United States General Accounting Office 135972

GAO

Testimony

Issues Related To

An Independent FAA

Statement of
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Before the
Subcommittee on Aviation
House Committee on Public Works
and Transportation

135972

Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to appear before the Subcommittee to discuss several issues concerning the effectiveness with which the Federal Aviation Administration (FAA) achieves its mission. Concern over these issues has prompted several proposals for making FAA independent of the Department of Transportation. The specifics of these proposals include exempting FAA, or its successor, from federal procurement and personnel rules or requirements, and they also address the need to assure FAA of a sufficient flow of funds. Proponents believe these changes are needed if FAA is to accommodate air traffic growth in a safe and efficient manner.

Over the past few years, we have reviewed FAA's effectiveness in discharging its responsibilities for ensuring aviation safety and operating, maintaining, and modernizing the air traffic control (ATC) system. While our reviews have not addressed directly the issue of an independent FAA, we have focused on many of the areas identified as needing improvement, including procurement and personnel. An underlying premise of the information we present today is that ensuring the public's safety should be a principal criterion by which proposals for organizational change are judged. In this regard, we believe that safety oversight and regulation are inherently governmental responsibilities, and we concur with the President's Aviation Safety Commission and others that these functions should not be removed from the federal government or from public accountability.

Based on our work, our testimony today makes three primary points:

-- First, deregulation has combined with other factors, such as the 1981 controllers' strike and the need to modernize and automate the ATC system, to present FAA with formidable challenges. Actions such as making FAA independent of the Department of Transportation or exempting the agency from procurement and personnel rules will not in themselves be sufficient to meet these challenges. In fact, we believe that FAA's procurement process would be improved with closer adherence to federal procurement guidance regarding the development of costly state-of-the-art technologies.

-- Second, the Department's oversight role could potentially offer long term benefits in the areas of airport development, cross-modal transportation planning, and national transportation policy. There also has been a constructive and useful side to the Department's oversight role that has contributed to enhanced aviation safety and greater assurance that systems being acquired under the National Airspace System (NAS) Plan will be reliable.

-- Third, while funds appropriated through the Aviation Trust Fund have been sufficient to pay for the NAS Plan to date, the need for funding not only the NAS Plan but also FAA's work forces will intensify greatly over the next several years. To modernize the ATC system, increase air carrier surveillance, and provide adequate work forces, FAA will

2

need a predictable and sufficient flow of funds. Ensuring

that this need is met without sacrificing the needs of

other transportation modes is, in our view, a critical

issue in the current debate over improving the capacity of

FAA to carry out its mission.

Before amplifying on these points, a perspective should be

provided on FAA's responsibilities. Air travel has expanded

rapidly since the industry was deregulated in 1978--from about 276

million passengers in 1978 to about 450 million in 1987. This

growth has been accompanied by airspace and airport congestion,

lost baggage, flight delays, work force problems, and highly

publicized reports of close calls in the air and aviation

tragedies. We believe it is important to recognize that

limitations exist on what FAA can do about some of these conditions

and that others share in the responsibility. For example, the

airlines set the level of service consumers receive and are

responsible for schedules that in some instances create backlogs at

peak periods. And the Department of Transportation, not FAA, is

responsible for enforcing consumer protection rules for lost

baggage, bumping, unrealistic scheduling as well as for reviewing

airline mergers. Thus, FAA does not act alone in carrying out its

mission of promoting air commerce and ensuring safety.

VARIETY OF ISSUES GIVES RISE TO

PROPOSALS TO RESTRUCTURE FAA

Proposals for changing the ground rules under which FAA

operates have come from Members of Congress, the executive branch,

3

presidential commissions, and the aviation community. The principal objective of the proposals is to give FAA more autonomy over managing its procurement, personnel, and budget and thereby better position FAA to meet the challenges of a growing aviation industry. Reasons cited for why change is needed include:

-- Federal procurement procedures are too slow to allow FAA to keep abreast of current technology.

