United States General Accounting Office

GAO

Testimony

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

For Release
on Delivery
Expected at
9:30 a.m. EST
Thursday
February 6, 1992

AVIATION SAFETY

FAA Needs to More Aggressively Manage Its Inspection Program

Statement of
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GAO/T-RCED-92-25

GAO Form 160 (12/87)

053519/145876

Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to testify on the management and oversight by the Federal Aviation Administration (FAA) of its inspection program. An April 1991 midair collision resulted in the deaths of four pilots, Senator John Heinz, and two children in a schoolyard. The National Transportation Safety Board's (NTSB) accident investigation report said that, because of a heavy work load, the FAA inspectors' oversight was inadequate and contributed to the accident. Also, NTSB investigations of six other airline crashes in the 1980s found that ineffective inspections were a contributing factor. Our testimony today is based on a series of reports on FAA's inspection program, most recently our report of November 1991.[1] Appendix I provides a list of relevant reports.

In summary, our work showed the following:

-- FAA has yet to sufficiently address several fundamental and deeply embedded problems in its airline inspection management and oversight which we have previously reported. As a result, FAA still cannot provide sufficient assurance of airline safety and regulatory compliance for several reasons. First, FAA did not perform required inspections of all airlines, some of which did not receive any inspections. Second, FAA does not follow up to determine whether airlines take corrective action on identified problems, particularly those that are the most severe. Third, FAA does not know how much time inspectors are spending on inspections and other noninspection tasks. Finally, FAA does not target inspection resources on the

[1]Aviation Safety: Problems Persist in FAA's Inspection Program (GAO/RCED-92-14, Nov. 20, 1991).

basis of airline risk. Instead, it targets inspections primarily on the basis of the airline's fleet size.

-- FAA has taken positive steps, such as increasing the number of inspectors and developing guidance that defines requirements to ensure consistency of inspections by district offices. Clearly, these are positive and significant actions critical to rebuilding its program. However, much more needs to be done if this program is to effectively use its increased resources to approach aviation safety proactively rather than reactively.

-- FAA needs to act now to correct problems in its inspection program to increase the margin of safety before it is overtaken by newer challenges. Newer challenges FAA faces include aging aircraft, airline industry restructuring, globalization of the industry, oversight of foreign air carriers, and development of inspector skills to deal with new technology.

Before I discuss these issues in greater detail, let me briefly provide some background on FAA's inspection coverage and responsibilities.

BACKGROUND

As of September 30, 1991, FAA had about 2,600 inspectors to oversee more than 6,500 scheduled commercial aircraft, 4,439 repair stations, 547 pilot training schools, 177 maintenance schools, 641,477 active pilots, and 274,834 general aviation aircraft. About 43 percent of FAA's inspectors oversee activites related to commercial air carriers and 57 percent oversee activities related to general aviation. Located in 90 district offices throughout the United States, FAA inspectors perform four principal functions: (1) routine surveillance--continuous, periodic inspections of

airlines and aviation-related activities, (2) certification of an airline's operations and maintenance procedures, (3) accident and incident investigations, and (4) safety promotion.

FAA inspectors who perform airline surveillance are classified into three categories--operations, maintenance, and avionics. Operations inspectors focus on such items as pilot certification and performance, flight crew training, and in-flight record-keeping. Maintenance inspectors examine an airline's overall maintenance program, including personnel training, policies, and procedures. Avionics inspectors focus on electronic components of the aircraft.

FAA HAS NOT SUFFICIENTLY ADDRESSED PREVIOUSLY REPORTED PROBLEMS

Since 1985, our reports and testimonies, combined with FAA's own findings and those of the Office of the Secretary of Transportation, the Department of Transportation's Office of the Inspector General (OIG), and NTSB, have shown that FAA's inspection program has not ensured that airlines comply with federal safety regulations. Collectively, this work has shown that (1) FAA's routine inspections have been ineffective in identifying serious safety problems, (2) critical airline inspections have not been conducted, (3) FAA inspectors spend about 80 percent of their time on noninspection tasks, leaving insufficient time to conduct necessary inspections of existing airlines, (4) FAA's follow-up actions often do not ensure that problems are corrected once they are identified, (5) FAA lacks an effective management information system to record and consolidate the results of its airline inspections, and (6) FAA does not have a methodology for estimating airline safety risks so that it can target limited inspection resources to high-risk conditions.

