

UNCLASSIFIED

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

DATE

June 2001

BUDGET ACTIVITY

07 - Operational System Development

PE NUMBER AND TITLE

0305110F Satellite Control Network

PROJECT

3276

COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
3276 Satellite Control Network	54,731	58,105	56,349	23,531	23,068	23,001	37,502	34,494	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

FY03-FY07: This administration has not addressed FY 2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.

(U) **A. Mission Description**

The Air Force Satellite Control Network (AFSCN) mission is to fly operational USAF and other DoD satellites. The AFSCN also provides launch and early orbit tracking operations in support of all major US launches. Air Force Space Command (AFSPC) performs operations and maintenance and Air Force Materiel Command (AFMC) performs modernization and sustainment of the system to meet requirements validated by a HQ USAF approved Operational Requirements Document (ORD). This program element contains funds for the development and acquisition of this integrated national satellite telemetry, tracking, commanding, and data relay capability to meet the requirements of the growing inventory of operational and developmental DoD, National, Civil, and Allied satellite systems. Improvement and Modernization efforts in command & control, communications, and range elements of the AFSCN will ensure DoD space systems are operationally ready to support the CINCs' warfighting requirements.

The AFSCN is a global infrastructure of control centers, Remote Tracking Stations (RTSs), and communications links that provide the highly reliable command and control, communications, and range systems required to support the nation's surveillance, navigation, communications, and weather satellite operations. The AFSCN is the DoD common user network that provides satellite state-of-health, tracking, telemetry, and commanding (TT&C) for the following operational satellite systems: Defense Meteorological Satellite Program (DMSP), Global Positioning System (GPS), Defense Satellite Communications System (DSCS), Defense Support Program (DSP), Fleet Satellite (FLEETSAT), Military Strategic and Tactical Relay Satellite (MILSTAR), the Navy's Ultra High Frequency Follow-On (UHF F/O), Skynet, NATO III/IV, and classified programs.

AFSCN Improvement and Modernization (I&M): AFSCN I&M is an ongoing program of replacements and upgrades which will meet AFSPC operational requirements to replace non-standard, unsupportable equipment with more reliable, maintainable and standardized hardware and software. This new equipment will enable AFSPC satellite operations to be performed with fewer, less skilled personnel and will significantly reduce hardware/software maintenance costs. The principal efforts within this program are: Network Operations Upgrades, Communications Upgrades, and Range (RTS) Upgrades.

NETWORK OPERATIONS UPGRADES: These upgrades will build upon the Electronic Schedule Dissemination (ESD) and Orbit Analysis Subsystem (OAS)

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(U) **A. Mission Description Continued**
 deliveries to continue to improve AFSCN resource management capabilities.

COMMUNICATIONS UPGRADES: This effort will transition the current, costly point-to-point AFSCN communications network to a distributed communications system that integrates government and commercial networks. Several standardization efforts are being implemented to improve and modernize the communications and ground segment elements of the AFSCN, including: Archival recording systems to replace obsolete, manpower-intensive analog equipment with automated, standardized digital COTS and COTS-based systems; Wide Area Network Interface Units (WANIU) which standardize hardware, enable future access to the Defense Information System Network (DISN) global grid, reduce O&M costs for performing multiplexing functions in the AFSCN, and provide an Asynchronous Transfer Mode (ATM) interface; and Operational Switch Replacement (OSR) to provide increased capacity, reliability, data quality, and user access.

RANGE UPGRADES: This effort will upgrade the current Automated Remote Tracking Station (ARTS) and other Range assets. Several integrated projects, which are now grouped into the Remote Tracking Station (RTS) block change effort, will standardize the remote tracking stations, upgrade and/or replace outdated equipment in order to reduce failures, correct operational deficiencies, and reduce operating and sustainment costs.

