

May 1987

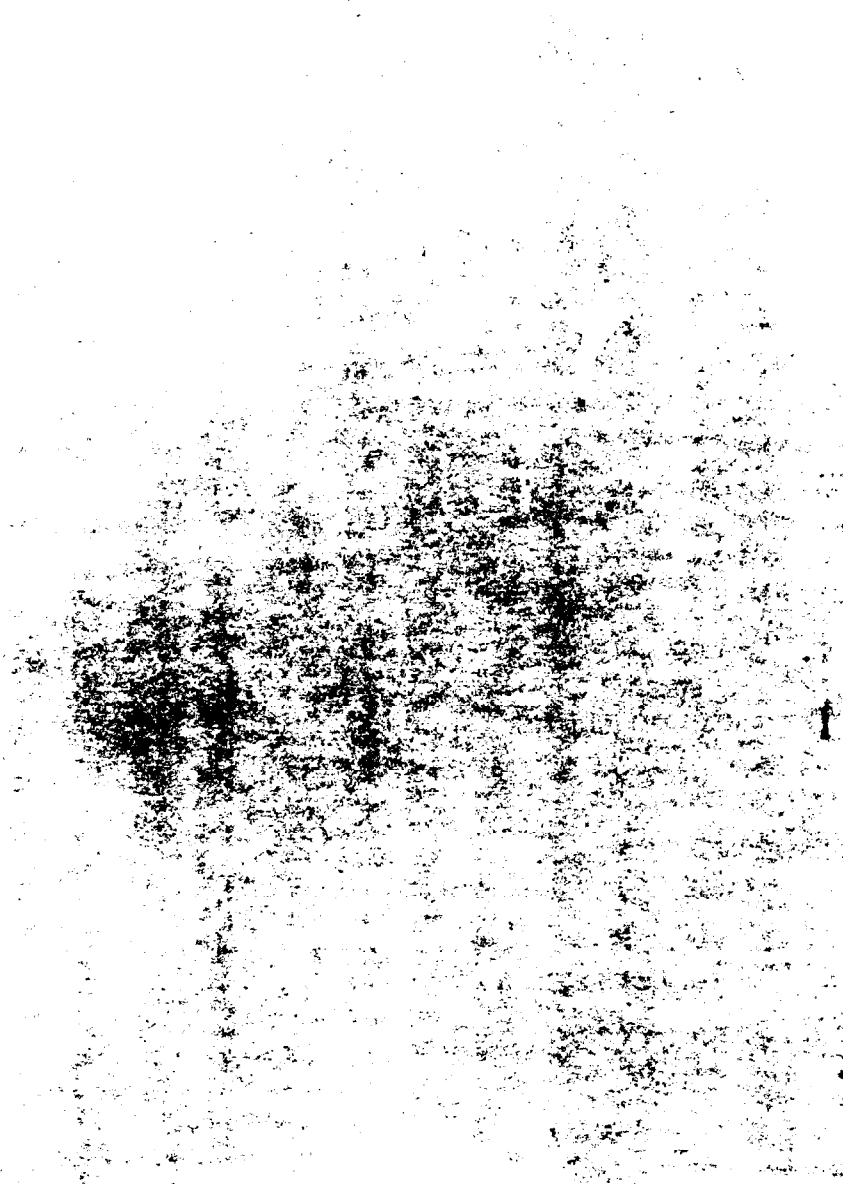
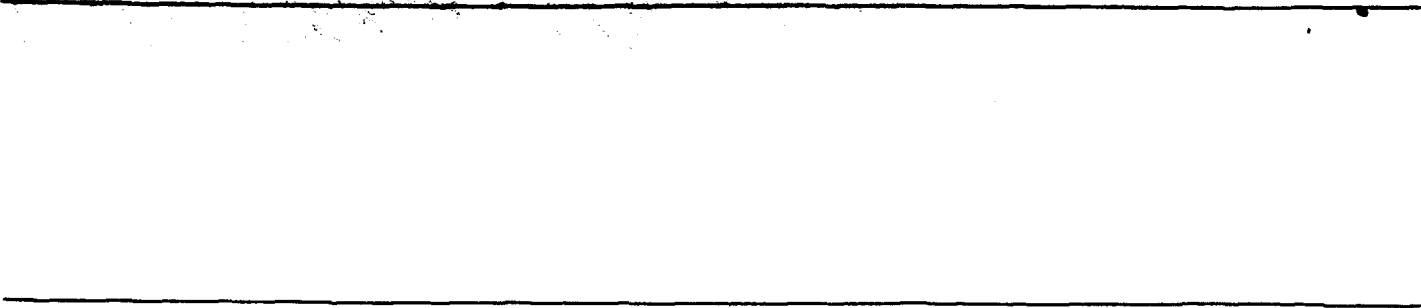
AVIATION SAFETY

