

GAO

Testimony

For Release
on Delivery
Expected at
9:30 a.m. EST
Thursday
January 29, 1987

Aviation Safety

Statement of
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Before the
Subcommittee on Aviation of the
Senate Committee on Commerce, Science, and Transportation



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Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to appear before you today to discuss the issue of aviation safety in the United States. We have done a great deal of work on specific aviation safety-related issues over the past several years, and would like to outline what we see as key issues for you today.¹

FAA's ROLE IN AVIATION SAFETY

While other federal agencies, including the National Transportation Safety Board (NTSB), perform certain aviation safety-related functions, primary responsibility rests with the Federal Aviation Administration (FAA).

FAA's role in aviation safety is defined in the Federal Aviation Act of 1958, as amended, which charges the Secretary of Transportation with regulating air commerce in such a manner as to best promote its development and safety. The act makes the safety of air travel the joint responsibility of the airlines and FAA. Individual airlines are responsible for operating and maintaining their aircraft safely while FAA carries out its safety responsibility by setting minimum safety standards, monitoring airline compliance, and taking enforcement action when noncompliance is found.

FAA fulfills its collateral responsibility--to promote the development of air commerce--primarily by ensuring the reliability and operational effectiveness of the national air traffic control (ATC) system. The ATC system includes the

¹See attached list of fiscal year 1986 GAO testimonies and recent reports relating to aviation.

procedures and techniques for managing and controlling take-offs and landings at airports; the control of aircraft en route from one destination to another; operational flight rules; and the installation, maintenance, and repair of ATC equipment and facilities. The ATC system, in its broadest sense, also includes the development and operation of airports. Thus, it is a system of mutual relationships among airports; air traffic control; flight crews; aircraft; and regulations, procedures, and techniques. Although the primary emphasis is on operational efficiency, safety is an inherent characteristic of the ATC system that cannot be easily separated from reliability and operational effectiveness.

It is against this legislative backdrop that the adequacy of FAA's efforts to meet its safety role should be measured.

MEASURING THE LEVEL OF AVIATION SAFETY

Overall, FAA and the airlines have done a good job fulfilling their safety roles. The national ATC system is one of the safest in the world and most agree that U.S. aviation is a safe mode of transportation. Yet, public interest and attention continue to focus on the issue of aviation safety. We think this is because, as Chairman Mineta of the House Subcommittee on Aviation has stated, the American public imposes a far more demanding safety standard on aviation than on most other activities in our society.

While the aviation accident rate has fallen over the last 2 decades, it may not be the best indicator of how safely the ATC system is currently operating. This is because many different

things usually have to go wrong before an accident occurs. Investigators have observed that unsafe operating practices do not inevitably lead to accidents and, unfortunately, accidents can occur in the safest possible system to the most safely managed airlines. In either case, accidents occur so rarely that they cannot be used alone to analyze aviation safety in any detail.

For these reasons, more specific measures--precursors of safety risk--are needed to identify and direct attention to unsafe or high-risk conditions. FAA uses two precursors, near mid-air collisions and operational errors, as additional indicators of ATC system safety. Near mid-air collisions occur when two airborne aircraft inadvertently come within 500 feet of each other and operational errors occur when there is less than the applicable minimum separation distance between two or more aircraft or between an aircraft and terrain or obstacles and obstructions.

While FAA uses near mid-air collisions and operational errors to measure the safety of the ATC system, it has not developed similar precursors of risk to indicate how safely airlines are operating and maintaining their aircraft. An important indicator could be the frequency and severity of airline noncompliance with safety regulations and standards over time. Changes in the total number of safety deficiencies and the frequency of those considered to directly or adversely affect safety could be used to indicate whether the level of safety has changed from year to year and where additional FAA

resources may be needed. Improvements in FAA's inspection guidance and management information systems are needed, however, before adequate and comparable data are available.

