

# ARCHIVED REPORT

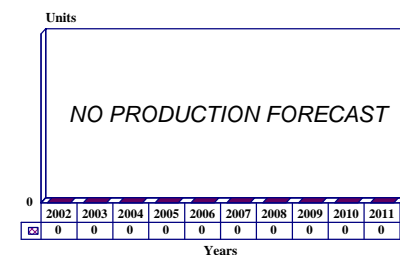
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## Voice Switching and Control System (VSCS) - Archived 6/2003

### Outlook

- Twenty-five Voice Switching and Control Systems have been purchased by the United States Federal Aviation Administration
- No future VSCS production is anticipated
- Maintenance services for all VSCSs will continue until December 31, 2007
- **Forecast International will archive this report in 2003**

10 Year Unit Production Forecast  
2002 - 2011



### Orientation

**Description.** The Voice Switching and Control System (VSCS) is a voice communication system used by air traffic controllers. VSCS provides communications between pilots and air traffic controllers. This Forecast International report covers Voice Switching and Control Systems purchased by the United States Federal Aviation Administration.

#### Sponsor

US Department of Transportation  
Federal Aviation Administration  
Washington, DC  
USA

#### Contractors

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**Status.** VSCS production for the United States Federal Aviation Administration is complete.

**Total Produced.** Twenty-five Voice Switching and Control Systems produced and installed at US Federal Aviation Administration Air Route Traffic Control Centers (ARTCCs).

**Application.** The VSCS allows pilots and air traffic controllers to communicate with one another.

**Price Range.** The price tag for a single Voice Switching and Control System is US\$60 million. The US\$60 million includes installation, training, and maintenance services over a 14-year period. After the original production run, option systems are estimated to

cost between US\$13 million and US\$24 million, depending upon the size of the system.

## Technical Data

**Design Features.** The VSCS integrates air-to-ground and ground-to-ground voice communications through an automated, software-driven switching system. The VSCS is designed to provide delay- and clipping-free voice communication that is unaffected by traffic load, adverse weather conditions, or aircraft emergencies. The system is able to connect calls within 15 milliseconds and process peak traffic loads of more than 2,800 calls per minute.

The core of the Voice Switching and Control System is a fiber-optic digital switching system. The system is

based on Harris Digital Telephone Systems' 20-20 switch for routing air-to-ground and ground-to-ground calls. The VSCS includes a Tandem Computer CKX fault-tolerant subsystem with up to eight CPUs, 120 MB of RAM, and five GBs of disk storage.

Redundancy of central functional elements and an integrated diagnostic system ensures system operational integrity. Fault mitigation, including system reconfiguration as appropriate, is accomplished automatically to the circuit-card level, and is transparent to both pilots and controllers.

## Variants/Upgrades

**VITS.** The VSCS Integrated Test Suite (VITS) is a modular and portable test stand used for testing the VSCS system. VITS is run off a Micron PC platform using custom programming designated Nightvision.

**VTABS.** The VSCS Training and Backup System (VTABS) serves a dual purpose. First, it trains con-

trollers on the use of VSCS prior to actually being posted to a site. Second, it provides a backup system in case a primary VSCS system fails. While the VTABS incorporates these two functions under one system, the training and backup functions are kept entirely separate from each other.

## Program Review

**Background.** In October 1986, the US Federal Aviation Administration (FAA) awarded VSCS prototype development contracts to Harris Corp and AT&T. Under the agreements, the two firms were to design, develop, and install separate prototype Voice Switching and Control Systems. Both contractors ran into problems producing a system that met FAA requirements.

By November 1990, the VSCS effort was restructured to minimize the risks that might occur during the VSCS production phase. The restructured project required both development contractors to develop a prototype upgrade in addition to the prototype.

After five years of development, the FAA awarded a 14-year production contract to Harris Corporation on December 31, 1991. The contract is valued at US\$1.6 billion.

Initially, Harris focused its efforts on developing the prototype and its upgrade. The prototype upgrade was the first VSCS installation. In June 1992, the upgraded prototype was installed at the US FAA Technical Center in Atlantic City. Upon completion of operational testing on the prototype and acceptance of the prototype upgrade, the FAA authorized the limited production of the first five systems in September 1992.

The first operational system was scheduled to be installed in the Seattle ARTCC in June 1993. Unfortunately, the program fell eight months behind schedule, and installation was rescheduled for the first quarter of 1994. The system was delivered to Seattle in February 1994. The delay occurred because the prime contractor, Harris Corporation, encountered software development and integration problems in upgrading the prototype.

**Latest Information.** As of April 2002, 25 Voice Switching and Control Systems have been produced and installed throughout the United States. All 25 systems are operational.

The VSCS has been phased into existing US FAA communications systems. This has allowed air traffic controllers to gain experience with the VSCS at their own pace.

The original VSCS contract contains options to produce 24 additional systems. If these options are exercised, the Voice Switching and Control System will be built for air traffic control operations for the US Armed Forces, and installed at FAA air traffic control sites in Chicago, Denver, and Dallas. Under the original agreement, maintenance services for all Voice Switching and Control Systems will continue until December 31, 2007.

## Funding

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The total amount of funding allocated to the VSCS is estimated at US\$1.7 billion. This figure includes installation, training, and maintenance services over a 15-year period.

## Recent Contracts

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No recent contracts have been identified.

## Timetable

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<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Oct	1986	Prototype development awarded to Harris and AT&T
Dec	1991	Production contract awarded to Harris
Jun	1992	Upgraded prototype installed at US FAA Technical Center, Atlantic City
Sep	1992	Limited production began
Feb	1994	First system installation in Seattle, Washington
	1994	Systems installed at ARTCCs in Salt Lake City, Denver, and Atlanta, and at the US FAA Aeronautical Center in Oklahoma City
Apr	1997	Harris awarded a three-year contract to develop and install VSCS's Training and Backup Switch (VTABS)
Dec	2007	Under the original contract, maintenance services for all Voice Switching and Control System will cease

## Worldwide Distribution

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This is a **US Federal Aviation Administration** (US FAA) program.

## Forecast Rationale

The Voice Switching and Control System (VSCS), developed by Harris Corporation, provides communications between air traffic controllers and pilots. This Forecast International report covers Voice Switching and Control Systems purchased by the United States Federal Aviation Administration.

The VSCS is a major element of the US FAA's Capital Investment Plan (CIP) air traffic control (ATC) modernization program. The VSCS will be integrated

with the Advanced Automation System (AAS) that is currently being developed to lower the cost of US air traffic control.

Twenty-five Voice Switching and Control Systems have been purchased by FAA. The production run of the VSCS has come to a close. No additional FAA purchases are forecast. That said, **Forecast International will archive this report in 2003.**

## Ten-Year Outlook

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With production complete, the forecast chart has been omitted. **This report will be archived in 2003.**

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