Needed Improvements in FAA's Airline Inspection Program Are Underway



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

**Resources, Community, and
Economic Development Division**

B-226617

May 19, 1987

The Honorable Norman Y. Mineta
Chairman, Subcommittee on Aviation
Committee on Public Works and Transportation
House of Representatives

The Honorable William Lehman
Chairman, Subcommittee on Transportation
Committee on Appropriations
House of Representatives

As you requested in your August 2, 1985, letter, this report examines (1) federal oversight of airline operations in a deregulated environment and (2) the status of FAA's actions to correct weaknesses in its inspection program.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 14 days from the date of this letter. At that time we will send copies to interested parties and make copies available to others upon request.

This work was performed under the direction of Herbert R. McLure, Associate Director. Major contributors are listed in appendix VIII.

A handwritten signature in black ink that reads 'J. Dexter Peach'.

J. Dexter Peach
Assistant Comptroller General

Executive Summary

Purpose

Every day about one million people travel on more than 16,000 scheduled airline flights in the United States. Questions have been raised by the Congress about the Federal Aviation Administration's (FAA's) ability to ensure that standards of airline safety are maintained, especially in a deregulated industry that in the past several years has witnessed a dramatic increase in the number of airlines and operating aircraft. At the request of two congressional subcommittees, this report examines (1) federal oversight of airline operations in a deregulated environment and (2) the status of FAA's actions to correct weaknesses in its inspection program.

Background

Airlines have direct responsibility for operating their aircraft safely; however, the Federal Aviation Act of 1958, as amended, charges the Secretary of Transportation with regulating air commerce in a way that best promotes its development and safety. Although the Airline Deregulation Act of 1978 removed government control over domestic airline fares and schedules, FAA retained its responsibility for providing oversight of airline compliance with safety regulations. To carry out these responsibilities, FAA first inspects an airline's entire operation when the airline seeks a certificate to operate; FAA is then supposed to follow up with periodic inspections to assure continued compliance with safety regulations.

GAO testified in May 1986 before the Subcommittee on Aviation, House Committee on Public Works and Transportation on the preliminary results of this review. The management of FAA's inspection program and how the types of improvements in the program can be used to strengthen overall Department of Transportation (DOT) management are further discussed in GAO's report entitled Department of Transportation: Enhancing Policy and Program Effectiveness Through Improved Management (GAO/RCED-87-3, April 13, 1987).

Results in Brief

While deregulation led to large increases in the number of airlines and aircraft requiring inspection, FAA cut its inspection force and placed its emphasis on certifying new airlines rather than assuring that periodic inspections of existing airlines were performed at an acceptable level.

• Until 1985, FAA did not develop systems or standards for determining how many inspectors it needed, what inspections should be performed, or analyzing what the inspections revealed about airline compliance with safety regulations. Further, GAO's review—as well as FAA and DOT

studies—found that the inspection program often did not identify major safety problems or assure their correction through appropriate follow-up.

FAA has acknowledged these program weaknesses and, building upon initiatives launched by the Secretary of Transportation, is taking corrective action on a broad front. Among other actions, FAA is increasing the size of its inspector work force and has established minimum inspection standards to identify what inspections need to be performed and how frequently. It has also begun to address needed improvements in its internal controls and management information systems.

Additional actions that FAA could take to improve its inspection program include revising inspection guidance to include specific factors influencing the choice of airlines to be inspected and when, and improving its management information system to assure that current and reliable inspection information is consistently available.

