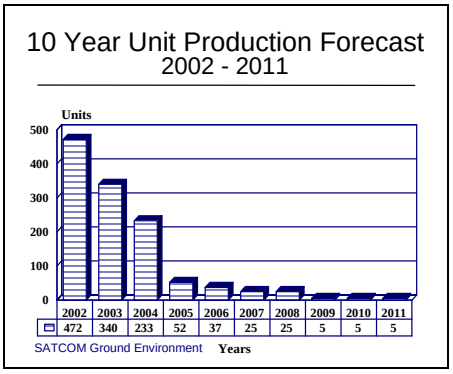
SATCOM Ground Environment - Archived 12/2003

Outlook

- Forecast International projects the US Army to procure some 1,199 SATCOM ground terminals and control systems over the next decade
- In 2003, look for Project 253 to continue SATCOM Engineering Lab (SEL), PM Admin, and Systems Engineering Technical Assistance (SETA) efforts



Orientation

Description. The Satellite Communications (SATCOM) Ground Environment program is a United States Army endeavor. The SATCOM Ground Environment program researches, develops, and procures military satellite communications ground terminals and control systems for the US Department of Defense (DoD).

Sponsor

US Army – Communications Electronics Command
Center for Space Systems
Fort Monmouth, New Jersey (NJ) USA

Contractors

Harris Corporation
1025 West NASA Boulevard
Melbourne, Florida (FL) 32919
USA
Tel: +1 321 727 9100
Fax: +1 321 724 3973
Web site: http://www.harris.com

Raytheon Co
141 Spring Street
Lexington, Massachusetts (MA) 02421
USA
Tel: +1 781 862 6600
Fax: +1 781 860 2172
Web site: http://www.raytheon.com

SAIC
10260 Campus Point Drive
San Diego, California (CA) 92121
USA
Tel: +1 800 430 7629
Web site: http://www.saic.com

ITT Industries
4 West Red Oak Lane
White Plains, New York (NY) 10604
USA
Tel: +1 914 641 2000
Fax: +1 914 696 2960
Web site: http://www.itt.com

Status. Ongoing research, development, and procurement.

Total Produced. Approximately 4,461 SATCOM terminals and related systems had been produced through 2001.

Application. To research, develop, and purchase military satellite communications ground terminals and

control systems for the US Department of Defense (DoD).

Price Range. Most of the work in this program involves developmental systems and prototype units which are not an accurate reflection of per-unit cost in a procurement production run.

Technical Data

As the lead service for Military Satellite Communication (MILSATCOM) Ground Subsystems, the US Army is responsible for developing and procuring satellite terminals, satellite control subsystems, communication subsystems, and all related equipment. This responsibility also includes maintaining the life cycle logistics support required to achieve end-to-end connectivity, satisfying JCS Command, Control, Communications, and Intelligence (C^3I) in support of the President, Joint Chiefs of Staff (JCS), CINCs, military departments, State Department, and other US government departments and agencies.

PE#0303142A – SATCOM Ground Environment (SPACE)

The US Army funds the SATCOM Ground Environment program under Program Element 0303142A. This program element is comprised of the following projects.

Project 253: Defense Satellite Communications System-Defense Communications System (DSCS-DCS) Phase II. This project funds the development of strategic and tactical SATCOM ground terminals and control systems to support JCS validated unique and vital C^3I for the worldwide super high frequency (SHF) DSCS. Work done in this project provides rapid, reliable, and effective communications to support a variety of C^2 needs for strategic commanders, as well as other users.

Project 384: SMART-T. The Secure Mobile Anti-jam Reliable Tactical Terminal (SMART-T) program provides a satellite interface to permit uninterrupted communications as US advancing forces move beyond the line-of-sight capability of the Mobile Subscriber Equipment communications system. The SMART-T equipment communicates at both low and medium data rates over the MILSTAR satellite constellation. It is also compatible with the UHF Follow-On (UFO), the Navy Fleet SATCOM EHF satellite package, and MIL-STD-1582B/C compatible payloads. The SMART-T also has low probability of interception and low probability of detection (LPI/LPD) to avoid being targeted for destruction, jamming, or intercept.

