

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2003

BUDGET ACTIVITY

04 - Advanced Component Development and Prototypes
(ACD&P)

PE NUMBER AND TITLE

0603845F ADVANCED WIDEBAND SYSTEM (AWS)

PROJECT

4944

COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
4944 ADVANCED WIDEBAND SYSTEM	0	117,953	439,277	877,504	1,183,185	1,327,256	1,530,969	736,938	274,737	6,487,819
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	2	2

(U) A. Mission Description

The Advanced Wideband System (AWS) will provide DoD with high data rate MILSATCOM services as defined by the Transformational Communications Architecture (TCA) analysis of alternatives. The TCA analysis of alternatives will define a network-centric SATCOM architecture with improved connectivity and data transfer capability that will remove bandwidth constraints for global U.S. requirements across DoD.

The AWS portion of the TCA will incorporate interoperable radio frequency (RF) and laser SATCOM to meet defense and intelligence communities' requirements for high data rate protected communications. The space segment will make use of key technology advancements where feasible to achieve a transformational leap in SATCOM capabilities. These technologies include but are not limited to: laser communications, packet switching, bulk and packet encryption/decryption, communications-on-the-move antennas, dynamic bandwidth and resource allocation techniques, protected bandwidth efficient modulation, and etc. The AWS portion will also address the associated ground command and control segment for the satellite system(s), as well as, any required gateways. The goal of the TCA is to launch the first satellite with these transformational capabilities as early as CY2009.

In order to ensure TCA/AWS interoperability with the Global Information Grid (GIG) Integrated Architecture, this program will participate in a GIG end-to-end test bed and systems engineering activity. Aspects of the net-centric GIG which TCA/AWS must be interoperable with include, but are not limited to, Information Assurance (IA), Network Operations (NetOps), and Information Dissemination Management (IDM).

(U) FY 2002 (\$ in Thousands)

(U) \$0 Accomplishments/Planned Program
 (U) \$0 No Activity (see PE0 063436F for TCA related activities)
 (U) \$0 Total

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PROJECT

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(U) **A. Mission Description Continued**(U) **FY 2003 (\$ in Thousands)**

(U) \$0	Accomplishments/Planned Program
(U) \$88,237	System Definition - technology maturation efforts
(U) \$16,000	System Definition - architecture study and program(s) definition efforts
(U) \$8,400	Technical Support
(U) \$5,316	Program Support
(U) \$117,953	Total

(U) **FY 2004 (\$ in Thousands)**

(U) \$0	Accomplishments/Planned Program
(U) \$418,277	System Definition: Continue technology development for key advanced technologies to include laser communications, antenna design, encryption technologies, dynamic bandwidth and resource allocation, bandwidth efficient modulation, network operations, and networking protocols. Initiate engineering design activities including risk reduction and design development for the first transformational comm satellite system.
(U) \$21,000	Continued Program Office and other related support activities
(U) \$439,277	Total

(U) **B. Budget Activity Justification**

Funding is in Budget Activity 4, Advanced Component Development and Prototypes, since it supports the TCA technology definition, development, demonstration and validation.

(U) **C. Program Change Summary (\$ in Thousands)**

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Total Cost</u>
(U) Previous President's Budget	0	4,982	15,130	977,095
(U) Appropriated Value	0	119,982		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions		-1,268		
b. Small Business Innovative Research				
c. Omnibus or Other Above Threshold Reprogram		-761		

Project 4944

Page 2 of 6 Pages

Exhibit R-2 (PE 0603845F)