DEREGULATION'S IMPACT ON AVIATION SAFETY

Deregulation of domestic airlines in 1978 affected FAA's safety responsibilities in two ways. First, air traffic has reached record levels and is expected to continue to grow and increasingly competitive scheduling and hub and spoke operations have created peak air traffic periods and placed extra demands on the ATC system. Second, lower fares and a flood of new entries created an environment that put pressure on airlines to reduce aircraft maintenance, flight crew salaries, and other controllable expenses--a situation requiring greater FAA surveillance over airline operations and maintenance.

FAA'S RESPONSE TO INCREASING AIR TRAFFIC

Even before deregulation, FAA knew that air traffic would continue to rise through the turn of the century, placing unprecedented demands on the ATC system. It also knew that to meet this demand safely and efficiently would require improved and expanded services, additional facilities and equipment, improved work force productivity, and the orderly replacement of aging equipment. So in December 1981, FAA published a comprehensive National Airspace System (NAS) plan to modernize, automate, and consolidate the existing system.

In terms of dollars spent, the NAS plan is one of the largest single civil procurement programs ever, costing more than \$16 billion by the year 2000. FAA believes the plan

represents a practical way to achieve a significantly more efficient system while reducing the risks of mid-air and surface traffic collisions, landing and weather-related accidents, and collisions on the ground.

One NAS plan goal is to increase the productivity of various FAA work forces. Air traffic controller productivity is to be increased by an Advanced Automation System (AAS). Flight service specialist productivity gains are to be accomplished primarily through consolidation of existing stations and an automation system. And replacement of outdated vacuum tube electronic equipment with solid state devices in ground-to-air communications, navigation, approach and landing, and surveillance systems is to increase the productivity of the airways facilities technician. Five years into the plan, however, each of these systems has experienced schedule delays ranging from a year for an airport surveillance radar to 8 years for the Advanced Automation System, resulting in corresponding delays in anticipated productivity gains. Meanwhile, the controller work force has not fully recovered from the August 1981 strike and subsequent firing of over 11,000 controllers and FAA has allowed attrition to reduce the airways facilities technician and the flight service specialist work forces by almost 20 percent each.

Our March 1986 report stated that the growth in air traffic is straining the controller work force at many major facilities, especially "en route centers" which control flights between airports. Our consultant, the Flight Safety Foundation,

compared the conditions we found with the results of a study it did for FAA in 1981, concluding that conditions within the controller work force have changed since their study and that the present system does not provide the same level of safety as before the 1981 strike.

FAA has acknowledged that some changes are needed in its air traffic control functions, and is working to increase its controller work force by about 1,225 people from about 14,000 to about 15,225 in fiscal years 1986 through 1988. FAA will, however, need several more years at its present rate of gain to meet its current goal of qualified controllers and the first major labor-saving features of its Advanced Automation System are not now expected until the late 1990's.

We are presently studying the flight service specialist and airways facilities technician work forces to determine whether similar effects are evident.

FAA's RESPONSE TO THE NEED FOR GREATER AIRLINE SURVEILLANCE

The second way deregulation affected FAA's safety responsibilities was to create a situation requiring increased FAA oversight of individual airlines.

While the 1978 act removed government control over fare costs and schedules, FAA remained responsible for assuring that airlines comply with federal safety regulations. Until 1984, however, FAA took few steps to address the impact deregulation had on its safety oversight work load or staffing requirements. For example, between 1978 and 1983, when the number of airlines and aircraft grew substantially, FAA's

inspector work force was reduced from about 1,600 to about 1,500 or by about 7 percent.

In May 1986, we testified that FAA could not say with assurance that airlines were complying with federal safety regulations. FAA studies--as well as those conducted by the Office of the Secretary of Transportation, the Department's Office of Inspector General, and by us--showed that FAA's airline inspection and follow-up activities were often insufficient to identify major safety problems or to ensure that problems were corrected once they were detected. For example, FAA's 1985 Safety Activity Functional Evaluation--Project SAFE--found that FAA surveillance of airlines was often ineffective and that broad changes in FAA's inspection program were needed to improve aviation safety. Moreover, several NTSB investigations criticized FAA's inspection program and concluded that ineffective FAA inspections contributed to aircraft accidents.