-- Personnel rules do not permit FAA to correct significant work force shortages, especially in high cost locations.

-- The Office of the Secretary of Transportation is perceived as managing FAA's operations.

-- The lack of a guaranteed and continuous stream of sufficient funding hampers effective management and planning.

We will discuss each of these conditions in turn and what the findings of our work suggest regarding improvements to FAA's ability to meet the challenges of the 1990s.

Acquisition Delays

The FAA is modernizing air traffic control equipment and facilities through a program called the National Airspace System Plan--one of the largest civilian procurements ever undertaken. Initiated in 1981, the plan provides for a complex overhaul of the ATC system, including new radars, computers, and communications systems. Six years into the plan, costs have risen and significant schedule delays have occurred. Estimated at about $12 billion in 1981, ATC modernization could now cost as much as $24 billion by

the year 2000. Project delays to major NAS Plan systems range from 2 to 6 years when comparing FAA's initial 1981 plan with its current implementation dates. As a result, benefits of the NAS plan--greater ATC system productivity and significant economic and safety gains for the airline industry--are being pushed further into the future.

However, our work shows that, to date, delays have resulted primarily from unrealistic initial schedules and problems in developing new technology. If FAA were to follow more closely Office of Management and Budget's (OMB) guidance on acquiring the most costly and complex systems, we believe that cost and schedule risk would be reduced and initial reliability of fielded systems would be enhanced. Regardless of whether FAA is exempted from federal procurement rules, its technology development and systems acquisition process needs to be strengthened.

Causes of acquisition delays. Our work indicates that the delays experienced in developing systems are related to FAA's underestimating (1) the complexity of highly-automated systems, (2) the time needed to develop system software, and (3) the interdependencies among systems. FAA has testified to this as well. In addition, FAA acknowledges that contractors have been unable to perform as planned and scheduled. The delays in implementing the automated $511 million Flight Service Station project is a case in point. Computers were stored for several years because the needed software was not ready. Other major systems whose schedules suffered because of contractor development

5

problems include the $5 billion Advanced Automation System, the $556 million Voice Switching and Control System, and the $489 million Mode S.

FAA's original 1981 NAS plan raised the expectations of the aviation community as well as the Congress because of the highly optimistic schedules and projections it contained for ATC modernization. In addition, the basic concepts for many systems were flawed and this problem was not addressed until FAA hired a systems engineering and integration contractor in 1984 to assist in technically managing the plan and identifying changes needed to correct initial design inadequacies. Not having a solid design at the outset resulted in underestimates of the time needed to develop and install systems, the funds needed to correct design deficiencies, and the personnel needed to install delivered equipment.

In our opinion, FAA's acquisition difficulties in developing NAS systems are not primarily related to the agency being encumbered by procurement guidelines or rules—such as OMB Circular A-109—under which FAA is encouraged to acquire its most significant facilities and equipment (see attachment 1 for acquisition flow chart).[1] Rather, FAA's acquisition problems have been due to inadequate planning and an underestimation of the time

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[1] OMB Circular A-109 consists of four phases: defining requirements, demonstrating that these requirements can be met, developing a prototype, and full-scale development and limited production. This acquisition approach is important to assuring that the product being procured will meet agency needs and will work in an operational environment.

6

needed to develop complex technology. Moreover, our work shows that FAA has not always followed OMB's recommended approach and, for many major NAS plan systems, FAA bypassed the early development phases and went directly to full-scale development. This did not provide for validation of concept, requirements, or operational effectiveness and is proving costly for some systems. An example is FAA's Microwave Landing System where production was begun before the number and location of sites was validated, benefits demonstrated, and system prototype tested.

