Exhibit R-2, RDT&E Budget Item Justification				DATE: February 2005				
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07				R-1 ITEM NOMENCLATURE Joint Spectrum Center /PE 0303153K				
COST (in Millions)	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Joint Spectrum Center /JS1	15.239	17.839	14.097	14.279	14.610	15.322	15.896	16.477

A. Mission Description and Budget Item Justification:

The Joint Spectrum Center's (JSC) mission is to ensure the Department of Defense's (DoD) effective use of the electromagnetic spectrum in support of national security and military objectives. The JSC serves as the DoD center of excellence for Electromagnetic (EM) spectrum management matters in support of the Unified Commands, Joint Staff, Assistant Secretary of Defense for Networks and Information Integration (ASD (NII)), Military Departments, and Defense Agencies. The JSC supports the Electronic Protect missions of Information Warfare (IW) as they relate to spectrum supremacy. It is responsible for developing and maintaining DoD standard information systems that support DoD spectrum related activities and processes. Specifically, the Center designs, develops, and maintains DoD automated spectrum management systems, evaluation tools, and databases employed by the Unified Commands, Military Departments, and Defense Agencies. The JSC databases are the prime sources of information for DoD use of the EM spectrum. The JSC provides technical assistance to the Office of Assistant Secretary of Defense (OASD) NII, the Joint Staff, DoD activities and the Unified Commands in support of spectrum policy decisions and ensuring the development, acquisition, and operational deployment of systems that are compatible with other spectrum dependent systems operating within the same EM environment. Additional focus is centered on improving future warfighter EM spectrum utilization through technological innovation accomplished by researching, studying, and steering the direction of Research and Development (R&D) emerging technology efforts from a spectrum perspective. The Center is the DoD focal point for technical spectrum related support, Electromagnetic Environmental Effects (E^3), and EM interference resolution assistance to operational units including deployable support to COCOM Joint Task Forces. The JSC mission is integral to other vital activities such as Information Operations (IO), Command and Control (C2) Protect and other defensive IW activities as directed by the Joint Staff. This program element is under Budget Activity 07 because it supports operational systems development.

Accomplishments/Planned Program:

Spectrum Knowledge Resources	FY 04	FY 05	FY 06	FY 07
Subtotal Cost	6.876	6.703	6.761	6.832

This function includes development and updates of DoD systems such as the Frequency Resource Record System (FRRS), the Spectrum Certification System (SCS), and the Spectrum Requirements System (SRS) which provide critical frequency assignment and equipment data that is necessary in predicting and avoiding spectrum conflicts. This area also includes development and updates of the SPECTRUM XXI, the joint standard DoD spectrum management system. This system ensures DoD has adequate spectrum access to accomplish its missions by addressing the regulatory requirements of host nation

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spectrum administrations and by ensuring that a common operating picture of the spectrum is available to the warfighter. SPECTRUM XXI Version 4.1 was released in FY 2004, and Version 4.2 is planned for FY 2005 with periodic releases thereafter.

Electromagnetic Environmental Effects (E3)	FY 04	FY 05	FY 06	FY 07
Subtotal Cost	1.655	2.994	2.636	2.747

The mission of this program is to ensure that DoD platforms, systems, equipment, and other assets can effectively use the Electromagnetic (EM) spectrum in support of national security and military objectives. It supports the requirements generation system, the DoD acquisition process, operational test and evaluation, and EM compatibility standardization. Algorithms and E3 analytical tools are developed for functions such as Hazards of Electromagnetic Radiation to Ordnance (HERO) risk assessments in support of the COCOMS and the Joint Task Force (JTF). Assessments are conducted to determine system and equipment limitations in the operational EM environment. Efforts also include the development and maintenance of the JSC Ordnance E3 Risk Assessment Database (JOERAD), a decision support system that helps the warfighter make critical decisions about the hazards associated with the use of introduced ordnance within complex EM environments.

Emerging Spectrum Technology (EST)	FY 04	FY 05	FY 06	FY 07
Subtotal Cost	6.708	8.142	4.700	4.700

The JSC, in conjunction with the Defense Spectrum Office, has the responsibility of planning, developing, and executing the DISA Emerging Spectrum Technology (EST) program to improve future warfighter EM spectrum utilization through technological innovation accomplished by researching, studying, and steering the direction of Research and Development (R&D) emerging technology efforts from a spectrum perspective. This support will provide R&D analysis support to NII and other organizations with executive summary presentations; high-level reports and briefings; development of R&D roadmaps; development of an EST Testbed concept; and detailed survey and review of emerging technologies to identify trends and analyze their implications on DoD spectrum management and supportability processes and procedures. As part of the outreach efforts, focused partnerships will be pursued with internal DoD departments, federal agencies, private industry, and the academic world to complement current and future DoD R&D spectrum initiatives; collaborative spectrum R&D opportunities; advocacy of new spectrum strategies; and sponsorship of spectrum conferences and technical information exchanges. The JSC will produce necessary tools for conducting technical analyses of next-generation technologies in support of efficient DoD use of the spectrum. Efforts include the development of models, algorithms,