Project 456: MILSATCOM System Engineering. This project funds the development of tactical satellite communications terminals and satellite control systems used with the DoD's global SHF DSCS and UHF FLTSAT/AFSAT systems. Work under this project includes the TSQ-173 (formerly TSQ-XX) and the EMUT (Enhanced Manpack UHF Terminal). The TSQ-173 is a replacement for the existing MSQ-144 SATCOM ground control station. The MSQ-144 requires five C-130 loads for transportation; the TSQ-173 requires one C-130 load. The TSQ-173 controls the TSC-85/93 satellite receiving terminals.

Variants/Upgrades

This program includes upgrades to various existing equipment.

Program Review

Project 253: Defense Satellite Communications System-Defense Communications System (DSCS-DCS) Phase II. During 1996, project efforts continued on the DSCS Integrated Management System (DIMS) Interface Software; the NDI Adaptation Phase of the Replacement Satellite Configuration Control Element (RSCCE); and the IRF and Systems Engineering Technical Assistance (SETA). The schedule for 1997 continued much of the work from 1996 as well as the initiation of the development of the Integrated Baseband Workstation (IBWS), the Replacement BATSON, and the GSC-52 Modification.

Project 253 activity for 1998 focused on completing the NDI Adaptation Phase for RSCCE, continuing the RBATSON program, continuing the development of DIMS Interface Software, and completing the IBWS program. In 1999, the RBATSON program was completed; the Common Network Planning Software (CNPS) program was initiated; and the prototype

microwave link from Kaiserslautern, through Donnersburg, to Heidelberg, Germany, was developed.

In 2000, Project 253 continued work on the DIMS Interface Software program. In 2001, the project continued the DIMS Software program. In 2002, Project 253 supported CNPS development for the Wideband Gapfiller System. In 2003, look for the project to continue SATCOM Engineering Lab (SEL), PM Admin, and SETA efforts.

Project 384: SMART-T. Integration, Contract Technical Test, and the Modem Verification Test all began in 1994. Testing continued through 1995 and included a Payload-to-Terminal Interface Test and a Terminal Test with the Lincoln Lab Medium Data Rate Simulator. The Contractors Technical Test was scheduled to be completed by 1996, at which time an LRIP decision was obtained. A development effort for Joint Interoperability Standard, Network Control, and Payload Specification Changes was also begun.

The year 1998 saw a continuation of the planned efforts from 1997, as well as the continuation of the development of the C4I Technical Architecture and the Demand Assigned Multiple Access (DAMA) capabilities. In 1999, the development for DAMA was completed and the development for the Asynchronous Transfer Mode (ATM) DAMA began. Also in 1999, development of Network Control continued, and development of an Advanced Extremely High Frequency (AEHF) testbed commenced.

In 2000, Project 384 completed the development of the DAMA. In 2001, the project completed Packet DAMA development efforts and continued developing payload specification changes. In 2002, Project 384 continued developing AEHF satellite payload simulators. In 2003, expect the project to continue AEHF development efforts.

Project 456: MILSATCOM System Engineering. By 1992, Project 456 accomplishments included the completion of technical specifications for the Enhanced Manpack UHF Terminals (EMUT) ND-I PSC-5 and PSC-3/VSC-7; the completion of Phase III TSQ-173 functional/operational tests; the delivery of four Phase III TSQ-173 prototypes and one stand-alone TSQ-173; and the beginning of TSQ-173 conceptual testing at Ft. Detrick.

During 1993, the UHF Control Bid Sample Test Evaluator for sample hardware was completed. Other efforts included evaluating bid samples for the Non-Developmental Items (NDI) PSC-5 Enhanced Manpack UHF Terminal (EMUT) and starting the Anti-Jam Control Modem (AJCM) T1 data rate study.