(U) **FY 2000 (\$ in Thousands)**

(U) \$27,985	Communications Upgrades: continued OSR, WANIU, and archival recorders development.
(U) \$9,795	Range Upgrades: began Control and Status (C&S) Processor Upgrade development to continue the ARTS modernization effort; as a continuation of the modernization effort to standardize hardware and software; begin Standards Protocol requirements definition effort to address impact on AFSCN architecture of emerging space communications protocols being examined by DOD, NASA, and the International Standards Organization.
(U) \$5,588	Network Integration and Systems Engineering: continued system engineering and integration of hardware/software to meet evolving satellite program requirements at OCNs and RTSs.
(U) \$11,363	Provided program support for Systems Program Office.
(U) \$54,731	Total

(U) **FY 2001 (\$ in Thousands)**

(U) \$384	Network Operations Upgrades: begin Orbit Analysis Subsystem follow-on development effort to continue upgrades to network operations
(U) \$12,572	Communications Upgrades: continue upgrades to include OSR and WANIU development.
(U) \$26,610	Range Upgrades: continue Standards Protocol development. Continue C&S Processor Upgrade development and begin effort to upgrade the Automated Remote Tracking Stations (ARTS) Space/Ground interface upgrade as a continuation of the ARTS modernization effort (these efforts are now grouped as the Remote Tracking Stations (RTS) Block Change effort).

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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0305110F Satellite Control Network		PROJECT 3276																																																		
<p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2001 (\$ in Thousands) Continued</u></p> <p>(U) \$7,298 Network Integration and Systems Engineering: continue system engineering and integration of hardware/software to meet evolving satellite program requirements at OCNs and RTSs.</p> <p>(U) \$11,241 Provide program support for Systems Program Office.</p> <p>(U) \$58,105 Total</p> <p style="padding-left: 20px;">The following net transactions are not reflected in the FY01 program total: BTR = -\$8179K, SBIR = -\$783K These transactions are not reflected in other sections of the R-Docs where an FY01 total is shown.</p> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <p>(U) \$15,500 Communications Upgrades: continue communications upgrades to include completion of OSR and WANIU efforts.</p> <p>(U) \$25,849 Range Upgrades: continue standards protocol development effort. Continue RTS Block change development effort.</p> <p>(U) \$3,000 Network Integration and Systems Engineering: continue system engineering and integration of hardware/software to meet evolving satellite program requirements at OCNs and RTSs.</p> <p>(U) \$12,000 Provide program support for Systems Program Office.</p> <p>(U) \$56,349 Total</p> <p>(U) <u>B. Budget Activity Justification</u></p> <p style="padding-left: 20px;">This effort is in Budget Activity 7, Operational System Development, because it supports a fielded system.</p> <p>(U) <u>C. Program Change Summary (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 10%; text-align: center;"><u>FY 2000</u></th> <th style="width: 10%; text-align: center;"><u>FY 2001</u></th> <th style="width: 10%; text-align: center;"><u>FY 2002</u></th> <th style="width: 20%; text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY 2001 PBR)</td> <td style="text-align: center;">60,977</td> <td style="text-align: center;">56,643</td> <td style="text-align: center;">97,504</td> <td style="text-align: center;">TBD</td> </tr> <tr> <td>(U) Appropriated Value</td> <td style="text-align: center;">61,918</td> <td style="text-align: center;">58,643</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">a. Congressional/General Reductions</td> <td style="text-align: center;">-606</td> <td style="text-align: center;">-411</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">b. Small Business Innovative Research</td> <td style="text-align: center;">-2,250</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">c. Omnibus or Other Above Threshold Reprogram</td> <td style="text-align: center;">-271</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">d. Below Threshold Reprogram</td> <td style="text-align: center;">-3,818</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">e. Rescissions</td> <td style="text-align: center;">-242</td> <td style="text-align: center;">-127</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY 2001 PBR</td> <td></td> <td></td> <td style="text-align: center;">-41,155</td> <td></td> </tr> </tbody> </table>					<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>	(U) Previous President's Budget (FY 2001 PBR)	60,977	56,643	97,504	TBD	(U) Appropriated Value	61,918	58,643			(U) Adjustments to Appropriated Value					a. Congressional/General Reductions	-606	-411			b. Small Business Innovative Research	-2,250				c. Omnibus or Other Above Threshold Reprogram	-271				d. Below Threshold Reprogram	-3,818				e. Rescissions	-242	-127			(U) Adjustments to Budget Years Since FY 2001 PBR			-41,155	
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(U) **C. Program Change Summary (\$ in Thousands) Continued**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>
(U) Current Budget Submit/FY 2002 PBR	54,731	58,105	56,349	TBD

(U) **Significant Program Changes:**

FY 2000: AF reduction supports higher priorities and delays Orbit Analysis Subsystem follow-on effort, a continuation of network operations upgrades, to FY01.