Notwithstanding these problems, FAA has taken positive steps to address some of the identified shortcomings in its program. FAA increased its inspector work force from 1,300 in fiscal year 1983 to about 2,600 today; developed and is now updating a staffing standard to determine the number of inspectors needed; improved hiring and training processes; institutionalized a program to perform in-depth inspections of selected airlines; and developed national guidelines for its inspection program that establish the amount and frequency of inspections that must be undertaken to ensure that airlines comply with regulations and operate safely. Clearly, these are positive and significant accomplishments critical to rebuilding its program.

FUNDAMENTAL INSPECTION PROGRAM PROBLEMS REMAIN UNCORRECTED

Inadequacies with FAA's information system for inspections are a primary reason for managers not having the data needed to oversee the program. FAA inspectors have not been properly trained to use the system; nor have they received adequate support equipment to ensure that inspection results get recorded. FAA headquarters managers do not know whether inspectors are concentrating on the most important safety problems. Also, these managers have difficulty determining what the problems are and if they get corrected.

FAA's Inspection Information System Is Flawed

As we have previously reported, FAA's managers need current and reliable information on key program elements to provide

effective management oversight of the inspection program.[2] Such information includes knowing whether (1) FAA's information system is accurate and reliable, (2) work priorities--such as surveillance over certification--are met, (3) inspection follow-up activities are adequate and timely, and (4) inspection resources are being used effectively.

However, FAA's management data system for inspections--the Program Tracking and Reporting Subsystem (PTRS)--contains inaccurate and incomplete information for several reasons. Inspectors have not entered inspection results; field offices have not had adequate computer support; and inspectors have not received adequate guidance or been sufficiently trained in data input. FAA officials told us that FAA experienced widespread problems with outdated computer hardware and software in its district offices, which hindered entry and retrieval of data from PTRS. Houston, for example, did not enter 6 months of inspection results for fiscal year 1990. FAA officials also told us that current limitations result in incorrect data entries and contribute significantly to poor data quality and the absence of data. As a result, FAA still lacks important oversight information on program performance and cannot adequately determine whether program priorities are being achieved. FAA is now replacing outdated computer hardware and software; officials said they plan to complete this effort by the end of fiscal year 1994--7 years after we first reported this as a problem.[3]

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[2]Aviation Safety: Needed Improvements in FAA's Airline Inspection Program Are Underway (GAO/RCED-87-62, May 19,1987) and Aviation Safety: FAA's Safety Inspection Management System Lacks Adequate Oversight (GAO/RCED-90-36, Nov. 13, 1989).

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

FAA Does Not Know If Work Priorities Are Being Met

According to FAA, surveillance is the most important function inspectors perform. FAA headquarters develops annual program requirements to ensure that inspectors give priority attention to surveillance and that airlines conduct safe operations and comply with regulations. FAA requires (1) inspectors to spend 35 percent of their time on surveillance, (2) district offices to perform certain headquarters-required inspections annually, and (3) district offices to perform at least one operations, one maintenance, and one avionics inspection on each airline annually. We found that FAA had not analyzed PTRS inspection data to assess performance against stated requirements. FAA headquarters officials acknowledged this shortcomming and stated that they plan to assign staff to perform such analyses. However, they could not estimate when these analyses would occur.

