Memorandum

**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

Office of Inspector General

Subject: **ACTION**: Efforts to Develop and Deploy the
Standard Terminal Automation Replacement
System, AV-2001-048

Date: March 30, 2001

From: Alexis M. Stefani
Assistant Inspector General for Auditing

Reply to
Attn of: JA-10
X60500

To: Federal Aviation Administrator

On March 14, 2001, at a hearing of the Subcommittee on Aviation, Committee
on Transportation and Infrastructure, U.S. House of Representatives, we
provided testimony on the Federal Aviation Administration's (FAA) efforts to
develop and deploy the Standard Terminal Automation Replacement System
(STARS). The STARS program, as first envisioned in 1996, has undergone
significant cost increases and schedule delays. Although the STARS
acquisition was originally intended to maximize the use of commercially
available equipment, significant human factors concerns were identified late in
the acquisition that required extensive software development.

In October 1999, FAA revised its estimated cost of the STARS program to
$1.4 billion—an additional $462 million over the initial baseline of
$940 million. Today, the current estimate for developed software is over
400,000 lines of code development with various software configurations. In
addition, FAA now estimates "full service" STARS will not be deployed
nationwide until September 2008—4 years behind schedule.

Our testimony focused on three issues—schedule slippages have required
interim solutions, software development is progressing but challenges remain,
and an aggressive deployment schedule will likely result in further cost and
schedule overruns. These concerns are discussed briefly below, and a copy of
our statement is attached for your information.

FAA fragmented the STARS development plan into multiple configurations to better manage the software development, with each configuration requiring its own set of milestones for development and testing. One successful configuration involved the early display configuration (EDC) of STARS. EDC is primarily a display replacement, which heavily relies on existing Automated Radar Terminal System (ARTS) software. FAA also moved forward with an interim measure known as Common ARTS, which provides many of the same functions that STARS will provide. Common ARTS can process 6,000 aircraft tracks from 10 analog or digital radars while STARS will process 7,000 tracks from 16 digital radars.

FAA has made progress developing the STARS software necessary for the nationwide deployment and expects completion later this year. However, FAA recently identified other risks to its software development schedule, such as locally programmed functions, which may require additional software development. Once the software development is complete, almost 2 years of testing will be needed. This could have significant implications for the STARS program's schedule and cost.

FAA has set out an aggressive schedule to complete deployment by the end of fiscal year 2008. To stay within budget and on schedule, FAA developed a process improvement plan that proposes a new strategy for training air traffic controllers and maintenance technicians. Although FAA has set the general schedule for deployment, no specific dates have been established for the delivery, installation, and testing. A key concern is whether the FAA and its contractor will realistically be able to deploy 164 systems in 6 years within the cost and schedule parameters.

FAA must determine the cost, capabilities, and deployment dates for its terminal automation needs. This should include a comparison of the costs and capabilities of STARS versus Common ARTS.

Accordingly, we recommended that FAA revise its terminal automation strategy no later than June of this year, to include:

1. Establishing milestone dates and quantifying all costs associated with delivery, installation, and testing of STARS for the 164 sites outlined in FAA's deployment schedule. Additional costs should include software development, additional contractor or personnel costs, and site-specific infrastructure modifications.

2. Completing a training strategy for over 11,000 air traffic controllers and maintenance technicians that identifies specific dates and personnel cost requirements necessary to meet FAA's deployment schedule.

3. Evaluating if additional Common ARTS with color displays will be needed to support FAA's terminal automation needs. This evaluation should include an independent assessment by a group that would not have a vested interest in the outcome. The assessment should contain a detailed comparison of cost and capabilities of each system, their ability to be upgraded with future enhancements, and ability to meet realistic deployment schedules.

In accordance with Department of Transportation Order 8000.1C, we would appreciate receiving your response within 30 days. If you concur with our recommendations, please indicate for each recommendation the specific actions taken or planned and target dates for completion of these actions. If you do not concur, please provide your rationale. Furthermore, you may provide alternative courses of action that you believe would resolve the issues presented in this report.

We appreciate the courtesies and cooperation extended by your staff. If I can answer any questions or be of further assistance, please call me at (202) 366-1992 or David A. Dobbs, Deputy Assistant Inspector General for Aviation, at (202) 366-0500.

Attachment

The actual testimony referenced by this document can be viewed at the following URL: http://www.oig.dot.gov/statements/cc2001127.pdf