Principal Findings

FAA's Past Problems With the Inspection Program

While FAA probably could not have predicted the magnitude of the demands that deregulation would place on it, once deregulation became law, FAA did not develop systems for monitoring its impact. As the number of scheduled airlines and aircraft increased, the number of inspector positions decreased. FAA did not have staffing standards in place that could provide a framework for determining how many inspectors it needed; between 1981 and 1983 it decreased inspector positions from about 1,750 to 1,500. FAA did not collect data on what inspections were being performed or what the inspections showed. In addition, guidance was lacking about the needed frequency and scope of inspections.

Working with less staff and without clear guidance, local field managers, responding to industry pressures, for the most part gave priority to certifying new airlines, allowing inspections of existing ones to suffer. At the same time, many existing airlines—due to rapid growth and personnel turnover—were experiencing safety compliance problems. FAA did not have information with which to assess the consequences of field office inspection practices for airline compliance with safety requirements. This lack of clear guidance and inspection data left FAA without the tools it needed to effectively oversee its inspection program.

Corrective Actions

Building upon major safety program reviews and related initiatives of the Secretary of Transportation, FAA began to address these problems in 1985. It has issued staffing standards and national minimum inspection standards, begun to increase the size of its inspector work force, and has affirmed that inspections of existing airlines are the number one work priority for inspectors—ahead of certification work. FAA also has instituted a National Inspection Plan, using specially assembled teams to inspect targeted airlines. In addition, FAA plans to have in place by the end of fiscal year 1988 updated guidance for inspectors, revisions to existing hiring and training policies and programs, and an improved system of management oversight.

Additional Improvements

Recently issued inspection standards specify annual minimum inspection requirements applicable to all airlines—typically one of each type of critical inspection per airline. This guidance, however, does not take into account characteristics that affect how often an airline needs to be inspected, such as fleet size, type, age, usage rates, and the airline's record of compliance.

To increase the inspector work force to 1,975 positions and replace staff losses, FAA needs to hire over 700 new inspectors during fiscal years 1986 and 1987. Since new inspectors will not be trained to perform all inspection work and will require more time to perform inspections, FAA will reach its staffing goals on paper much sooner than it will in practice. The sheer number of new inspectors will also place added demands on experienced inspectors' time to train and supervise them. According to FAA, the new inspectors will require between 2 and 4 years of training and experience to become fully effective.

FAA does not yet have in place the internal controls and management information systems needed to monitor the operations of its regional and district offices. For example, FAA's computer-based information system has been of limited use because of numerous design and operational problems. FAA will not be in a position to say with assurance whether airlines are complying with safety requirements until it has sufficiently reliable and complete information in these areas.

Recommendations

GAO recommends that the Secretary of Transportation direct the Administrator, FAA, to revise FAA's standards for the type and frequency of airline inspections to take into account the need to target airlines displaying characteristics that may indicate safety deficiencies. The

resources required to implement the revised standards, as well as FAA's National Inspection Plan, should then be included in FAA's inspector staffing need estimates.

In order to better analyze FAA's inspection activities and more appropriately allocate scarce resources, GAO also recommends that the Secretary direct the Administrator to improve its management information system to assure that current and reliable information is available to FAA management about district office inspection activities.

Agency Comments

A draft of this report was furnished to DOT for official comment.

DOT generally concurs with this report's findings and recommendations, stating that each of the programs addressed by GAO's recommendations is being revised or developed under the auspices of Project SAFE—FAA's initiative to improve the efficiency and effectiveness of its inspection program. DOT also stated that it will ensure that the intent of GAO's recommendations is specifically addressed during the development of each affected program.

GAO also provided copies of the four case studies presented as appendixes to this report to the individual airlines for comment. The case study airlines were identified by FAA as having experienced safety problems. In their comments to GAO, the case study airlines said they were concerned that the draft report negatively portrayed their operations. GAO developed these case studies to illustrate weaknesses in FAA's surveillance and not to criticize the operations of individual airlines. These airlines had maintenance or operation problems that were either missed by routine FAA inspections or were allowed to continue uncorrected for long periods. GAO believes the case studies help illustrate inherent weaknesses in FAA's inspection program. GAO has made changes, however, in the report to reflect the airlines' comments where appropriate.

