funding Summary	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
Airborne Avionics SSN AA0700	33246	23173	73854	87922	115452	115858	169323	224946	Continuing	Continuing
Joint Tactical Radio System SSN AA0702 (JTRS)	1535	0	0	0	0	0	0	0	0	1535
JTRS Ground Domain Integration PE 654805/615 (JTRS)	195047	97570	230330	197878	14465	2590	0	0	0	737880
Army Data Distribution System (Data Radio) SSN BU1400 (JTRS)	70983	40606	34837	2225	1494	3252	0	0	0	153397
JPALS RDTE (FY 04 & Prior) PE 030511A	935	0	0	0	0	0	0	0	0	935

C. Acquisition Strategy: This project is comprised of multiple systems:

1) JTRS - Initial JTRS A-Kit hardware/software development, installation and integration will be procured via host platform vendor.

House Report 108-553 stated "Of the funds requested in the amended budget request for fiscal year 2005, the Committee directs that funds originally requested for ICNIA shall be used only to continue this program, and for no other purpose." Based on this report, ICNIA funding for FY05 has been reflected in this submission.

2) IDM - The nonrecurring engineering and software development to integrate the open systems architecture IDM solution with database-to-database exchange into the MCAP and CAAS processors will be performed via sole source contractor. The software will be ported into the MCAP and CAAS processors, eliminating the requirement for a B-Kit.

3) JPALS- The JPALS acquisition strategy is to complete the current risk reduction effort and Technology Development (TD) phase which will lead to the development of a JPALS combined land, sea, and avionics specification. Using this specification, a JPALS prototype ground station will be tested in both benign and jamming environments prior to MS B in Apr 06. JPALS functionality will be integrated on a GPS card which will be inserted into the Army's existing avionics. JPALS integration will be synchronized with the integration of M Code into Army platforms in the FY 2012 timeframe.

ARMY RDT&E COST ANALYSIS(R3)

February 2005

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604201A - AIRCRAFT AVIONICS

PROJECT
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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs 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
a . A-Kit AH-64D , CH-47F, and UH/HH-60M/Q R&D Contracts (JTRS) (Design Analysis & SDD)	Various	Boeing, AZ, PA, & CA:Rockwell/Collins, IA:Sikorsky, CT;ARINC, MD;ICI, VA	54108	49147	1-3Q	8732	1-3Q	11232	1-3Q	Continue	Continue	Continue
b . Systems Engineering, Logistics Efforts (JTRS)	MIPR	Various	12965	3203	1-3Q	3363	1-3Q	3531	1-3Q	Continue	Continue	Continue
c . Dev/Integration of an open system architecture IDM solution and FCS database-to-database exchange	SS/CPFF	ICI, McLean, VA	0	1729	3-4Q	4372	1-3Q	12073	1-3Q	Continue	Continue	Continue
Subtotal:			67073	54079		16467		26836		Continue	Continue	Continue

ARMY RDT&E COST ANALYSIS(R3)

February 2005

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604201A - AIRCRAFT AVIONICS

PROJECT
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II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs 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
a . ICNIA compliance to JTRS Requirements (JTRS)	C/CPFF	Northrup Grumman	14466	4000	1-3Q	0		0		0	18466	18466
b . Antenna Effort (JTRS)	C/CPFF	JVYS, Alabama; Lear Siegler Services, Inc., Maryland	3425	1806	1-3Q	1896	1-3Q	1991	1-3Q	Continue	Continue	Continue
c . System engineering, logistics, and technical support(JPALS)	MIPR	Various	0	1774	1-3Q	1780	1-3Q	1817	1-3Q	Continue	Continue	Continue
d . Complete Systems Engineering and Logistics Efforts (IDM)	MIPR	Various	0	187	2-4Q	96	1-3Q	257	1-3Q	Continue	Continue	Continue
Subtotal:			17891	7767		3772		4065		Continue	Continue	Continue

ARMY RDT&E COST ANALYSIS(R3)

February 2005

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604201A - AIRCRAFT AVIONICS

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs 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
a . Test and Evaluation (JTRS)	MIPR	Various	542	1912	1-3Q	2095	1-3Q	2200	1-3Q	Continue	Continue	Continue
Subtotal:			542	1912		2095		2200		Continue	Continue	Continue

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs 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
a . PM Spt (IDM)	MIPR	AMCOM, AL/PM AME, AL	1245	0		143	1-4Q	517	1-4Q	Continue	Continue	Continue
b . PM Spt (JTRS)	MIPR	AMCOM, AL/PM AME, AL	4475	2166	1-4Q	877	1-4Q	1000	1-4Q	Continue	Continue	Continue
c . PM Spt (JPALS)	MIPR	AMCOM, AL/PM AME, AL	0	39	1-4Q	97	1-4Q	96	1-4Q	Continue	Continue	Continue
Subtotal:			5720	2205		1117		1613		Continue	Continue	Continue
Project Total Cost:			91226	65963		23451		34714		Continue	Continue	Continue

Schedule Profile (R4 Exhibit)