Since FAA had not analyzed its inspection data, we analyzed the data for fiscal year 1990 to determine whether FAA had achieved its inspection goals. Although PTRS has reliability problems, its data are the only information available to assess whether FAA is achieving program priorities. We did not determine what the appropriate level of surveillance should be. While FAA believes this level should be 35 percent, according to our analysis inspectors spent, on average, only about 23 percent of their time performing surveillance. In addition, 30 of FAA's 83 district offices did not meet their goals for conducting headquarters-required inspections.[4] These 30 offices did not conduct over 5,200 inspections, or about 28 percent of those required. Finally, 886 of 3,605 airlines (25 percent) did not receive at least one

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[4]Although FAA has 90 district offices, 7 are satellites to the 83, and FAA includes their results with the 83 district offices.

required operations, one maintenance, or one avionics inspection.[5] All but 31 of the 886 airlines were air taxis--small aircraft operators that fly unscheduled routes. In 1990, air taxis had an accident rate 15 times greater than major airlines per 100,000 hours flown.

An NTSB report of a 1988 accident in which 12 people were killed illustrates the importance of performing needed inspections. NTSB said that had FAA surveillance been adequate, it is possible that this accident would not have occurred. Increased surveillance could have indicated to FAA that the airline was operating its airplanes inappropriately and that the first officer's piloting skills were questionable. NTSB criticized FAA because there was no evidence to show that FAA had performed certain inspections of the airline's pilots, such as flight checks; met the chief pilot or manager of training; or visited the company's headquarters. Furthermore, NTSB said its criticism was warranted given that a near fatal accident had occurred 2 months prior to the fatal accident.

FAA Does Not Evaluate the Severity of Problems Found or Ensure Their Correction

FAA inspectors generally do not evaluate the severity of discovered problems, making it difficult to determine which problems are the most severe and pose the greatest safety risk. Without such an evaluation, FAA does not know how to direct its limited resources to those areas that warrant immediate attention. FAA generally classifies its findings as unacceptable or potential

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[5]Our report, Aviation Safety: Problems Persist in FAA's Inspection Program (GAO/RCED-92-14, Nov. 20, 1991), showed that 1,305 airlines did not receive inspections in fiscal year 1990. After the report was issued, FAA provided us with updated information that reduced that number to 886.

safety problems. FAA has not provided inspectors with guidance to distinguish the level of their severity. Basically, each of FAA's 2,600 inspectors use their own judgment to describe adverse findings that can affect aircraft airworthiness or passenger safety differently and with different degrees of urgency. For example, one inspector found it unacceptable that an airline had returned an aircraft to service even though the maintenance performed was inadequate. Another inspector who observed an aircraft before and after de-icing found the airline's de-icing procedures to be unacceptable. A third inspector deemed a partially empty first-aid kit as unacceptable.

Effective corrective actions are essential to ensure that airlines are operating safely. As we first reported in 1987, FAA does not know whether inspectors follow up on identified problems.[6] As a result, FAA has no assurance that airlines are taking corrective action, even for those problems that are the most severe. In fiscal year 1990, FAA inspectors identified over 9,000 problems that were, or had the potential to be, in noncompliance with either regulations or other safe operating practices. Because inspectors are not required to account for the disposition of identified problems, FAA headquarters did not know how many of them were corrected. For example, PTRS records showed that an inspector found evidence of a leak on the landing gear of an aircraft and stated that the gear was dirty and hard to inspect. The inspector informed the flight engineer, who wiped off the dirty area and told the inspector that he would check it at the next landing. Although the inspector recorded this finding in PTRS, there was no indication of whether the inspector or airline took any follow-up action. Without this information, the system has little value as a management tool.

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

NTSB has criticized FAA for not ensuring that airlines correct identified problems. According to NTSB's September 1989 report on an airline accident that resulted in 14 fatalities and 26 serious injuries, poor flight crew discipline and coordination contributed to the accident. Between 1985 and October 1988, FAA inspectors had consistently observed these deficiencies but did not require corrective action. NTSB said that "contributing to the accident was the lack of sufficiently aggressive action by the FAA to have known deficiencies corrected by [the airline] and the lack of sufficient accountability within the FAA's air carrier inspection process."