FAA also concluded that it needed to improve its surveillance of airlines and, building on initiatives launched by the Secretary of Transportation, has begun to take action on a broad front. FAA has increased the size of its inspector work force, established minimum inspection standards to identify what inspections need to be performed and how frequently, and affirmed that inspections--not certification of potential new airlines--are the inspectors' number one priority. FAA has also begun to address needed improvements in its internal controls and management information systems.

FAA expects to increase its number of inspector positions in fiscal years 1986 and 1987 by 365 and has requested an additional 178 inspector positions in fiscal year 1988. But it will be years before all the needed improvements in inspector hiring, training, and guidance are implemented; important regulatory revisions are completed; nationwide minimum standards for the type and frequency of airline inspections are revised to include characteristics that indicate possible safety deficiencies at a given airline; and adequate internal controls and management information systems are in place. Our draft report on this program is presently with the Department of Transportation for comment.

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In closing, I would like to emphasize again that, like reliability and operational effectiveness, safety is an inherent characteristic of the air traffic control system that must be recognized and considered in deliberations on such issues as increasing operational efficiency and "privatizing" the system. For example, a NAS plan goal is to increase user efficiency by reducing aircraft separation standards, providing more fuel efficient routing, reducing spacing minimums for independent parallel approaches to runways, and minimizing weather-related delays. According to FAA, each of these increased efficiencies is contingent, at least in part, upon advanced technologies included within the NAS plan and each of these technologies has been delayed. It would seem appropriate from a safety perspective for FAA to continue to wait until the NAS plan

technologies are in place and working before it changes any of the related separation standards.

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

Status of FAA's Host Computer Program and Related Software Enhancements
(GAO/IMTEC-86-25BR, July 3, 1986).

Key Aspects of FAA's Plans to Acquire the Multibillion Dollar Advanced Automation System (GAO/IMTEC-85-11, June 17, 1985).

FAA's Host Computer: More Realistic Performance Tests Needed Before Production Begins (GAO/IMTEC-85-10, June 6, 1985).

Interim Observations on FAA's Plans for Major Systems Acquisitions
(GAO/IMTEC-84-14, May 4, 1984).

AVIATION ACQUISITION:

Review of the Federal Aviation Administration's Management of Research, Engineering, and Development Funds
(B-215676, Sept. 12, 1984).

Information on the Federal Aviation Administration's Regulation of the Aircraft Parts Manufacturing Industry
(B-214803, April 16, 1984).

Review of Studies on Early Retirement of Flight Service Station Specialists
(B-214320, March 27, 1984).

Federal Aviation Administration's Process of Selecting Locations for Automated Flight Service Stations (GAO/RCED-84-95, March 2, 1984).

AVIATION WEATHER:

FAA Should Buy Direct User Access Terminal Systems, Not Develop Them
(GAO/RCED-86-173, June 6, 1986).

FAA System for Disseminating Severe Weather Warnings to Pilots
(GAO/RCED-86-152BR, April 22, 1986).

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

AVIATION FUNDING:

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

Information on Airport and Airway Trust Fund Revenues and Outlays by States and Large Airports (GAO/RCED-85-153, Sept. 30, 1985).

Federal Aviation Administration's System for Prioritizing Airport Grants (GAO/RCED-84-124, April 13, 1984).

DEREGULATION:

Increased Competition Is Making Airlines More Efficient and Responsive to Consumers (GAO/RCED-86-26, Nov. 6, 1985).

Update of Certain Statistical Information Included in Report Entitled "The Changing Airline Industry" (RCED-84-83, May 4, 1984).

The Changing Airline Industry: A Status Report Through 1982 (GAO/RCED-83-179, July 6, 1983).

More Flexible Eligibility Criteria Could Enhance the Small Communities Essential Air Service Subsidy Program (GAO/RCED-83-97, May 18, 1983).

AIRLINE COMPETITION:

Impact of Computerized Reservation Systems (GAO/RCED-86-74, May 9, 1986).

Airline Takeoff and Landing Slots: Department of Transportation's Slot Allocation Rule (GAO/RCED-86-92, Jan. 31, 1986).

Testimonies
(10/01/85 to 9/30/86)

FAA's Role In Developing A Mid-Air Collision-Avoidance System, Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, Sep. 25, 1986.