An example of an earlier attempt to reduce acquisition time by exempting an agency from federal regulations is the Warner Amendment. This legislation exempts Defense's acquisitions of "mission critical" computers and telecommunications from the Brooks Act--the governing legislation for procuring and using automated data processing resources in the federal government. As a result, the requirement to secure a delegation of procurement authority from the General Services Administration was removed. In a prior review, we found that there was little difference in the overall time needed to complete a sample of procurements conducted under the Brooks Act and those conducted under the Warner Amendment.[2] A point of commonality between the two approaches was the difficulty- -and resultant time--experienced by Defense components in defining their requirements. This indicates that, regardless of the nature of the regulatory umbrella under which major procurement is

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[2]ADP Procurement: Warner Amendment Has Not Reduced Defense's Acquisition Time (GAO/IMTEC-86-29, July 31, 1986).

accomplished, significant analysis and time are needed to identify
needs, define an appropriate set of requirements, contract to
satisfy those needs, and implement the product.

Ways to make FAA's acquisition process more effective. There
are ways to make FAA's acquisition process less time-consuming and
more effective, regardless of whether FAA remains subject to
existing federal procurement regulations or establishes its own.
Common to many of FAA's major NAS Plan acquisitions is that system
requirements and, in turn, the design of hardware and software were
improperly defined at the outset. In our opinion, this is because
some FAA project managers perceive that design problems can be
fixed at a later point in time, even if they require modification
during initial field testing. This can be costly and time-
consuming because established designs have to be changed in the
middle of production and installed units in the field have to be
retrofitted. The installation of FAA's Flight Data Input/Output
system is a case in point. Problems with the existing flight strip
printers were identified as far back as the late 1970s. However,
the replacement system is just now entering operation because of
retrofitting needed to correct technical problems.

Another way to make the acquisition process more effective is
to build in the time for testing systems before major commitments
are made to buy equipment in significant quantities. This reduces
the risk of acquiring systems that do not work as expected as well
as the cost and time that otherwise might be needed for
retrofitting. FAA recently adopted this practice when it altered

8

its acquisition strategy for the Advanced Automation System by including more testing before field deployment. This should reduce risks and increase controller confidence that this new technology can work in an operational environment.

Work Force Shortages

FAA must manage a total work force of over 44,000 personnel to achieve its mission. Our work shows, however, that FAA has not aggressively pursued authorities available to it to solve some problems and that others are not related to the civil service system. FAA currently is examining ways to ensure that it has or obtains the flexibility it needs to address these problems. We believe the agency is on the right track in seeking ways to achieve this flexibility.

FAA is increasing its three major work forces--controllers, inspectors, and maintenance technicians. FAA has made progress in rebuilding its controller work force since the 1981 controllers strike and the loss of over 11,000 controllers. As of April 30, 1988, FAA had 9,081 fully trained controllers. FAA also has been hiring new inspectors and hopes to have a work force of about 3,000 inspectors by 1991. We found that until 1984, FAA had taken few steps to monitor and address the impact of deregulation on the effectiveness of its inspection program. In fact, FAA cut its inspector staffing just when the number of airlines and aircraft were growing substantially.[3] Similarly, FAA prematurely reduced

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[3]Aviation Safety: Needed Improvements in FAA's Airline Inspection Program Are Underway, (GAO/RCED-87-62, May 19, 1987).

9

staffing for the maintenance of air traffic equipment in anticipation of productivity benefits which did not occur because of NAS Plan schedule slippage.[4] In its fiscal year 1989 budget, however, FAA requested increases for all three work forces.

Recognizing the need to improve its human resource management, FAA has recently undertaken initiatives with a view toward developing and implementing specific solutions to personnel problems, either through improved management, Office of Personnel Management (OPM) waivers, or legislation.

Civil Service hiring process. FAA depends on OPM to administer controller aptitude exams, examine qualifications of maintenance personnel, and conduct security investigations of prospective employees. These services can be time-consuming and this time impairs FAA's ability to hire high-caliber air traffic controller candidates. OPM handles FAA's prospective employees are handled on a first-come, first-served basis along with applicants for other government jobs. Currently, it takes about a year from the time a person takes the OPM exam until an individual enters the FAA Academy's controller screening program.