FAA Has Not Developed a System to Target Inspections on the Basis of Airline Risk

Our 1987 report pointed out that FAA could develop criteria for targeting inspections at high-risk conditions and emphasized that targeting is important because FAA will never have sufficient resources to inspect all carriers all of the time.[7] In that same year, the Senate Appropriations Committee directed FAA to develop safety indicators that would provide FAA with a basis for measuring risk. FAA initially focused on developing risk factors related to its air traffic program. It has yet to develop a system for assessing airlines' safety risk. Such a system would allow FAA to proactively manage the use of its limited resources so that safety problems are identified and corrected before they become more serious. Currently, FAA assigns its inspection resources largely on the basis of an airline's fleet size. Therefore, airlines with similarly sized fleets receive similar levels of inspection coverage, even though some pose significantly greater risks to the flying public.

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[7]Department of Transportation: Enhancing Policy and Program Effectiveness Through Improved Management (GAO/RCED-87-3, Apr. 13, 1987).

The ability of FAA to target its resources and provide adequate inspection coverage of airlines has long been a concern to the Congress, particularly following the December 1985 airline crash in Newfoundland, Canada, that killed 248 military personnel and 8 crew members. Although FAA was responsible for inspections of this airline, the Congress was concerned about FAA's resources and ability to effectively perform oversight. The Congress subsequently enacted legislation requiring the Department of Defense (DOD) to inspect commercial airlines with which it contracts to transport military personnel. To accomplish its mandate, DOD increased its inspection capabilities and focused on developing the Air Carrier Analysis Support (ACAS) system to assess the performance of about 130 airlines that have contracts with DOD. FAA does not have a system that integrates data from various sources as ACAS does.

Although DOD's system may not be totally applicable for FAA's needs, a similar system would enable FAA to target inspection resources at those carriers with the poorest performance. We examined the hours that FAA spent inspecting 97 airlines in fiscal year 1990 and compared them with DOD's performance ratings. Using the Department of Transportation's (DOT) criteria, we placed the airlines into four groups--majors, nationals, regionals, and air taxis. Our analysis showed that FAA sometimes spent more inspection resources on airlines DOD rates as better-performing than it did on poorer-performing airlines. For example, FAA spent about 26,100 discretionary hours inspecting eight better-rated national carriers. In contrast, FAA spent about 6,900 discretionary hours inspecting five poorer-rated national carriers.

Since FAA inspects airlines largely on the basis of fleet size, we performed a second analysis of the 97 airlines using the average number of inspection hours per aircraft for DOT's groupings. This analysis considers variations in carrier's fleet size. Of the 97 airlines, 34 did not receive inspection coverage

consistent with DOD's performance rating. Of the 34, 17 better-rated airlines received too much inspection coverage and 17 poorer-rated airlines received too little coverage relative to other airlines in their groups. To its credit, FAA spent more inspection hours on 16 poorer-rated airlines and less inspection time on 44 better-rated airlines.[8] FAA has only recently begun developing a Safety Performance Analysis Subsystem that would assess airline risk and help it better target its inspection resources. FAA plans to evaluate a prototype system for air carriers by fiscal year 1993. According to FAA officials, neither FAA headquarters nor its regional offices had explored ways to enhance their inspection program by using a risk assessment system because of other priorities.

FAA officials point to continuing low accident rates as an indication that the level of aviation safety has increased. The accident rate, however, is not the best indicator of the margin of safety because many different things usually have to go wrong before an accident occurs. Focusing on accidents represents after-the-fact reactions to events rather than prevention. Investigators have observed that unsafe operating practices do not inevitably lead to accidents and, unfortunately, accidents can occur in even the best managed airspace. In either case, accidents occur so rarely that they cannot be used alone to analyze aviation safety. For these reasons, more specific measures of safety risk are needed to identify and direct attention to unsafe or high-risk conditions.

In addition, DOT's OIG is completing a nationwide review of FAA's inspection program and will soon issue its report. The OIG found, in part, that (1) actual time devoted to FAA's surveillance is significantly lower than that reported through PTRS, (2)

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[8]Two airlines were neither poorer- or better-rated. Also, because of insufficient data for one airline, we could not determine the average number of inspection hours per aircraft.

inspectors needed to follow up to ensure that air carriers were taking corrective action on identified problems, (3) planned inspections were not based on a systematic effort to target carriers with problems, (4) inspectors performed inspections when they were not adequately trained to do so, and (5) FAA needed to better utilize existing inspectors.

