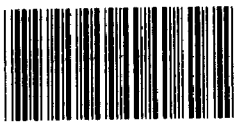
United States General Accounting Office
Washington, D.C. 20548



FOR RELEASE ON DELIVERY
EXPECTED AT 10:00 A.M.
WEDNESDAY, APRIL 16, 1986

STATEMENT OF

HERBERT R. MCLURE, ASSOCIATE DIRECTOR

RESOURCES, COMMUNITY, AND

ECONOMIC DEVELOPMENT DIVISION

BEFORE THE

SUBCOMMITTEE ON TRANSPORTATION

OF THE

HOUSE COMMITTEE ON APPROPRIATIONS

ON FAA APPROPRIATION ISSUES

Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to comment on FAA appropriation issues. We have worked with this Subcommittee over the past few years to monitor many aspects of FAA's efforts to modernize, automate, and consolidate the national airspace system.

Our testimony today covers continuing problems FAA has had in procuring the technologies required for the National Airspace System (NAS) plan, and in developing adequate controller and inspector work forces. These problems demonstrate that this Subcommittee should continue to question FAA appropriations requests in these areas.

RISKS REMAIN FOR MANY NAS PLAN PROGRAMS

The Congress, the Office of Technology Assessment, the Office of Management and Budget, and the Department of Transportation (DOT) have repeatedly expressed concern about FAA's ability to effectively implement the NAS plan. We believe that these concerns are well founded.

After my testimony, my counterpart from our Information Management and Technology Division, Dr. Carl Palmer, will address FAA's current plans to commit to production the single most expensive program in the NAS plan, the Advanced Automation System, before obtaining adequate assurance that the proposed system will perform as required. Our work to date has also addressed a number of other NAS plan programs for which FAA has not adequately identified the technical, operational, and economic risks associated with their implementation. Further, for many of these programs, FAA's acquisition strategy does not include a plan to minimize risks by adequately demonstrating a system's performance in an operational environment before committing to production.

Automated flight services

For example, FAA has not developed a strategy for adequately considering its technical options in developing direct user access terminal systems, called DUATS. DUATS is designed to reduce the work load of FAA's flight service station specialists by permitting pilots to obtain their own weather briefings and file flight plans with personal computers. Still

at issue is whether DUATS will be included in FAA's fully automated Model 2 flight service station program or be an independent system.

In June 1985 FAA requested funding to develop Model 2 which, if approved, would have put flight service automation $48 million over original estimates and 7 years behind schedule. However, this Subcommittee and its Senate counterpart suspended all fiscal year 1986 funding for FAA's Model 2 program pending an FAA report comparing the relative cost, performance, and availability of commercial DUATS and two FAA-developed systems. The suspension of fiscal year 1986 funds will remain in effect until both appropriations committees have had an opportunity to evaluate FAA's report.

At your request, we reviewed a December 1985 draft of the required FAA report. We found that the draft report wrongly attributed approval of FAA's preferred option, proceeding with a modified Model 2 contract, to a study team which, in fact, had never examined that option. We also found that the study team's analysis supporting FAA's Technical Center DUATS was deficient in each of the cost, performance, and availability criteria FAA was asked to address and, therefore, is inadequate to justify any DUATS option.

FAA is currently reconsidering its DUATS options. Because of the unsupported preferred option in FAA's draft report and the inadequacies in the study team's analysis, we believe the funding suspension should continue until both House and Senate appropriations' committees have ample opportunity to evaluate the basis for whatever DUATS option FAA recommends.

Automated weather observing systems

FAA also did not adequately identify the economic and safety risks of installing automated weather observing systems (AWOSs) at towered airports. In a July 1985 report to you we stated that FAA's operational testing showed that its automated system did not meet operational requirements for four of the nine weather elements considered essential to providing airport and area aviation weather forecasts.[1] These forecasts are considered essential to maintaining aviation safety. Conversely, existing surface weather observations at these airports made by observers using equipment to measure or estimate the nine weather elements not only meet or exceed FAA's operational requirements, but are also more cost-effective.