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and measurement tools for use in analyzing ultra-wideband technologies, software defined radios, and high-power and directed-energy weapons. In software defined radios, the parameters (frequency range, modulation type, or maximum power) can be altered by making a software modification without changing hardware components that can affect the radio frequency emissions. As for directed energy weapons, these systems will be evaluated with respect to E3 and measurements conducted to assist in modifying Military Standards to ensure compatible coexistence of these systems with legacy systems. In FY 2004 an initial Cosite Modeling Capability was developed to allow simulation of interference issues related to spectrum dependent equipment that resides on the same platform. The FY 2005 Program includes development of capabilities necessary to evaluate and manage the use of Emerging Spectrum Technologies (EST) on the battlefield, expansion of test and measurement capabilities to characterize EST systems and validate modeling capabilities, and outreach and engagement activities (key to identification and initial assessment of EST). Planned for FY 2005 through FY 2007 are the EST Testbed Prototype Demo and an Adaptive Networks Assessment. The goal of the Spectrum Testbed initiative is to establish capabilities that provide simulation and hardware facilities to assess and measure performance of innovative spectrum access methods, systems, and components. The JSC is developing an initial spectrum testbed prototype intended to demonstrate the knowledge that can be gained from such a capability and the benefits in terms of more effective spectrum operations. The JSC will conduct an assessment of the electromagnetic spectrum implications of adaptive networks and potential application to support DoD warfighting concepts. These networks typically consist of mobile nodes that communicate over wireless links, without any fixed network infrastructure or central control. JSC will investigate how network management functions such as initialization, routing, and security are distributed among the nodes can be combined with spectrum management for effective spectrum operations in support of network-centric warfare.

B. Program Change Summary:

	FY 04	FY 05	FY 06	FY 07
Previous President's Budget	16.565	18.941	14.253	14.423
Current Submission	15.239	17.839	14.097	14.279
Total Adjustments	-1.326	-1.102	-.156	-.144

Change Summary Explanation: FY 2004 funding changes are due to below threshold reprogramming. FY 2005 decreases are due to undistributed Congressional reductions to the Defense-wide RDT&E appropriation as well as below threshold

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reprogramming. FY 2006 and FY 2007 funding changes are due to revised fiscal guidance.

C. Other Program Funding Summary:

	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	To Complete	Total Cost
O&M, DW	13.880	12.971	13.463	14.006	14.382	15.436	15.625	15.832	Contg	Contg

D. Acquisition Strategy: Engineering support services for the JSC are provided via contract. No in-house government capability exists, nor is it practical to develop one that can provide the expertise necessary to fulfill the mission and responsibilities of the JSC. Full and open competition was used for the acquisition of the current contract with ALION Science and Technology that became effective 24 August 2000 with a basic period of two years and three one year options. Preparation has begun for recompetition of this work in FY 2005.

E. Performance Metrics:

Employ through analyses, planning, and policy, emerging spectrum-dependent technologies to enhance DoD operational capabilities by:

a. Identifying/base lining the number of technologies to assess (% of spectrum-dependent technologies assessed).
b. Forming strategic alliances with government, industry and academia to advocate, influence, and promote spectrum dependent emerging technologies (% of partnerships formed after outreach and engagement).

Exhibit R-3 Cost Analysis			**DATE:** February 2005
APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT**		**PROJECT NAME AND NUMBER**
RDT&E, Defense-Wide/07	Joint Spectrum Center / PE 0303153K		Joint Spectrum Center / JS1

Cost Category	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Contractor Engineering/Technical Spt	C/CPAF	IIT Research Inst Annapolis, MD	13.408							0	13.408	13.408
GFE	C/CPAF	IIT Research Inst Annapolis, MD	.800							0	.800	.800
Engineering/Technical Support	C/FF	Georgia Tech	.186							0	.186	.186
Engineering/Technical Support	C/FF	Virginia Tech	.170							0	.170	.170
Engineering/Technical Support	MIPR	Various	1.730	.475	Var	.475	Var			0	2.680	2.680
Contractor Engineering/Technical Spt	C/CPRR	Various	1.619							0	1.619	1.619
Contractor Engineering/Technical Spt	C/CPAF	ALION Annapolis, MD	43.486	16.494	10/04					0	59.849	59.849
GFE	C/CPAF	ALION Annapolis, MD	3.569	.870	10/04					0	4.439	4.439
Contractor Engineering Technical/Spt	C/TBD	TBD				13.622	10/05	14.279	10/06	0	27.901	27.901
Subtotal Test & Evaluation			64.968	17.839		14.097		14.279	10/06			
Total			64.968	17.839		14.097		14.279				