In August 1988, FAA will begin a streamlined controller hiring process, including initial security screening and administering the controller aptitude exam. FAA believes this new process, combined with other planned actions, will reduce the time to hire top notch

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[4]FAA Staffing: Challenges in Managing Shortages in the Maintenance Work Force, (GAO/RCED-87-137, September 25, 1987).

controller candidates to about 2 months. If this program proves successful, it will be expanded to other FAA occupations.

While FAA's initiatives should assist in expediting controller hiring, other authorities are available to FAA which could assist in attracting and retaining high-caliber personnel and which FAA has not aggressively pursued. Among these are special pay rates to make federal employment competitive with the private sector and authority to hire personnel directly rather than going through OPM.

Pay and classification. Of particular concern to FAA has been the issue of pay and classification for its work forces. The Department also points out that current salaries and benefits fail to attract and retain controllers at the busiest facilities, which usually are located in the higher cost-of-living areas.

In early 1988, FAA began a comprehensive review of pay, classification, and benefits for those involved with air traffic control. This study, expected to be completed in the fall 1988, may lead to specific changes in pay policies and legislative proposals. The Secretary of Transportation's Task Force on FAA internal reforms has recommended that FAA's pay study be expanded to all FAA safety-related occupations. The Department also is proposing a demonstration project to evaluate potential incentives for difficult-to-staff facilities.

Staffing standards. We found that one of FAA's principal personnel problems does not relate to personnel rules. Specifically, FAA needs to improve and use a key management tool-- staffing standards. FAA needs a sound basis for estimating its

staffing needs and deciding how many people it should hire, but currently it cannot say with confidence how many people it needs to carry out its mission. FAA's controller staffing standards underestimate needs because, among other things, they do not provide sufficient staff to cover peak traffic periods. The agency is currently re-examining its staffing standard for airport terminal staffing. Although better designed than the controller staffing standards, FAA's maintenance staffing standard has not been used as the basis for FAA's budget requests.

Both staffing standards also understate requirements because they do not provide for an adequate pipeline of trainees to replace those leaving and to meet future needs. Both controllers and maintenance personnel require several years of training before they can carry full work loads. Many of these employees are currently eligible to retire. Thus, to provide for smooth NAS operations, FAA needs enough individuals in training now so that fully trained and experienced personnel will be available to replace those who retire.

Department of Transportation Oversight

We recognize that the appropriate level of departmental oversight can be a question of management philosophy and that instances have occurred when the Department's involvement in FAA affairs was perceived as micromanagement or where the manner of the Department's involvement was not considered constructive in tone or supportive of FAA morale. For the longer term, however, we believe it is important that the constructive and beneficial side of

12

cabinet-level oversight should be considered in the debate about whether FAA should be a part of the Department.

Much of the Congress' reasoning when it placed FAA within the Department 22 years ago was to promote a unified transportation department that would foster integrated planning and policy-making among the modes. While the extent to which this has been achieved is certainly open to debate, it is not clear to us how this objective would be achieved if aviation--the fastest growing mode of transportation--is removed from the Department. For example, an urgent aviation matter that requires integrated planning and financing among several modes of transportation and several levels of government is the construction of new airports and runways and the highways, light rail, and mass transit infrastructure that so often is required to support them. We believe it is important to consider whether an FAA outside of the Department will encounter greater difficulties marshalling and coordinating the resources and intergovernmental political support necessary to meet this cross-modal challenge.