FAA planned to spend $60 million to install automated systems at 304 towered airports across the nation despite these test results. Citing our report, however, this Subcommittee denied FAA funding for AWOSs at towered airports. If FAA still hopes to install these systems at these airports, additional operational testing would be required to show that the systems meet the agency's operational requirements.

Microwave landing systems

Similar Subcommittee action may be appropriate in the case of the microwave landing system (MLS) which FAA believes will provide state-of-the-art precision landings.

---

[1] Installation of Automated Weather Observing Systems by FAA at Commercial Airports Is Not Justified (GAO/RCED-85-78, July 29, 1985).

In our work for this Subcommittee, we have found that unresolved technical problems have delayed the installation date for the first MLS by 18 months to July 1987. The primary contractor has not been able to develop the necessary software and has informed FAA that it is now planning to subcontract for software development. As a result, FAA has not spent $50 million or 35 percent of the $141 million already appropriated by the Congress from fiscal years 1982 through 1986 to buy the system.

FAA plans to use revised MLS performance specifications for a second procurement. Because FAA is changing specifications, it should demonstrate the system's performance in an operational environment before requesting additional funds for production.

Terminal Doppler weather radars

FAA is also requesting $65.5 million in fiscal year 1987 to buy 15 terminal Doppler weather radars (S-band) to detect and warn of low-level wind shear[2] even though research and development to find solutions to technical problems is still not complete. Our work for this Subcommittee has shown that this funding commitment for production would precede research and development solutions to the system's ground clutter suppression, data update rate, and fully automated warning requirements, as well as related research on radar siting, wind shear detection capabilities, and controller displays. FAA hopes that

---

[2]This meteorological phenomenon is characterized by widely divergent winds in the form of gust fronts, downdrafts, or microbursts that directly affect an aircraft's flying ability.

operational solutions to these technical problems will be available before production. FAA then plans to apply these operational solutions to a second, different (C-band) terminal Doppler radar to be located at 110 airports.

Currently, FAA does not plan to test either radar system in an operational environment before committing to production. Because of the complexity of the system and the life-critical decisions a controller and pilot must make on the basis of a terminal Doppler radar, FAA should test and evaluate initial production units of both radar systems in an operational environment to ensure effective performance before proceeding to full production.

Management of FAA's major systems acquisition process

Because of the problems we noted in our reviews of specific NAS programs, you requested us to review how well FAA and DOT are managing FAA's major system acquisitions. What we found is encouraging for the future, but disappointing for NAS programs already committed to production, which have experienced cost increases and schedule delays.

We would expect a major system acquisition program with significant technical, operational, and economic risks to require strict adherence with the phasing and competition

principles fundamental to OMB Circular A-109.[3] This directive established a process of decisionmaking at four critical points in a system's acquisition, including requiring an agency to demonstrate that a technology will actually work in an operational environment before it commits to production.

A 1984 FAA report on its acquisition process stated that there seemed to be little regard for the procurement policy set forth in OMB Circular A-109. Further, a 1984 study by an FAA consultant of several major systems acquisitions found that failure to adequately test operational systems in the field prior to full procurement is a major cause of FAA's subsequent performance problems.

In the past year, DOT and FAA have made progress incorporating the requirements and principles of OMB Circular A-109 into the NAS plan acquisition process. Six of the 11 major NAS plan systems, including flight service automation and MLS, are already into the final production phase of the acquisition process and two other systems, including AWOS, are currently scheduled to go to production. All eight have not benefitted from the improvements in FAA's acquisition process and have experienced cost increases, schedule delays, or both.

---

[3]Published in 1976, this government-wide directive is intended to eliminate problems previously associated with the procurement of major systems. The directive attempts to avoid the premature commitment of a system to full-scale development and production by requiring periodic reviews of project cost, schedule, and performance.

There is, however, hope that other major systems will benefit from these recent improvements. The three remaining major NAS plan systems, one of which is the Advanced Automation System, have still not reached the final production phase. Still other systems, such as terminal Doppler weather radars, are scheduled to become major systems in the near future. And a few systems, such as MLS, that are already in the final production phase, may have to return to the development and testing phase due to problems encountered in production. Accordingly, we believe that all these systems should be subjected to FAA's revised acquisition process.

