

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

DATE

**February 2000**

BUDGET ACTIVITY

PE NUMBER AND TITLE

**07 - Operational System Development**

**0207423F Advanced Communications Systems**

COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5,527	0	2,867	2,907	2,954	3,013	3,074	Continuing	TBD
671013 Theater Deployable Communications (TDC)	1,964	0	2,649	2,907	2,954	3,013	3,074	Continuing	TBD
672982 Anti-Jam Radio Communications	3,563	0	218	0	0	0	0	0	23,139
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description**

The Advanced Communication Systems program procures commercially available ground communications equipment for deployment to theaters of operation; and develops and procures jam-resistant, ultra high frequency (UHF) and very high frequency (VHF) frequency-hopping tactical radios. The ANTI-JAM RADIO COMMUNICATIONS (HAVE QUICK) UHF radios provide the primary Air Force and DOD UHF Electronic Counter-Countermeasures (ECCM) voice communications. SINCGARS (Single Channel Ground and Airborne Radio System) provides anti-jam, VHF frequency-hopping voice and data communications and is the primary means of ECCM communications between Air Force, Army, and USMC aircraft and ground units involved in close air support and joint battlefield operations. The Theater Deployable Communications (TDC) program provides funding for the research, development, test and evaluation for the modernization of operational deployable communications, and integration of commercial off the shelf (COTS) equipment that support tactical air operations in a combat environment. This includes the integration of deployable communications equipment for active duty, guard and reserve forces. Equipment will be fielded at wings, combat communications squadrons, Air Force Special Operations Command and Air Mobility Command communication units, and Theater Air Control System units. This funding also provides Systems Program Office (SPO) internal management, engineering and technical support for the continuing spiral development of (COTS) equipment and will examine appropriate emerging technologies. TDC equipment is composed of three components Lightweight Multi band Satellite Terminal (LMSTs), the Integrated Communications Access Packages (ICAP), and Network Management System/Base Information Protection (NMS/BIP). Together these three systems provide communications infrastructure in deployed bare base environments. FY99 funding was provided for EFX99 it is part of an annual war fighter experiment to demonstrate emerging Air Force capabilities to deploy and employ decisive air and space power for the Joint Force Commander through a Rapid Response Air Expeditionary Force (RAEF). The experiment is designed to meet Chief of Staff of the Air Force (CSAF) requirement to explore how advanced command and control capabilities and new operational processes enable modern aerospace forces to decisively halt an invading force anywhere in the world. It is a continuous spiral development process for the C2 Weapon System.

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- (U) **B. Budget Activity Justification**  
 This program is in budget activity 7, Operational System Development RDT&E, AF because it examines appropriate emerging technologies for the continuing spiral development of commercial off-the-shelf (COTS) equipment; provide software development; provides support for the the fielded HAVE QUICK family of radios; and determines and resolves integration issues pertaining to COTS equipment
- (U) **C. Program Change Summary (\$ in Thousands)**
- |   | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Total Cost</u> |
|---|----------------|----------------|----------------|-------------------|
| (U) Previous President's Budget (FY 2000 PBR)     | 2,348          | 2,864          | 2,892          | TBD               |
| (U) Appropriated Value                            | 2,348          | 0              |                |                   |
| (U) Adjustments to Appropriated Value             |                |                |                |                   |
| a. Congressional/General Reductions               | -172           | 0              |                |                   |
| b. Small Business Innovative Research             | -67            | 0              |                |                   |
| c. Omnibus or Other Above Threshold Reprogram     |                |                |                |                   |
| d. Below Threshold Reprogram                      | 3,449          | 0              |                |                   |
| e. Rescissions                                    | -31            |                |                |                   |
| f. Other  |                | 0              |                | TBD               |
| (U) Adjustments to Budget Years Since FY 2000 PBR |                |                | -25            |                   |
| (U) Current Budget Submit/FY 2001 PBR             | 5,527          | 0              | 2,867          | TBD               |
- (U) **Significant Program Changes:**  
 FY99: Funds reprogrammed by SAF/AQI to support EFX initiatives within PE 672982 ANTI-JAM