In 1996, specification development for SHF Tri-Band Advanced Range Extension Terminal (STAR-T) began. During 1997, development of a multiplexer for SHF terminals was initiated.

The 1998 agenda called for continuing Spitfire DAMA Waveform Improvement, incorporating GPS and HAVE QUICK capabilities in Spitfire terminals, and continuing various SATCOM and battlefield digitization integration efforts. In 1999, Project 456 continued these efforts.

In 2000, Project 456 continued its developmental work on AEHF waveforms. The project also made software modifications to support SATCOM-on-the-Move (SOTM) tactical internet interface. In 2001, the project continued Battlefield Digitization architecture efforts.

In 2002, Project 456 conducted development, integration, and fielding of interim SATCOM networking management tools. In 2003, look for the project to conduct various developmental efforts to provide enhanced terminal capability.

Funding

US RDT&E FUNDING

	FY01		FY02(Req)		FY03(Req)	
	QTY	AMT	QTY	AMT	QTY	AMT
RDT&E (US Army)						
PE#0303142A	-	38.29	-	44.65	-	72.24

	FY04(Req)		FY05(Req)		FY06(Req)		FY07(Req)	
	QTY	AMT	QTY	AMT	QTY	AMT	QTY	AMT
RDT&E (US Army)								
PE#0303142A	-	81.00	-	53.68	-	63.59	-	108.30

All US$ are in millions.

Source: US Department of the Army FY2003 RDT&E Descriptive Summary

Recent Contracts

Contractor	Award ($ millions)	Date/Description
Raytheon Co	48.0	May 1998 – Contract for an estimated 447 Airborne Integrated Terminal Groups applicable to the MILSATCOM communication system. To be completed in September 2003.
Harris Corp	22.9	Jul 1998 – Contract for the modernization of AN/GSC-52 satellite terminals. To be completed by 2008.
Harris Corp	16.5	Feb 1999 – Contract modification for materials/kits in support of the AN/GSC-52 Satellite Terminal Modernization Program. To include spares, various data items, warranties, and training. To be completed December 12, 2008. (DAAB07-98-C-A515)
Raytheon Co	33.1	1999 – Contract modification for 89 SMART-Ts for fielding to the US Army, Air Force, and Marine Corps. To be completed June 30, 2006. (DAAB074-9-C-A757)
SAIC	5.3	Feb 2000 – ID/IQ contract for engineering services for life-cycle support of various programs including satellite terminal efforts. Options could bring the cumulative value to US$27.6 million if all options are exercised. To be completed February 2005. (N66001-00-D-5042)
ITT Industries	21.0	2000 – US$21 million increment of a US$63 million contract for a replacement DSCS frequency division multiple access control system. To be complete July 31, 2010. (DAAB07-00-C-A261)
Raytheon Co	15.9	2000 – Contract to procure 166,859 staff-hours to support engineering services to design software/hardware improvements to the EHF, SHF, submarine high data rate and GBS SATCOM terminals and antennas. Options would bring contract value to US$49 million. To be completed January 2003. (N00039-98-R-4008)
Harris Corp	8.8	2000 – Contract modification to exercise an option for six AN/GSC-52 SATCOM terminal upgrade kits. To be completed December 12, 2008. (DAAB07-98-C-A515)
Raytheon Company	49.0	April 2001 – Raytheon's SMART-T SATCOM program receives three-year, US$49 million award to develop, test, and validate an advanced extremely high frequency (AEHF) retrofit kit for installation on approximately 330 SATCOM ground terminals. Award issued by US Army's Communications and Electronics Command, Ft. Monmouth, NJ Under the contract, Raytheon will design, develop, integrate, and test three prototype retrofit kits on SMART-T terminals.
Raytheon Company	13.3	April 2002 – Raytheon awarded a contract for the rebaseline and incorporation of turbo cooling into the AEHF development effort for the SMART-T. Work will be completed by December 31, 2005. US Army Communications-Electronics Command, Fort Monmouth, NJ, is the contracting authority. (DAAB07-96-C-A757)