Remarks: Current JSC contract with ALION was a competitive acquisition and began on 24 August 2000 (2 year basic with 3 option years) and will be re-competed during FY 2005.

Exhibit R-4 Schedule Profile | **Date: February 2005**

Appropriation/Budget Activity	Program Element Number and Name	Project Number and Name
RDT&E, Defense-Wide/07	Joint Spectrum Center/PE 0303153K	Joint Spectrum Center/JS1

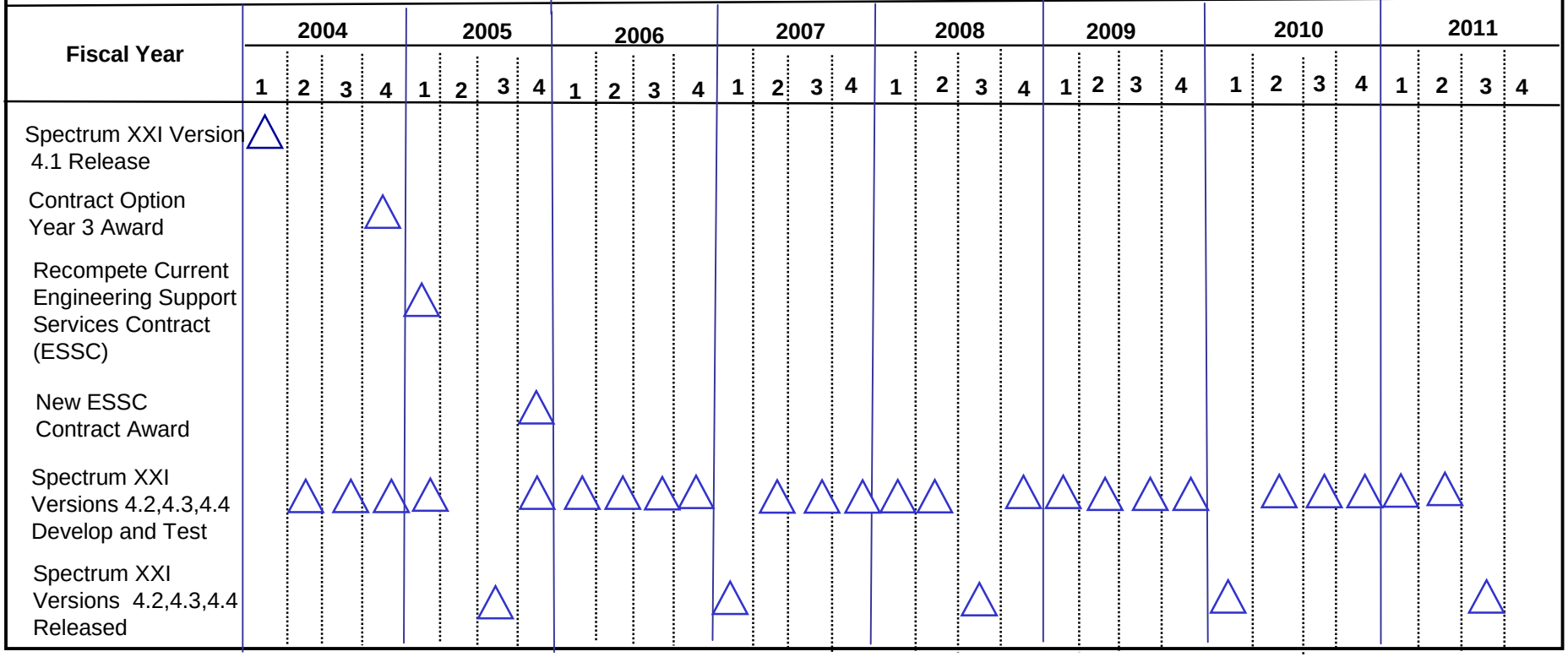

Exhibit R-4 Schedule Profile		Date: February 2005
Appropriation/Budget Activity **RDT&E, Defense-Wide/07**	**Program Element Number and Name** **Joint Spectrum Center/PE 0303153K**	**Project Number and Name** **Joint Spectrum Center /JS1**