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Abbreviations

AQAFO	Aircraft Quality Assurance Field Office
ASAS	Aviation Safety Analysis System
CHDO	certificate-holding district office
DOT	Department of Transportation
FAA	Federal Aviation Administration
FAR	federal aviation regulation
FSDO	flight standards district office
GAO	General Accounting Office
MAC	Military Airlift Command
NATI	National Air Transportation Inspection
NTSB	National Transportation Safety Board
OJT	on-the-job training
PAI	principal avionics inspector
PBA	Provincetown-Boston Airlines, Inc.
PMI	principal maintenance inspector
POI	principal operations inspector
RCED	Resources, Community, and Economic Development Division
RMA	Rocky Mountain Airways, Inc.
SAFE	Safety Activity Functional Evaluation
SPIA	South Pacific Island Airways
WPMS	Work Program Management Subsystem

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Introduction

Every day about 1 million passengers fly on more than 16,000 scheduled commercial airline flights in the United States. Ensuring the safety of air travel is the joint responsibility of the airlines and the Federal Aviation Administration (FAA)—an agency within the Department of Transportation (DOT). Individual airlines are responsible for safely operating and maintaining their aircraft; FAA issues aviation regulations that set minimum acceptable standards of safety and monitors the industry's compliance with them.¹

Recently, questions have been raised in the Congress about FAA's ability to ensure that standards of airline safety are maintained, especially in a deregulated industry that in the past several years has witnessed a marked increase in the number of airlines and operating aircraft. This report examines how well FAA monitors scheduled commercial airlines' compliance with safety standards.

Deregulation Spawns a More Competitive Airline Industry

Deregulating federal control of U.S. airline fares and routes allowed competitive market forces to determine the quality, variety, and price of air service. Since deregulation, the number of airlines and aircraft has increased. In 1978, about 250 scheduled airlines were operating about 3,640 aircraft. By 1985 the number of scheduled airlines had risen to about 325; the number of aircraft had increased to about 4,470. According to FAA, continued growth is expected through the 1980s.

The airline industry has become highly competitive since deregulation.² Although competition has encouraged efficiency—and lowered air fares—as airlines strive for passengers and profitability by reducing costs wherever possible, competition has also caused significant financial turmoil in the airline industry. In the years following deregulation, as competition drove airline ticket prices down, the industry recorded the worst financial performance in its history. An economic recession also dampened revenues, while higher fuel prices drove costs up substantially. These financial pressures brought about a number of bankruptcies, mergers, and consolidations within the industry.

¹The Federal Aviation Act of 1958, as amended (49 U.S.C. App. 1301 *et seq.*) charges the Secretary of Transportation with regulating air commerce in such a manner as to best promote its development and safety. FAA carries out its safety-related responsibility by promulgating regulations, monitoring airline compliance, and enforcing the regulations.

²For a more complete analysis of the effects of airline deregulation, see Deregulation: Increased Competition Is Making Airlines More Efficient and Responsive to Consumers (GAO/RCED-86-26, Nov. 6, 1985).

Increased competition and emphasis on efficiency have also raised public concern that airlines may be cutting operating costs—especially in areas affecting safety—by reducing maintenance and inspection staffs, deferring routine or preventive maintenance, or delaying the replacement of older aircraft. It is FAA's responsibility to ensure that airline cost-cutting measures do not cause any airline to fall below federal aviation standards and thereby jeopardize air safety.

FAA's Role in a Deregulated Environment

Although some aspects of federal regulation—primarily those dealing with fares and routes—were removed by the Airline Deregulation Act of 1978 (Public Law 95-504), FAA's role as a safety regulator was not changed. FAA continues to be responsible for both certifying an airline's initial operations (determining an airline's ability to carry out its proposed operations and the airworthiness of its aircraft) and monitoring the operations and maintenance of an airline's fleet. FAA inspectors help ensure that airline operations are safe and that equipment is properly maintained by inspecting airline personnel, aircraft, maintenance, and other aspects of its operations for compliance with federal aviation regulations (FARS).

Scheduled commercial airlines operate their aircraft under Part 121 or Part 135 of the FARS. Part 121 regulations apply to large passenger and cargo aircraft—those that carry more than 30 passengers or a payload greater than 7,500 pounds. Part 135 regulations apply to smaller aircraft—those that carry 30 or fewer passengers and a payload not exceeding 7,500 pounds. FAA is also responsible for inspecting other types of aircraft—such as corporate, private, and agricultural—operating under other parts of the FARS. In addition, FAA inspects ground facilities, such as repair stations.