Timetable

Year	Major Development
FY 1983	SCOTT RFPs issued
FY 1985	SCOTT ROC approved; SCOTT FSED contract issued to Magnavox
FY 1988	AMUT O&O plan approved by TRADOC
FY 1989	Completed TSQ-173 development and test; Universal Modem development contracts completed; MoU signed with the UK for Universal Modem
FY 1990	IOT&E test of SCOTT FSED terminals; IOC of Phase II TSQ-173 prototype
FY 1991	SCOTT operational testing begun; completed SCOTT IOT&E
FY 1992	Conducted MILSTAR System Test for SCOTT; delivery of TSQ-173 prototypes
FY 1993	SCOTT program terminated; PSC-3/VSC-7, ND-I PSC-5 EMUTs and DSCS Training Devices contracts awarded
FY 1995	IOC for DSCS Generic Principles Trainer
FY 1997	First Delivery of Universal Modem
FY 1998	Automated Communications Management System effort begun; NDI Adaptation Phase for RSCCE and IBWS program completed
FY 1999	IOC for DSCS Training Devices; RBATSON program completed
2001	Project 384 completes Packet DAMA development efforts
2002	Project 253 supports CNPS development for Wideband Gapfiller System
2003	Project 456 to conduct various developmental efforts to provide enhanced terminal capability

Worldwide Distribution

The majority of work conducted in this program is for **US Department of Defense** (DoD) requirements only. However, some exceptions include work related to the DSCS program that has a Memorandum of Understanding (MoU) signed between the US and NATO.

Forecast Rationale

The Satellite Communications (SATCOM) Ground Environment program, a United States Army endeavor, researches, develops, and procures military satellite communications ground terminals and control systems for the US Department of Defense (DoD).

As indicated by the **Ten-Year Outlook** chart, Forecast International projects the US Army to procure some 1,199 SATCOM ground terminals and control systems over the next decade. The US Department of Defense's need to achieve information superiority over its adversaries is driving SATCOM ground terminal and control system purchases.

Military Satellite Communication (MILSATCOM) systems are vital to the DoD's ability to collect and disseminate information on the battlefield. The US Army plans to spend some US$378.8 million on the SATCOM Ground Environment program from 2003 to 2007. Forecast International will continue to analyze and report developments concerning the SATCOM Ground Environment program as they occur.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

			High Confidence Level				Good Confidence Level				Speculative			
Designation	**System**	**Thru 01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**Total 02-11**
SATCOM GROUND ENVIRONMENT	AIRBORNE TERMINAL GROUPS (USA)	223	112	112	0	0	0	0	0	0	0	0	224
SATCOM GROUND ENVIRONMENT	DKET (USA)	15	5	5	0	0	0	0	0	0	0	0	10
SATCOM GROUND ENVIRONMENT	EMUT (US ARMY)	2509	25	20	30	20	5	5	5	5	5	5	125
SATCOM GROUND ENVIRONMENT	GROUND MULTIBAND TERMINAL (US AIR FORCE)	9	20	20	20	20	20	20	20	0	0	0	140
SATCOM GROUND ENVIRONMENT	SCAMP (US ARMY)	755	127	0	0	0	0	0	0	0	0	0	127
SATCOM GROUND ENVIRONMENT	SMART-T WITH DAMA (US ARMY)	4	12	12	12	12	12	0	0	0	0	0	60
SATCOM GROUND ENVIRONMENT	STAR-TS (US ARMY)	2	1	1	1	0	0	0	0	0	0	0	3
SATCOM GROUND ENVIRONMENT	UMS FOLLOW-ONS (US ARMY)	680	170	170	170	0	0	0	0	0	0	0	510
SATCOM GROUND ENVIRONMENT	Prior Prod'n:	264	0	0	0	0	0	0	0	0	0	0	0
Total Production		4461	472	340	233	52	37	25	25	5	5	5	1199