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)								DATE February 2000		
BUDGET ACTIVITY <b>07 - Operational System Development</b>				PE NUMBER AND TITLE <b>0207423F Advanced Communications Systems</b>				PROJECT <b>671013</b>		
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
671013	Theater Deployable Communications (TDC)	1,964	0	2,649	2,907	2,954	3,013	3,074	Continuing	TBD
<p>(U) <b><u>A. Mission Description</u></b>            As clearly demonstrated during Desert Shield/Desert Storm (DS/DS), 70's generation of deployable communications equipment is bulky, inflexible in design and does not meet today's projected airlift availability or interoperability standards. Air Force planning calls for initial communications assets to be in place prior to the arrival of flying forces. Deployment priorities for DS/DS did not allow timely arrival of communications assets. The Theater Deployable Communications (TDC) program emphasizes COTS equipment to augment existing assets or replace tactical communications packages. The resulting TDC packages have reduced airlift requirements and is designed to support a wide range of operational scenarios during deployment/employment, expansion and sustaining operations. Combat communications units equipped with TDC Integrated Communication Access Packages (ICAP) and Lightweight Multiband Satellite Terminals (LMST) were deployed to Bosnia and Kosovo in support of theater air operations and deployed tactical air and mobility wings. LMST provided the reach back from the forward battle area back to the National Command Center and backbone theater communications required to operate in an austere environment to expedite dissemination of critical war fighter information. Required interoperability testing is provided by Ft. Hauchua, AZ. TDC performance during these operations exceeded Air Force and CINC expectations.</p> <p>(U) <b><u>FY 1999 (\$ in Thousands)</u></b>            (U) \$299 Continue communications architecture planning            (U) \$491 Continue development of automation tools            (U) \$885 Continue interoperability and integration activities            (U) \$289 Continue production improvement and interface development            (U) \$1,964 Total</p> <p>(U) <b><u>FY 2000 (\$ in Thousands)</u></b>            (U) \$0 No Activity            (U) \$0 Total</p> <p>(U) <b><u>FY 2001 (\$ in Thousands)</u></b>            (U) \$680 Prepare TDC roadmap and acquisition 'way ahead'            (U) \$1,857 Continue field interoperability and integration activities            (U) \$112 Program Management Activity (travel, supplies, etc)            (U) \$2,649 Total</p>										
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)								DATE February 2000			
BUDGET ACTIVITY <b>07 - Operational System Development</b>				PE NUMBER AND TITLE <b>0207423F Advanced Communications Systems</b>				PROJECT <b>671013</b>			
<b>(U) B. Project Change Summary</b>											
<b>(U) C. Other Program Funding Summary (\$ in Thousands)</b>											
	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</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) AF RDT&E											
(U) Other APPN											
(U) Other Procurement AF, Budget Activity 3, PE 0207423F	36,322	66,060	90,168	77,961	126,778	158,978	121,463	Continuing	TBD		
(U) O&M PE 0207422/0208010F	2,926	5,864	8,439	5,255	5,349	15,246	15,278	Continuing			
(U) Other Procurement AF, Budget Activity 5, Weapon System Code 86190A, PE 0207423F	1,888	1,891	3,048	98	97	99	101	Continuing	TBD		
<b>(U) D. Acquisition Strategy</b>											
There are three Firm Fixed Price (FFP) contracts for Theater Deployable Communications (TDC): Lightweight Multiband Satellite Terminals (LMST), the Integrated Communication Access Package (ICAP) and Network Management System/Base Information Protection (NMS/BIP). The TDC contracts were awarded after full and open competitions. (When restricted technologies are involved, foreign competition is not allowed.)											
<b>(U) E. Schedule Profile</b>											
				<u>FY 1999</u>			<u>FY 2000</u>		<u>FY 2001</u>		
				1	2	3	4	1	2	3	4
(U) ICAP Production Option exercise				*					X		
(U) ICAP Training Option exercise					*						
(U) Y2K Compliance						*					
(U) Acquisition Milestones (MS III ICAP)							X				
(U) Production LMST Deliveries Start								*			
(U) NMS/BIP Deliveries continuing											X
* denotes completed event											
X denotes planned event											
Project 671013			Page 4 of 9 Pages				Exhibit R-2A (PE 0207423F)				