FAA's Organization for Monitoring Airline Safety

Within FAA headquarters, the Office of Flight Standards is responsible for assuring the safe operation of airlines. The office's headquarters staff develops the FARS that airlines must follow and prepares guidance on how inspectors should perform inspections. Flight Standards units in FAA's nine regional offices interpret headquarters guidance, perform administrative functions, supervise the operations of district offices, and perform special inspections. Most airline inspections are conducted by inspectors in 90 district offices located throughout the United States.

FAA's inspections are divided into three functional categories—operations, maintenance, and avionics (aviation electronics). Operations

inspections generally monitor the operational aspects of an airline, including pilot certification and performance, flight crew training, and in-flight record keeping. Maintenance inspections monitor an airline's overall maintenance program, including personnel training and maintenance policies and procedures. Avionics inspections review matters similar to those of maintenance inspections, except that they focus on an aircraft's aviation-related electronic components. These three functional categories are further divided into specific inspection types such as spot, en route, and main base.

FAA district office inspectors fall into two main categories: air carrier and general aviation. Air carrier inspectors primarily inspect Part 121 aircraft, while general aviation inspectors are responsible for aircraft operating under Part 135 and other parts of the FARs. According to FAA, as of September 1986, it had 1,810 inspector positions—750 air carrier and 1,060 general aviation.

Each airline is assigned three principal air carrier or general aviation inspectors—one for each of the three functional categories of inspections—who are usually located in an FAA district office at or near the airline's main operations or maintenance facilities. Principal inspectors assigned to larger airlines often have assistants. Within their functional category, principal inspectors are responsible for certification, inspection, investigation, and enforcement duties for their assigned airline(s). The principal inspectors are also assisted in these duties by inspectors from the other FAA district offices within whose boundaries the airline operates.

Objectives, Scope, and Methodology

On February 5, 1985, the Chairman, Subcommittee on Aviation, House Committee on Public Works and Transportation, and the Chairman, Subcommittee on Transportation, House Committee on Appropriations, requested that we conduct a comprehensive review of FAA's oversight of the nation's scheduled airlines' operations and maintenance activities. As a first step, we were asked to compile and analyze information on the types and frequency of FAA's inspections of a sample of 92 airlines. We issued that report on August 2, 1985, disclosing wide variations among airlines in the types and frequency of inspections performed by FAA.³ On the basis of those results, the chairmen requested a follow-up review to determine why the conditions we reported existed, how effective FAA's

³Compilation and Analysis of the Federal Aviation Administration's Inspection of a Sample of Commercial Air Carriers (GAO/RCED-86-157, Aug. 2, 1985).

inspection program is, what actions FAA is taking to improve it, and what more needs to be done to ensure that airlines are complying with FAA's safety regulations.

To answer these questions, we performed work at FAA headquarters in Washington, D.C., and at three of FAA's nine regions—Northwest Mountain, Southern, and Western Pacific. These regions have primary responsibility for inspecting about 46 percent of the nation's approximately 325 scheduled Part 121 and Part 135 airlines, and were included in our August 1985 report.

Within each region, we performed work at the FAA regional office and at the two district offices having responsibility for inspecting the largest number of the region's assigned Part 121 and Part 135 airlines.⁴ We also telephoned or briefly visited other district offices in the three regions to follow up on information as needed. The principal offices we visited in each region were:

Northwest Mountain Region
Regional Office, Seattle, Washington
District Office, Seattle, Washington
District Office, Denver, Colorado

Southern Region
Regional Office, Atlanta, Georgia
District Office, Atlanta, Georgia
District Office, Miami, Florida

Western Pacific Region
Regional Office, Los Angeles, California
District Office, Los Angeles, California
District Office, Honolulu, Hawaii

At these field locations we interviewed responsible regional officials and district office inspectors, supervisors, and managers. We also reviewed inspection plans and reports and other documentation related to inspections that FAA performed, and at some locations accompanied inspectors on several different types of inspections.

⁴In the Western Pacific Region, we visited a third district office (San Diego) to collect additional information relating to one of our case studies.