WANIU installation delays due to operational mission considerations delayed completion of upgrade effort to FY02

FY 2002: AF net realignment of \$4,100K to OPAF implements COTS-based approach to Remote Tracking Station upgrades and re-phases funding to accommodate follow-on contract effort slip to FY02; reduction of \$33,555K results from user requirements refinement and increased emphasis on COTS-based replacement approach; reduction of \$3,500K for higher priorities delays external user connectivity to AFSCN from FY02 to FY03, with user concurrence.

(U) **D. Other Program Funding Summary (\$ in Thousands)**

	<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>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>Estimate</u>	<u>Complete</u>	
(U) Other Procurement, AF; PE 0305110F, AFSCN; BA-03, P-59	26,578	36,736	29,678	51,940	46,730	47,884	35,849	34,069	Continuing	TBD

(U) **E. Acquisition Strategy**

The primary objective of the AFSCN I&M program is to reduce the cost of satellite control operations while maintaining or improving reliability, maintainability, operability, and capability of current systems. The AF implemented a new streamlined contracting strategy in FY 1996, resulting in the award of the Range & Communications Development Contract (RCDC), the Network Operations Upgrade Contract (NOUC), and the Network Integration Contract (NIC). In FY 2001, the AF will further streamline its acquisition strategy by competitive award of the Satellite Control Network Contract (SCNC), which will consolidate development upgrade, sustainment, and integration responsibilities in one contract.

(U) **F. Schedule Profile**

	<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) NETWORK OPERATIONS UPGRADES												
(U) - ESD DD-250					*							
(U) - Start OAS follow-on effort									X			
(U) COMMUNICATIONS UPGRADES												

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(U) <u>F. Schedule Profile Continued</u>												
		<u>FY 2000</u>				<u>FY 2001</u>				<u>FY 2002</u>		
	1	2	3	4	1	2	3	4	1	2	3	4
(U) - RTS archival installation initiation	*											
(U) - Archival DD-250								X				
(U) - WANIU DD-250									X			
(U) - OSR Incremental Demonstration Review-2			*									
(U) - OSR Incremental Demonstration Review-3					*							
(U) - OSR FCA/PCA							*					
(U) - OSR DD-250												X
(U) RANGE UPGRADES (RTS Block Change)												
(U) - Start Control and Status Upgrade			*									
(U) - Begin RTS Block Change (including ARTS upgrade)								X				
*=completed; X=planned												

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE June 2001		
BUDGET ACTIVITY				PE NUMBER AND TITLE					PROJECT	
07 - Operational System Development				0305110F Satellite Control Network					3276	
(U) <u>A. Project Cost Breakdown (\$ in Thousands)</u>										
							<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	
(U)	Network Ops Upgrades						0	384		0
(U)	Communications Upgrades						27,985	12,572		15,500
(U)	Range Upgrades						9,795	26,610		25,849
(U)	Network Integration and Systems Engineering						5,588	7,298		3,000
(U)	Program Support						11,363	11,241		12,000
(U)	Total						54,731	58,105		56,349
(U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U) <u>Performing Organizations:</u>										
<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 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Organizations</u>										
Lockheed Martin (Range & Comm Development Contract)	C/CPAF	Mar 96	139,887	139,887	74,925	36,890	12,572	15,500	0	139,887
TBD (Satellite Control Network Contract)	TBD	Sep 01	TBD	TBD	0	0	26,994	25,849	Continuing	TBD
Lockheed Martin (Network Integration Contract)	C/CPAF	May 96	48,957	48,957	33,071	5,588	7,298	3,000	0	48,957
<u>Support and Management Organizations</u>										
Program Support (FFRDC, SETA, SPO Ops)	various	various	N/A	N/A	45,452	12,253	11,241	12,000	Continuing	TBD
<u>Test and Evaluation Organizations</u>										
N/A										
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE	
							June 2001	
BUDGET ACTIVITY				PE NUMBER AND TITLE			PROJECT	
07 - Operational System Development				0305110F Satellite Control Network			3276	
(U) <u>Government Furnished Property:</u>								
	<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>Budget</u>	<u>Budget to</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>	<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>
<u>Product Development Property</u>								
N/A								
<u>Support and Management Property</u>								
N/A								
<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>Subtotals</u>				<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>
Subtotal Product Development				107,996	42,478	46,864	44,349	TBD
Subtotal Support and Management				45,452	12,253	11,241	12,000	TBD
Subtotal Test and Evaluation								
Total Project				153,448	54,731	58,105	56,349	TBD

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