In addition to these longer term considerations of transportation planning and financing, we have observed numerous instances where there was a constructive and useful side to departmental intervention into FAA's affairs. This involvement covered matters ranging from critical safety issues and accurate disclosures to the Congress to more mundane procurement issues. Secretary Dole, for example, appointed a number of "white glove" task forces, including two which focused on FAA's airline

13

inspection and security screening programs. This oversight was instrumental in FAA taking a more rigorous and comprehensive approach to aviation security and the air carrier inspection program. In addition, as a result of action directed by the Department, FAA is reporting to the Congress more accurately on its air traffic controller staffing. In the procurement area as well, the Department played an important role in the decision not to proceed with a planned second procurement of 500 microwave landing systems until the system is tested in a way that demonstrates it will meet the needs of the aviation community.[5]

Funding Considerations

Funding needs for the NAS Plan as well as FAA's work forces will intensify greatly over the next several years. Only one of the plan's 12 major systems--the Host computer--is nearing completion. As more systems reach the implementation stage, more funds will be required. As we testified before the House Transportation Subcommittee on Appropriations in April 1988, the costs of ATC modernization are likely to increase from the FAA's current $15.8 billion estimate to at least $24 billion by the year 2000. Further, all of FAA's major work forces are being increased, in most cases substantially, and significant funding will be required to cover these increases. If FAA is to meet the challenges it faces, such as ATC modernization, increasing air carrier surveillance, and ensuring an adequate and trained work

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

force, it will need to request and receive a predictable and sufficient flow of funds.

Due primarily to slower than expected progress in the NAS Plan, the Aviation Trust Fund, which is the funding source for capital development of the nation's air transportation system, was projected to have a surplus of nearly $5 billion for fiscal year 1987. This surplus will be needed in the years ahead. Further, the various FAA work forces must compete for funding with other federal programs because (1) the fund does not take in enough revenue to cover all work force salaries plus projected NAS Plan needs and (2) the Trust Fund legislation significantly restricts the fund's availability to cover these costs. Annual Trust Fund revenue is less than $4 billion a year, which would not cover FAA's fiscal year 1988 estimated outlay of about $5.3 billion.

The President's Aviation Safety Commission report provides an analysis of the effects of a proposal for greater use of the Trust Fund to finance all FAA costs that are the result of commercial and general aviation aircraft using the Nation's air navigation system. This would include most work force salaries and expenses. The report concludes that any significant change in the role the Trust Fund plays in the financing of FAA outlays will quickly eliminate the annual surplus; consideration, the report adds, will have to be given to changing the current tax and fee structure.

We believe this proposal deserves consideration since it would provide a stable, all-inclusive funding source for FAA operations, financed entirely by those who use the aviation system. This

proposal corresponds closely to one of several options we provided in our 1986 report on the Aviation Trust Fund in which we suggested several formulas for reducing the unused balance.[6] While a change of this type clearly would require legislation, it could be accomplished within a framework that retains congressional authorization and appropriation oversight.

We recognize that widespread concern exists that Trust Fund spending will be restricted due to the pressure to reduce the deficit, and that these concerns could persist even if the fund were made available to finance all FAA operations. However, concern over the trust fund operations are not confined solely to the Aviation Trust Fund. Fiscal year 1989 budget documents show that over 150 trust funds existed governmentwide in 1987. Other trust funds, including those related to Social Security, also have surpluses, and under the unified budget trust fund surpluses are offsetting a portion of the huge deficit on the non-trust fund side of the budget. In our work on budget issues, we have become increasingly concerned about the extent to which trust fund surpluses under the unified budget "mask" the severity of the deficit on the non-trust fund side of the government's operations. Specifically, the $150 billion total deficit reported for fiscal year 1987 does not reveal that the non-trust fund deficit was actually $223 billion, offset by trust fund surpluses government-wide of $73 billion.

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[6]Aviation Funding: Options Available for Reducing the Aviation Trust Fund Balance (GAO/RCED-86-124BR, May 21, 1986).

We are preparing a report on this problem, and will be including suggestions on structuring the budget to facilitate analysis of the budget relationships between trust and non-trust operations. We expect to issue this report in June.