INCREASES IN FAA'S CONTROLLER AND INSPECTOR WORK FORCES ARE NEEDED

While we believe this Subcommittee should be cautious concerning FAA's appropriation requests to commit NAS plan programs to production, there is a clear need for more air traffic controllers and commercial aviation safety inspectors. More controllers are needed because the first labor-saving features of FAA's planned automated air traffic control system will not be available until at least the mid-1990's, and air traffic activity is increasing. More inspectors are needed because FAA's plan to make the inspector work force more productive has not realized expected gains, while the number of airlines and aircraft to be inspected have increased since deregulation.

FAA's air traffic controllers

Our March 1986 report states that FAA has not met its goals for full performance level (FPL) controllers at many major facilities, and that the growth in air traffic activity has so increased controller work load that controllers are stretched too thin.[4] Despite FAA assurances to the contrary, controllers and their supervisors have expressed serious concerns about their abililty to continue to maintain the proper margin of safety due to their high work load.

We asked the Flight Safety Foundation to consider our findings in comparison to an evaluation of air traffic control system safety it provided FAA in January 1982. The Foundation concluded that conditions within the controller work force have changed since its 1981 evaluation, and that the present system does not provide the same level of safety as it did before the August 1981 air traffic controllers' strike.

FAA has several efforts underway to improve controller staffing, including recently announced plans to increase the controller work force by 480 in both fiscal years 1986 and 1987. But these new controllers will still need 2 years or more to become fully trained. Further, the staffing situation could worsen because of the volatility of the retirement issue. We reported that FAA may be seriously underestimating the rate of controller retirements.

---

[4]Aviation Safety: Serious Problems Concerning the Air Traffic Control Work Force (GAO/RCED-86-121, March 6, 1986).

On the basis of our work, we support FAA's request to increase its number of fully qualified controllers, and we recommended that FAA impose restrictions on air traffic until both the number of FPL controllers and overtime requirements meet FAA's goals. As noted in our March 1986 report, problems relating to both the number of FPLs and overtime are most acute at the air route traffic control centers, and FAA must recognize this situation in deciding what restrictions to impose.

FAA's commercial aviation safety inspector work force

We are also completing work on FAA's inspection program. Our work to date shows that FAA's inspection program cannot adequately ensure that commercial airlines are complying with FAA's safety regulations, and that FAA has allowed major safety problems to go undetected or uncorrected for long periods.

In December 1985 the Congress directed FAA to include funding in fiscal year 1986 for an additional 300 inspector and support staff above its original budget request, and FAA has requested another 138 inspector positions in fiscal year 1987.

There is no doubt that an increase in the number of inspectors is needed; however, we believe that FAA is ill-prepared to absorb the proposed 24-percent increase in its inspector work force in fiscal years 1986 and 1987. A recent FAA task force concluded that FAA's present hiring practices do not always bring into the agency people with the experience and capabilities needed to develop into competent inspectors. Further, we identified problems with both the quantity and quality of FAA inspections and inspectors.

At the moment, FAA does not have adequate staffing standards to determine how many and what type of inspectors are needed or where they should be assigned within FAA's regions, and does not even know how many of its existing inspectors are now assigned to airlines. Further, FAA is increasing its inspector work force without (1) reevaluating what entry level knowledge and skills are appropriate for aviation safety inspectors, (2) revising its screening program to identify applicants with maximum potential for successful performance as inspectors, or developing a pass/fail training program similar to that now being used for air traffic controllers, (3) correcting identified problems in FAA's aviation safety inspector technical training program, and (4) making other needed revisions in existing training policies, procedures, and directives.

- - - - -

In summary, there are significant technical, operational, and economic risks associated with developing many NAS plan programs that have not been adequately identified by FAA prior to or during operational testing. We believe, therefore, that this Subcommittee should continue to question FAA's appropriations requests to assure that systems work before they are acquired. We also believe that, while increasing the number of FAA controllers and inspectors is a step in the right direction, FAA and the Congress should also deal with other problems within these work forces.

This concludes my testimony, Mr. Chairman. I will be happy to answer any questions you may have at this time.