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<p>(U) <u>C. Program Change Summary (\$ in Thousands) Continued</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="text-align: center; width: 10%;"><u>FY 2002</u></th> <th style="text-align: center; width: 10%;"><u>FY 2003</u></th> <th style="text-align: center; width: 10%;"><u>FY 2004</u></th> <th style="text-align: center; width: 20%;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>d. Below Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>e. Rescissions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY 2003 PBR</td> <td></td> <td></td> <td style="text-align: right;">424,147</td> <td style="text-align: right;">5,510,724</td> </tr> <tr> <td>(U) Current Budget Submit/FY 2004 PBR</td> <td style="text-align: center;">0</td> <td style="text-align: right;">117,953</td> <td style="text-align: right;">439,277</td> <td style="text-align: right;">6,487,819</td> </tr> </tbody> </table> <p>(U) <u>Significant Program Changes:</u> The FY03 Appropriations Act transferred funds for TCA efforts in PE 0603436F to this PE (0603845F). The current funds in this PE support analysis of alternatives and concept/system definition efforts on the network-centric SATCOM system architecture. Funding beyond FY04 will support continued system definition and system development & demonstration.</p> <p>(U) <u>D. Other Program Funding Summary (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="text-align: center; width: 8%;"><u>FY 2002</u></th> <th style="text-align: center; width: 8%;"><u>FY 2003</u></th> <th style="text-align: center; width: 8%;"><u>FY 2004</u></th> <th style="text-align: center; width: 8%;"><u>FY 2005</u></th> <th style="text-align: center; width: 8%;"><u>FY 2006</u></th> <th style="text-align: center; width: 8%;"><u>FY 2007</u></th> <th style="text-align: center; width: 8%;"><u>FY 2008</u></th> <th style="text-align: center; width: 8%;"><u>FY 2009</u></th> <th style="text-align: center; width: 10%;"><u>Cost to</u></th> <th style="text-align: center; width: 10%;"><u>Total Cost</u></th> </tr> <tr> <th></th> <th style="text-align: center;"><u>Actual</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Estimate</u></th> <th style="text-align: center;"><u>Complete</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>(U) AF RDT&E</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) PE 0603854, Project 644870, CCS-C, Line 52</td> <td style="text-align: right;">16,543</td> <td style="text-align: right;">11,836</td> <td style="text-align: right;">36,992</td> <td style="text-align: right;">20,350</td> <td style="text-align: right;">8,292</td> <td style="text-align: right;">7,013</td> <td style="text-align: right;">5,704</td> <td style="text-align: right;">6,397</td> <td style="text-align: center;">Continuing</td> <td></td> </tr> <tr> <td>(U) PE 0603854, Project 644811, WGS</td> <td style="text-align: right;">79,855</td> <td style="text-align: right;">1,965</td> <td style="text-align: center;">0</td> <td style="text-align: right;">53,341</td> <td style="text-align: right;">7,702</td> <td style="text-align: right;">2,296</td> <td></td> <td></td> <td></td> <td style="text-align: right;">145,159</td> </tr> <tr> <td>(U) PE0603436F, Transformation Wideband MILSATCOM</td> <td style="text-align: right;">9,972</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">9,972</td> </tr> <tr> <td>(U) Other APPN</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) MPAF, PE 0303600F, WGS</td> <td style="text-align: right;">361,272</td> <td style="text-align: right;">188,232</td> <td style="text-align: right;">34,588</td> <td style="text-align: right;">21,505</td> <td style="text-align: right;">60,420</td> <td style="text-align: right;">267,688</td> <td style="text-align: right;">178,030</td> <td style="text-align: right;">43,694</td> <td style="text-align: center;">Continuing</td> <td></td> </tr> <tr> <td>(U) MPAF, PE 0303602, AF AWS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">187,816</td> <td style="text-align: right;">1,198,822</td> <td style="text-align: right;">1,218,485</td> <td style="text-align: center;">Continuing</td> <td></td> </tr> <tr> <td>(U) OPAF, PE 0303600F, CCS-C</td> <td></td> <td style="text-align: right;">5,543</td> <td style="text-align: right;">8,109</td> <td style="text-align: right;">2,135</td> <td style="text-align: right;">289</td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">16,076</td> </tr> <tr> <td>(U) OPAF, PE 030600F, WGS</td> <td></td> <td style="text-align: right;">15,933</td> <td style="text-align: right;">11,864</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">27,797</td> </tr> <tr> <td colspan="11" style="padding-top: 10px;"> <div style="display: flex; justify-content: space-between;"> Project 4944 Page 3 of 6 Pages Exhibit R-2 (PE 0603845F) </div> </td> </tr> </tbody> </table>												<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Total Cost</u>	d. 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Rescissions					(U) Adjustments to Budget Years Since FY 2003 PBR			424,147	5,510,724	(U) Current Budget Submit/FY 2004 PBR	0	117,953	439,277	6,487,819		<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>FY 2008</u>	<u>FY 2009</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>Estimate</u>	<u>Complete</u>		(U) AF RDT&E											(U) PE 0603854, Project 644870, CCS-C, Line 52	16,543	11,836	36,992	20,350	8,292	7,013	5,704	6,397	Continuing		(U) PE 0603854, Project 644811, WGS	79,855	1,965	0	53,341	7,702	2,296				145,159	(U) PE0603436F, Transformation Wideband MILSATCOM	9,972									9,972	(U) Other APPN											(U) MPAF, PE 0303600F, WGS	361,272	188,232	34,588	21,505	60,420	267,688	178,030	43,694	Continuing		(U) MPAF, PE 0303602, AF AWS						187,816	1,198,822	1,218,485	Continuing		(U) OPAF, PE 0303600F, CCS-C		5,543	8,109	2,135	289					16,076	(U) OPAF, PE 030600F, WGS		15,933	11,864							27,797	<div style="display: flex; justify-content: space-between;"> Project 4944 Page 3 of 6 Pages Exhibit R-2 (PE 0603845F) </div>										
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PROJECT