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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)							DATE February 2000		
BUDGET ACTIVITY <b>07 - Operational System Development</b>				PE NUMBER AND TITLE <b>0207423F Advanced Communications Systems</b>				PROJECT <b>672982</b>	
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
672982 Anti-Jam Radio Communications	3,563	0	218	0	0	0	0	0	23,139
<p>(U) <b><u>A. Mission Description</u></b>                      The fast paced development of emerging communication technologies by potentially hostile nations dictates that the U.S. maintains a technological lead. Ultra high frequency (UHF) and Very High Frequency (VHF) frequency hopping voice and data radios are needed for jam resistant communications between tactical aircraft and airborne and ground control elements. The HAVE QUICK waveform used in these radios is a NATO standard for UHF anti-jam communications. The HAVE QUICK UHF radios provide the primary Air Force and DOD UHF Electronic Counter-Countermeasures (ECCM) voice communications. The SINCGARS (Single Channel Ground and Airborne Radio System) waveform provides anti-jam, very high frequency (VHF) hopping voice and data communications and is the primary mode of ECCM communications between the Air Force, Army, and USMC. It is utilized during Close Air Support (CAS) for maneuver units and joint battlefield operations.</p> <p>(U) <b><u>FY 1999 (\$ in Thousands)</u></b>                      (U) \$96 Continue to investigate improvements in anti-jam performance and other anti-jam techniques                      (U) \$117 Continue to investigate decrease in air traffic control channel bandwidth and modulation techniques                      (U) \$3,350 EFX 99'                      (U) \$3,563 Total</p> <p>(U) <b><u>FY 2000 (\$ in Thousands)</u></b>                      (U) \$0 No Activity                      (U) \$0 Total</p> <p>(U) <b><u>FY 2001 (\$ in Thousands)</u></b>                      (U) \$98 Software updates for resolution of GPS incompatibility (i.e. F-16, E-3, and A-10)                      (U) \$10 Required printing and reproduction of the HAVE QUICK updated technical orders for GPS                      (U) \$50 Support fielding of AN/ARC-222 and AFKDMS                      (U) \$10 PMA                      (U) \$50 Work with users to improve supportability for AN/ARC-164, AN/ARC-222 and AN/ARC-204 units                      (U) \$218 Total</p> <p>(U) <b><u>B. Project Change Summary</u></b>                      FY00 zeroed out by Congress (Consolidation and Elimination of Small Programs)</p>									
Project 672982			Page 6 of 9 Pages				Exhibit R-2A (PE 0207423F)		

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)</b>	DATE <b>February 2000</b>
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BUDGET ACTIVITY <b>07 - Operational System Development</b>	PE NUMBER AND TITLE <b>0207423F Advanced Communications Systems</b>	PROJECT <b>672982</b>
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	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</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) <b>C. Other Program Funding Summary (\$ in Thousands)</b>									
(U) AF RDT&E									
(U) Other APPN									
(U) Other Procurement AF, Budget Activity 3, Weapon System Code 837102, PE 0207423F	0	13,309	22,169	23,628	24,003	12,777	9,703	Continuing	TBD

(U) **D. Acquisition Strategy**  
The Anti-Jam (SINCGARS) is a army lead program that was awarded after full open competition

	<u>FY 1999</u>				<u>FY 2000</u>				<u>FY 2001</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Investigate anti-jam improvements				*								
(U) Software updates										X		
(U) Improve supportability										X		
(U) Support fielding										X		
* denotes completed event												
X denotes planned event												

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2000			
BUDGET ACTIVITY <b>07 - Operational System Development</b>					PE NUMBER AND TITLE <b>0207423F Advanced Communications Systems</b>			PROJECT <b>672982</b>		
<b>(U) A. Project Cost Breakdown (\$ in Thousands)</b>										
						<u>FY 1999</u>		<u>FY 2000</u>		<u>FY 2001</u>
(U)	Software Support					32		0		98
(U)	Engineering Support					30		0		80
(U)	Evaluation Analysis					40		0		20
(U)	Test and Evaluation					15		0		0
(U)	PMA					30		0		10
(U)	Unreleased budget					12		0		0
(U)	EFX 99'					3,370		0		0
(U)	Miscellaneous					34		0		10
(U)	Total					3,563		0		218
<b>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>										
<b>(U) Performing Organizations:</b>										
<u>Contractor or Government</u>	<u>Contract Method/Type</u>	<u>Award or Obligation</u>	<u>Performing Activity</u>	<u>Project Office</u>	<u>Total Prior to FY 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Performing Activity</u>	<u>or Funding Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>						
<u>Product Development Organizations</u>										
	Joint Spectrum Center					4				4
<u>Support and Management Organizations</u>										
	Warner Robins ALC							48		48
	ESC					66		10		76
	MITRE	FFP	OCT 97	TBD	TBD	353	70	0	0	423
	ITSP/TEMS	FFP	Varies			19,005	41	0	160	19,206
<u>Test and Evaluation Organizations</u>										
	AFOTEC	N/A								
	EFX 99'					3,382				3,382

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<b>RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)</b>		<b>DATE</b>				
<b>07 - Operational System Development</b>		<b>0207423F Advanced Communications Systems</b>			<b>February 2000</b>	
<u>BUDGET ACTIVITY</u>	<u>PE NUMBER AND TITLE</u>	<u>PROJECT</u>				
		<b>672982</b>				
	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
	<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
<u>Subtotals</u>						
Subtotal Product Development		4				4
Subtotal Support and Management	19,358	177	0	218	0	19,753
Subtotal Test and Evaluation		3,382				3,382
Total Project	19,358	3,563	0	218	0	23,139
EFX 99 funding reflected in Budget FY 1999 as Subtotal Test and Evaluation						