Use of Satellite Technology for Air Traffic Control and Navigation, Subcommittee on Transportation, Aviation, and Materials; House Committee on Science and Technology, Sept. 24, 1986.

FAA's Air Traffic Controller Work Force, Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, Aug. 14, 1986.

Aviation Safety, Subcommittee on Investment, Jobs, and Prices, Congressional Joint Economic Committee, July 21, 1986.

S. 2417 and the Status of FAA's Controller and Inspector Work Forces, Subcommittee on Aviation, Senate Committee on Commerce, Science, and Transportation, July 17, 1986.

Department of Defense Oversight of Airlines With Military Contracts, Subcommittee on Investigations, House Committee on Armed Services, June 26, 1986.

LISTING OF RECENT GAO REPORTS AND
TESTIMONIES RELATING TO AVIATION

Reports
(5/18/83 to Present)

AVIATION SAFETY:

Federal Regulation of Public Aircraft
(GAO/RCED-87-19BR, Dec. 8, 1986).

Federal Aviation Administration's Role in
Developing Mid-Air Collision Avoidance Back-Up
Systems (GAO/RCED-86-105FS, April 22, 1986).

FAA's Surveillance of Two Contract Military
Carriers (GAO/RCED-86-128FS, March 13, 1986).

Serious Problems Concerning the Air Traffic
Control Work Force (GAO/RCED-86-121, March 6,
1986).

FAA Could Improve Overall Aviation Safety
and Reduce Costs Associated With Airport
Instrument Landing Systems (GAO/RCED-85-24,
April 3, 1985).

Legislation Needed to Clarify Future of
Consumer Protection and Federal
Preemption After the Civil Aeronautics Board
Sunsets (RCED-84-154, June 13, 1984).

Safety Standards on Small Passenger
Aircraft--With Nine or Fewer Seats--Are
Significantly Less Stringent Than on Larger
Aircraft (GAO/RCED-84-2, Jan. 4, 1984).

AIRLINE INSPECTIONS:

Comparison of Airlines With and Without
Military Contracts, (GAO/RCED-86-185BR,
June 20, 1986).

Compilation and Analysis of the Federal
Aviation Administration's Inspection of a
Sample of Commercial Air Carriers
(GAO/RCED-85-157, Aug. 2, 1985).

Evaluation of the Federal Aviation
Administration's Enforcement Program
(B-215648, July 25, 1984).

AIR TRAFFIC CONTROL:

FAA's Advanced Automation System
Acquisition Is Risky (GAO/IMTEC-86-24,
July 7, 1986).

FAA STAFFING:

The Air Traffic Control Work Force Opposes
Rehiring Fired Controllers (GAO/RCED-87-32BR,
Oct. 9, 1986).

FAA Air Traffic Controller Staffing Issues, Subcommittee on Human Resources, House Committee on Post Office and Civil Service, June 12, 1986.

FAA's Airline Inspection Program, Subcommittee on Aviation, House Committee on Public Works and Transportation, May 14, 1986.

FAA's Advanced Automation System, Subcommittee on Transportation, Aviation, and Materials; House Committee on Science and Technology, April 23, 1986.

FAA's Advanced Automation System, Subcommittee on Transportation, House Committee on Appropriations, April 16, 1986.

FAA Appropriation Issues, Subcommittee on Transportation, House Committee on Appropriations, April 16, 1986.

Conditions Within the Air Traffic Control Work Force, Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, March 17, 1986.

Serious Problems Concerning the Air Traffic Control Work Force, Task Force on Air Transportation Safety, Senate Republican Conference, March 10, 1986.

Conditions Within the Air Traffic Control Work Force at Six FAA Facilities, Subcommittee on Aviation, House Committee on Public Works and Transportation, March 3, 1986.

FAA's Terminal Doppler Radar Efforts, Subcommittee on Aviation, House Committee on Public Works and Transportation, Oct. 2, 1985.

Three Safety Issues Relating to Aviation, Subcommittee on Aviation, Senate Committee on Commerce, Science, and Transportation, Oct. 1, 1985.