FAA faces considerable challenges with no significant growth expected in its inspector work force. These challenges include (1) monitoring repairs of aging aircraft, (2) restructuring in the airline industry, (3) expanding markets on a global scale, (4) developing inspectors' skills--expected by FAA to take until 1994 or 1995--to properly oversee aircraft that use new technology, such as composite materials and advanced avionic systems, and (5) assessing foreign government oversight of airlines that fly into the United States. FAA must take actions to correct fundamental flaws in its inspection program so that it can better position itself to deal with the challenges it faces.

CONCLUSIONS

FAA has yet to sufficiently address our previous concerns about shortcomings in its airline inspection management and oversight. FAA is unable to ensure that (1) airlines are complying with safety regulations and (2) its limited resources are targeted to inspecting airlines that pose the greatest risk to the flying public. Furthermore, because FAA is not tracking corrective actions for identified problems, the possibility exists that serious problems will remain uncorrected, putting airline passengers at risk. NTSB has criticized FAA for not ensuring that airlines take corrective action and found that FAA's lack of aggressive action and ineffective surveillance contributed to accidents.

FAA recognizes that improvements are needed in its inspection program and is taking some positive steps. However, fundamental problems remain that FAA has not adequately addressed. FAA needs to act now to correct its problems, particularly in light of the new challenges that are placing even greater demands on its inspector work force. We have made recommendations in our reports to improve the inspection reporting system and to give priority to developing a risk-assessment system, including a plan and milestones for implementation, that would help FAA meet these challenges.

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This concludes my prepared statement. We will be happy to respond to any questions at this time.

RELATED GAO PRODUCTS

Aviation Safety: Problems Persist in FAA's Inspection Program (GAO/RCED-92-14, Nov. 20, 1991)

Aviation Safety: Emergency Revocation Orders of Air Carrier Certificates (GAO/RCED-92-10, Oct. 17, 1991)

FAA Information Resources: Agency Needs to Correct Widespread Deficiencies (GAO/IMTEC-91-43, June 18, 1991)

Aircraft Maintenance: Additional FAA Oversight Needed of Aging Aircraft Repairs (Volumes I and II) (GAO/RCED-91-91A and B, May 24, 1991)

Aviation Safety: Limited Success Rebuilding Staff and Finalizing Aging Aircraft Plan (GAO/RCED-91-119, Apr. 15, 1991)

Aviation Safety: Changes Needed in FAA's Service Difficulty Reporting Program (GAO/RCED-91-24, Mar. 21, 1991)

Aviation Safety: Management Improvement Needed in FAA's Airworthiness Directive Program (GAO/RCED-90-94, Feb. 16, 1990)

Aging Aircraft: FAA Needs Comprehensive Plan to Coordinate Government and Industry Actions (GAO/RCED-90-75, Dec. 22, 1989)

Aviation Safety: FAA's Safety Inspection Management System Lacks Adequate Oversight (GAO/RCED-90-36, Nov. 13, 1989)

Aviation Training: FAA Aviation Safety Inspectors Are Not Receiving Needed Training (GAO/RCED-89-168, Sept. 14, 1989)

Aviation Safety: FAA Has Improved Its Removal Procedures for Pilot Examiners (GAO/RCED-89-199, Sept. 8, 1989)

FAA Staffing: Recruitment, Hiring, and Initial Training of Safety-Related Personnel (GAO/RCED-88-189, Sept. 2, 1988)

Aviation Safety: Airlines Should Check Pilot Applicants' Safety History (GAO/RCED-88-154, June 7, 1988).

Aviation Safety: Measuring How Safely Individual Airlines Operate (GAO/RCED-88-61, Mar. 18, 1988)

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

Department of Transportation: Enhancing Policy and Program Effectiveness Through Improved Management (GAO/RCED-87-3, Apr. 13, 1987)

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

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