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(U) **E. Acquisition Strategy**

The Transformational Communications activities in FY03 will define a network-centric SATCOM architecture of which AWS will provide SATCOM capabilities. After architecture definition in FY03, program specific system definition contracts will be awarded to at least two industry teams for the DoD SATCOM components of TCA.

(U) **F. Schedule Profile**

	<u>FY 2002</u>				<u>FY 2003</u>				<u>FY 2004</u>			
	1	2	3	4	1	2	3	4	1	2	3	4

(U) Architecture Approval

X

(U) AWS 1 Launch Decision Review

X

X = Planned Event

* = Completed Event

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE February 2003		
BUDGET ACTIVITY					PE NUMBER AND TITLE				PROJECT	
04 - Advanced Component Development and Prototypes (ACD&P)					0603845F ADVANCED WIDEBAND SYSTEM (AWS)				4944	
(U) A. Project Cost Breakdown (\$ in Thousands)										
					FY 2002		FY 2003		FY 2004	
(U)	System Definition - technology maturation				0		88,237		201,400	
(U)	System Definition - architecture study & program(s) definition						16,000		216,877	
(U)	Technical Support						8,400		0	
(U)	Program Support						5,316		21,000	
(U)	Total				0		117,953		439,277	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U) Performing Organizations:										
<u>Contractor or Government</u>		<u>Contract Method/Type or Funding</u>		<u>Award or Obligation Date</u>		<u>Performing Activity EAC</u>		<u>Project Office EAC</u>		<u>Total</u>
<u>Performing Activity</u>		<u>Vehicle</u>		<u>Date</u>		<u>EAC</u>		<u>Total Prior to FY 2002</u>		<u>Budget FY 2002</u>
<u>Budget FY 2003</u>		<u>Budget FY 2004</u>		<u>Budget to Complete</u>		<u>Total Program</u>				
<u>Product Development Organizations</u>										
Boeing: Architecture SD		CPAF		Oct 02		5,333		5,333		0
LMMS: Architecture SD		CPAF		Oct 02		5,333		5,333		0
Spectrum Astro: Architecture SD		CPAF		Oct 02		5,334		5,334		0
Program System Definition		CPAF		Oct 03		275,600		275,600		0
System Development & Demonstration				FY05						0
System Definition: Technology Maturation		Various		Various				88,237		201,400
								295,000		584,637
<u>Support and Management Organizations</u>										
Technical Support		Various		Various				8,400		21,000
Program Support		Various		Various				5,316		228,200
<u>Test and Evaluation Organizations</u>										
Project 4944										
Page 5 of 6 Pages										
Exhibit R-3 (PE 0603845F)										

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE February 2003	
BUDGET ACTIVITY				PE NUMBER AND TITLE		PROJECT
04 - Advanced Component Development and Prototypes (ACD&P)				0603845F ADVANCED WIDEBAND SYSTEM (AWS)		4944
(U) Government Furnished Property:						
	<u>Contract</u>					
	<u>Method/Type</u>	<u>Award or</u>				
<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>	<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>
<u>Product Development Property</u>						
None						
<u>Support and Management Property</u>						
None						
<u>Test and Evaluation Property</u>						
None						
				<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>
				<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>
						<u>Budget</u>
						<u>FY 2004</u>
						<u>Budget to</u>
						<u>Complete</u>
						<u>Total</u>
						<u>Program</u>
<u>Subtotals</u>				<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>
				<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>
						<u>Budget</u>
						<u>FY 2004</u>
						<u>Budget to</u>
						<u>Complete</u>
						<u>Total</u>
						<u>Program</u>
Subtotal Product Development				0	0	104,237
Subtotal Support and Management				0	0	13,716
Subtotal Test and Evaluation						21,000
Total Project				0	0	117,953
						439,277
						5,930,230
						6,487,460

Project 4944
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