CONCLUSIONS

Based on our work, we believe that actions such as making FAA independent of DOT or exempting the agency from procurement and personnel rules will not in themselves be sufficient to address the underlying work force and NAS Plan acquisition problems. For example, considerable time is required to fully train new staff for FAA's work, and this would be a factor for the new FAA, just as it is now for the current FAA. Modernization of the ATC system has been delayed primarily because sophisticated technologies need to be developed and shown to work together reliably. A systematic approach to technology development will be needed whether or not FAA is part of DOT and regardless of whether procurement regulations apply. Similarly, an independent FAA would have to cope with the airport capacity and runway constraints now being dealt with by FAA air traffic controllers, as well as with the resulting congestion and delays.

We are not in a position to say whether an FAA independent of DOT would deal with the work force and NAS Plan problems better than the current FAA. As our testimony indicates, however, we believe the beneficial side of DOT oversight also should be considered in the debate over whether the longer term interests of

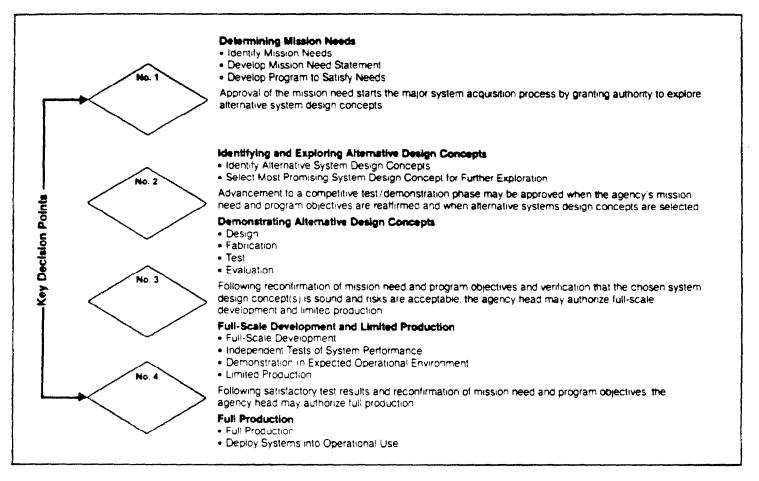transportation policy and aviation would be best served by an independent FAA.

Finally, a major issue we see as critical is funding. If work force shortages are to be addressed effectively and ATC modernization to proceed as planned, considerably more funding will be needed both in the immediate future and for the long term.

This concludes our statement. I will be pleased to address the Subcommittee's questions at this time.

Basic Major System Acquisition Process

Key Decision Points

No. 1

Determining Mission Needs
- Identify Mission Needs
- Develop Mission Need Statement
- Develop Program to Satisfy Needs

Approval of the mission need starts the major system acquisition process by granting authority to explore alternative system design concepts

No. 2

Identifying and Exploring Alternative Design Concepts
- Identify Alternative System Design Concepts
- Select Most Promising System Design Concept for Further Exploration

Advancement to a competitive test/demonstration phase may be approved when the agency's mission need and program objectives are reaffirmed and when alternative systems design concepts are selected

Demonstrating Alternative Design Concepts
- Design
- Fabrication
- Test
- Evaluation

No. 3

Following reconfirmation of mission need and program objectives and verification that the chosen system design concept(s) is sound and risks are acceptable, the agency head may authorize full-scale development and limited production

Full-Scale Development and Limited Production
- Full-Scale Development
- Independent Tests of System Performance
- Demonstration in Expected Operational Environment
- Limited Production

No. 4

Following satisfactory test results and reconfirmation of mission need and program objectives the agency head may authorize full production

Full Production
- Full Production
- Deploy Systems into Operational Use

This diagram depicts the process that OMB recommends federal agencies follow when acquiring major systems. Because of the built-in key decision points at which agency top management reviews and validates mission needs, system concepts, and test results, this process should minimize the cost, schedule, and performance risks an agency incurs as it acquires major systems. In the Department of Transportation, to qualify as a major system acquisition, a project must exceed $150 million in acquisition costs (or $25 million in research and development) or be considered critical to achieving an agency's mission.

19