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FAA's Voice Switching and Control
System

Statement for the record by Samuel W. Bowlin
Director, Defense and Aeronautics Mission Systems,
Information Management and Technology Division

Before the Subcommittee on Transportation
and Related Agencies
Committee on Appropriations,
United States Senate



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Mr. Chairman and Members of the Subcommittee:

My testimony today will be on the Federal Aviation Administration's (FAA) Voice Switching and Control System (VSCS), a major agency effort to modernize its communications. VSCS, currently estimated to cost over \$786 million, is intended to provide air traffic controllers with a computer-controlled system for ground-to-ground and air-to-ground voice communications.

VSCS is to be implemented at 23 major en route centers, which control air traffic between airports, and is expected to provide communications for the controller workstations that will serve up to 430 positions at each center. FAA expects this new system to significantly improve communications capabilities because it will be more reliable, and easier and less costly to maintain than the existing system.

VSCS is to provide voice communications for new controller workstations that are being developed under FAA's Advanced Automation System, a critical element in the National Airspace System Plan. The Advanced Automation System, with its new hardware, software, and workstations, is expected to result in many improvements, such as more efficient handling of air traffic. The new workstations, now scheduled for delivery in August 1992, cannot be used until VSCS is ready. Whether VSCS will be ready on time is uncertain because the project continues to encounter cost

increases, schedule delays, and technical difficulties. Further, we are concerned that, in an effort to remain on schedule, FAA will defer the testing needed to ensure it acquires a system that will work as intended.

In October 1986, FAA awarded VSCS prototype development contracts to Harris Corporation and American Telephone and Telegraph (AT&T) Technologies, Incorporated. Each contractor is to design, develop, and install one prototype system. FAA intends to award a production contract this November to the contractor who develops the prototype that best meets requirements. The original estimated cost of both prototype contracts was \$67 million; this cost is now estimated to run more than \$145 million.

Total project costs have more than tripled. The estimated cost to design, develop, produce, and install the system has risen from \$258 million in 1982 to the current estimate of over \$786 million. FAA officials say the original cost estimates were too low and did not consider all relevant costs. Further, these officials said that contractors underestimated the complexity of the project.

Both prototype contractors have encountered unanticipated technical difficulties in meeting VSCS requirements. Their original proposals called for using off-the-shelf hardware and software. After contract award, when the contractors obtained a

better understanding of the system's requirements, they learned that significant changes were required to both their proposed off-the-shelf hardware and software designs. In addition, both contractors underestimated the amount of custom software needed, and found that they had to develop additional software to meet requirements.

Milestones for the project have been continually missed and further delays may occur. For instance, the scheduled date for VSCS to be operational at the first site, once projected as 1986, is now estimated at 1992. In addition, Martin Marietta--which is under contract to FAA to provide technical and programmatic support for nearly all facets of the National Airspace System Plan--estimates that project milestones could be further delayed. For example, Martin Marietta believes that the agency's estimate for the system to be operational at the first site could be delayed up to 4 additional months, to September 1992. Further, Martin Marietta has maintained that the prototype contractors may be striving to meet FAA's target dates at the expense of their work quality.

In an effort to expedite delivery and avoid delaying the operation of the new controller workstations, FAA has reduced the testing required before it awards a production contract for VSCS. Independent operational testing and evaluation of the system, originally scheduled to be performed during the project's prototype

development phase, is now to be done after contract award. This testing was to verify that the system would work as intended and to demonstrate the operational effectiveness and suitability of the prototypes. Instead of this testing, FAA now plans that before awarding the production contract in November 1989, it will (1) use the results of selected factory acceptance testing performed by the contractors to determine whether their systems meet critical requirements; (2) perform independent tests of the prototypes at the contractors' plants, including assessing the systems under heavy traffic loads; and (3) use the results of limited operational tests, including having air traffic controllers evaluate the contractors' prototypes, to assess the operational suitability of the systems. FAA officials stated, however, that while they plan to complete these tests, they could not guarantee that they would be completed before awarding the production contract.

To preclude the government from buying a system that will not perform as expected, we believe it is critical that key tests be completed and evaluated before awarding the production contract. At a minimum, FAA needs to have (1) the results of complete factory acceptance testing to ensure prototypes meet system requirements; (2) an independent verification of the results of the contractors' testing, including an assessment of the prototypes under heavy work loads; and (3) an assessment of the operational suitability of the system. Office of Management and Budget Circular A-109, which provides guidance to federal agencies on acquiring major systems,

reinforces the importance of testing. It states that a production commitment should not be made until a system's performance is independently tested in a realistic operational environment.

The problems that result from proceeding to production without adequately testing a system are well documented. We previously reported that FAA's lack of testing prior to committing to production contracts contributed to delays ranging from 1 to 8 years for many of the agency's major systems.¹ In addition, testing before production generally reduces overall system cost because the earlier changes are made in the development process, the less expensive they are to make.

Because VSCS continues to experience development problems, Advanced Automation System workstation implementation may be delayed. The Advanced Automation System workstation is currently scheduled for delivery to the first operational site in August 1992. To meet the terms of the Advanced Automation System contract, key components of VSCS need to be delivered and certified operational 90 days before the workstation is to be delivered to the first site, or currently May 1992. However, Martin Marietta estimates that VSCS may not be operational until September 1992.

¹Microwave Landing Systems: Additional Systems Should Not Be Procured Unless Benefits Proven (GAO/RCED-88-118, May 16, 1988).

If the new controller workstations cannot be used because of delays in the VSCS project, the government will not have met its obligation under the Advanced Automation System contract, and could incur additional costs and delays. The Advanced Automation System contract contains no provision to lessen the consequences if VSCS is delayed.

Mr. Chairman, the problems I have just mentioned will be described in detail in a report we plan to issue shortly. We plan to make recommendations to the Secretary of Transportation that call for needed testing to be completed before making a production decision and for exploring possible changes to the new workstation contract that might mitigate the adverse consequences of VSCS delay.