February 2005

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604201A - AIRCRAFT AVIONICS

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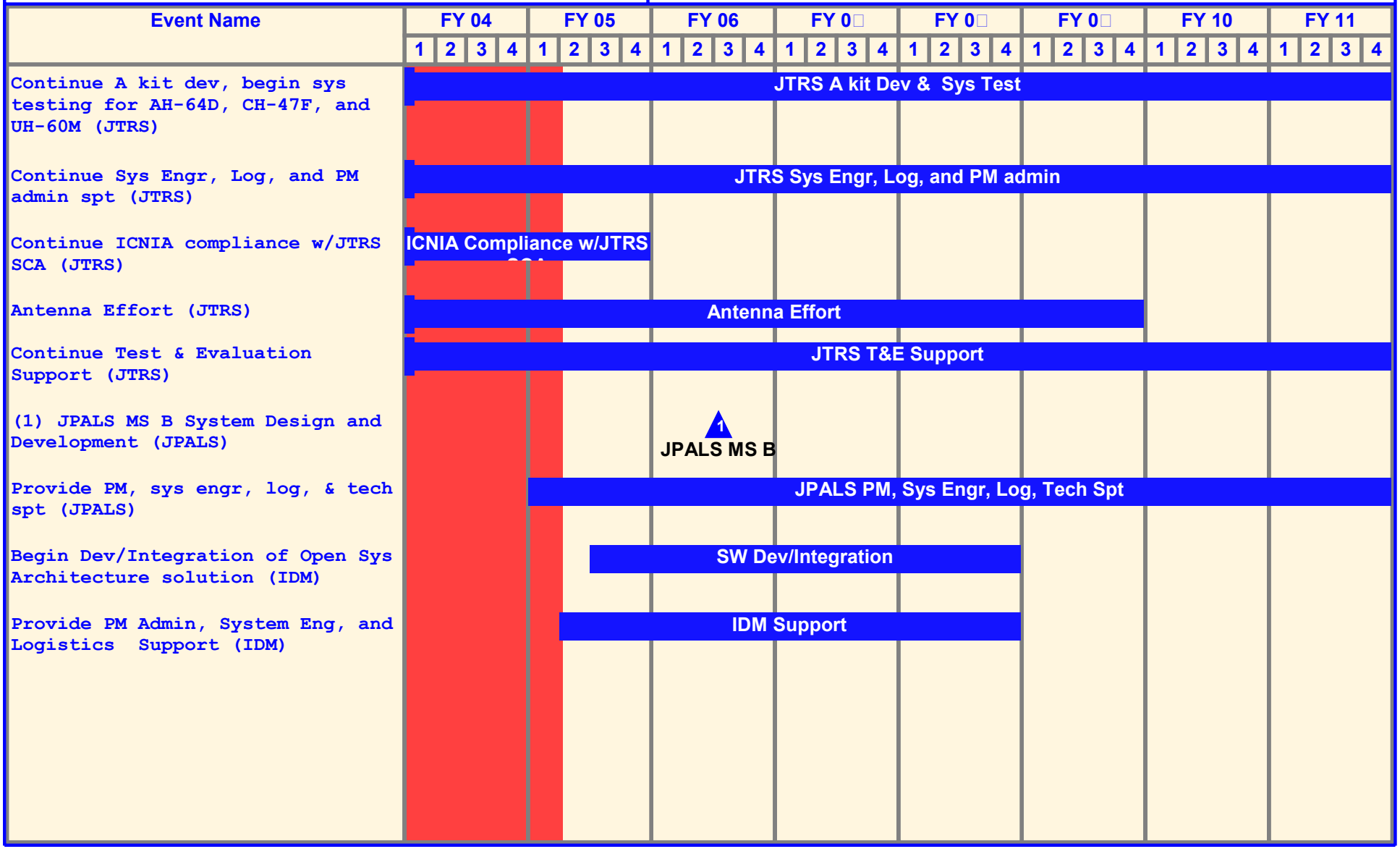

Schedule Detail (R4a Exhibit)

February 2005

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604201A - AIRCRAFT AVIONICS

PROJECT
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Schedule Detail	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Develop JTRS A-Kit and begin system testing for AH-64D, CH-47F, and UH-60M/Q (JTRS)	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Continue System Engineering and Logistics Efforts (JTRS)	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Complete ICNIA Compliance to JTRS Requirements	1-4Q	1-4Q						
Continue Antenna Effort (JTRS)	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q		
Continue Test and Evaluation Support (JTRS)	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Continue Program Managment support for the JTRS A-Kit development (JTRS)	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Continue system engineering, logistics and technical support (JPALS)		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
PM Support (JPALS)		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Begin Dev/Integration of open sys architecture IDM solution FCS database-to-database exchange (IDM)		3-4Q	1-4Q	1-4Q	1-4Q			
Complete System Engineering and Logistics Spt (IDM)		2-4Q	1-4Q	1-4Q	1-4Q			
Program Management Support (IDM)			1-4Q	1-4Q	1-4Q			