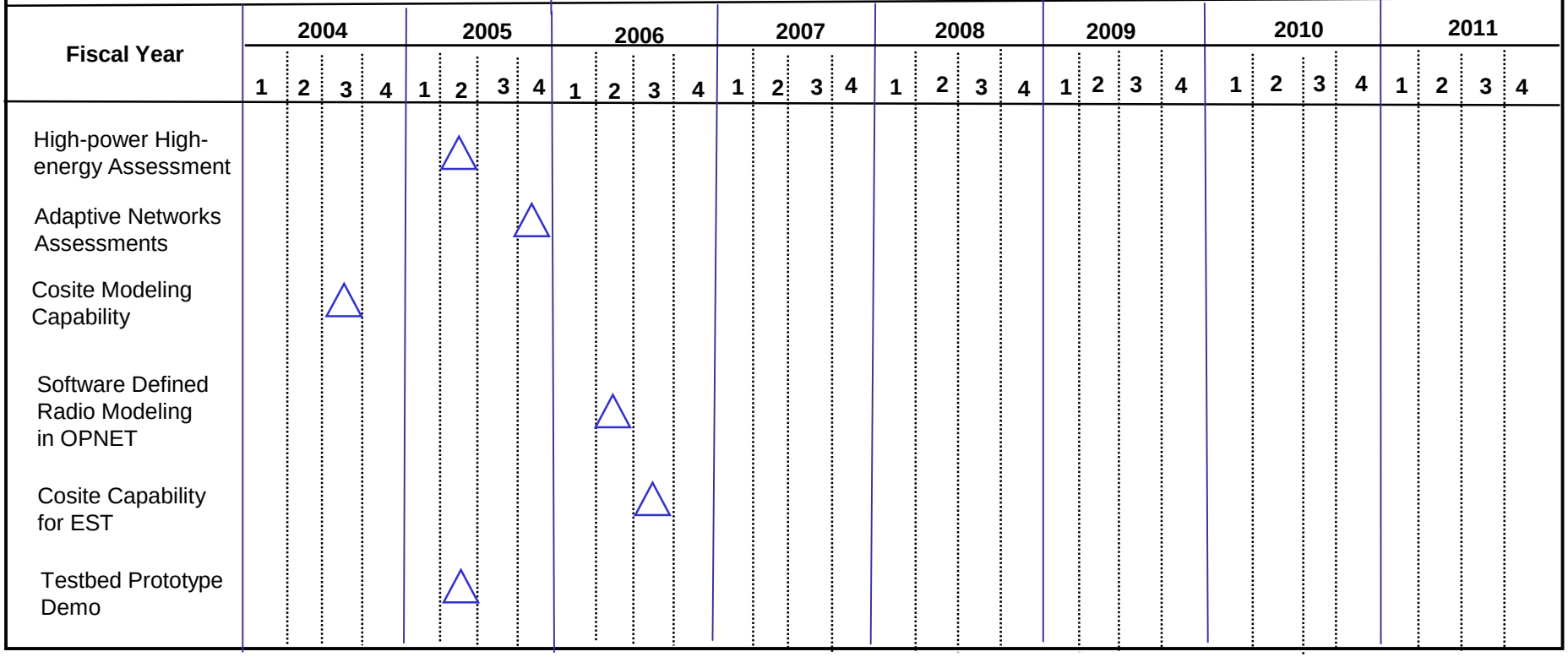

Exhibit R-4a Schedule Detail		DATE: February 2005
APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT**	**PROJECT NAME AND NUMBER**
RDT&E, Defense-Wide/07	Joint Spectrum Center / PE 0303153K	Joint Spectrum Center / JS1

Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
SPECTRUM XXI VERSION 4.1 Release	1Q							
Contract Option Year 3 Award	4Q							
Re-compete Current Engineering Support Services Contract (ESSC)		1Q						
New ESSC Contract Award		4Q						
SPECTRUM XXI Versions 4.2, 4.3, 4.4 Development and Testing	2-4Q	1Q 4Q	1-4Q	2-4Q	1-2Q 4Q	1-4Q	2-4Q	1-2Q
SPECTRUM XXI Versions 4.2, 4.3, 4.4 Released		3Q		1Q	3Q		1Q	3Q
High-power High-energy assessment		2Q						
Adaptive Networks Assessments		4Q						
Cosite modeling capability	3Q							
Software Defined Radio modeling in OPNET			2Q					
Cosite Capability for EST			3Q					
Testbed Prototype Demo		2Q						