We reviewed pertinent legislation at FAA headquarters in Washington, D.C.; reviewed agency documents; and interviewed FAA officials, including the Administrator; the Associate Administrator for Aviation Standards; and the manager of the Office of Airworthiness within the Aircraft Maintenance Division. We also analyzed agency and department initiatives relating to FAA's airline inspection program, including its 1984 National Air Transportation Inspection (NATI) program, its 1984-85 Safety Activity Functional Evaluation (Project SAFE), DOT's 1985 Safety Review Task Force report, FAA district office evaluations, and agency reports on inspector staffing levels and training.

We also reviewed information from congressional hearings and reports and contacted other organizations, including the National Transportation Safety Board (NTSB), DOT's Office of the Inspector General, and the Allen Corporation of America—a contractor engaged by the Office of Personnel Management to help FAA analyze the job tasks of the agency's inspectors.⁵ At the offices of these organizations we interviewed officials and reviewed reports and other documents concerning FAA's oversight of airlines.

Our review included preparing case studies of the operating history and related FAA inspection activity for four airlines that FAA has identified as having serious and continuing problems in complying with federal regulations in recent years. We selected two airlines from FAA's Western Pacific Region and one each from the Northwest Mountain and Southern regions. We also provided copies of the four case studies presented as appendixes to this report to the individual airlines for comment. In their comments to us, the case study airlines said they were concerned that the draft report negatively portrayed their operations. We developed these case studies to illustrate weaknesses in FAA's surveillance and not to criticize the operations of individual airlines. These airlines had maintenance or operation problems that were either missed by routine FAA inspections or were allowed to continue uncorrected for long periods. We believe the case studies help illustrate inherent weaknesses in FAA's inspection programs. We have made changes, however, in the report to reflect the airlines' comments where appropriate.

As requested by the Subcommittee chairmen, our review focused on the adequacy of FAA's oversight of scheduled airlines' operations and maintenance. Consequently, we did not examine FAA's inspections of non-scheduled charters or corporate, private, or agricultural aircraft. We

⁵See appendix VI for a list of related studies.

also did not examine FAA's activities related to certifying or recertifying airlines or their aircraft, facilities, or personnel, nor did we specifically examine FAA's procedures for taking enforcement actions against airlines (although much information of this nature can be found in our case studies). However, this report does recognize the impact of these activities on FAA's inspection function, such as the impact of increased certification work after deregulation.

Our field work was conducted primarily from August 1985 through January 1986; on May 14, 1986, we testified before the Subcommittee on Aviation, House Committee on Public Works and Transportation, on the preliminary results of the review. Also, at the request of Representative Charles E. Bennett, using much of the information developed during this review, we issued two reports related to the safety of U.S. airlines under contract to the Department of Defense. The first, issued in March 1986, contained a chronology of key events related to FAA inspections of two of the four airlines that we selected for our case studies.⁶ The second, issued in June 1986, compared the NATI inspection results of airlines holding military contracts with those of airlines not holding such contracts.⁷ Additional field work was conducted through October 1986 to update the status of FAA's initiatives to improve its inspection activities.

We performed our review in accordance with generally accepted government auditing standards.

⁶ Aviation Safety: FAA's Surveillance of Two Contract Military Carriers (GAO/RCED 86-128FS, March 13, 1986).

⁷ Airline Inspections: Comparison of Airlines With and Without Military Contracts (GAO/RCED 86-185BR, June 20, 1986).

Past Problems in FAA Surveillance of Airlines

FAA's airline inspection program has not been adequate to ensure that airlines are complying with federal safety regulations. FAA studies have found that the agency's inspection activities were often insufficient to identify major safety problems and that its follow-up actions often did not ensure that problems were corrected once they were identified. Similar findings have been reported in recent studies by the Office of the Secretary of Transportation and by DOT's Office of Inspector General. Our case studies (see apps. I-IV) of four airlines with documented safety problems—as well as data showing that FAA has not made critical inspections of many other airlines—are consistent with DOT and FAA studies in demonstrating the deficiencies in FAA's inspection program.

Inadequate inspections can directly affect the safety of airline operations. Several NTSB investigations have criticized FAA's safety inspection program and have concluded that ineffective FAA inspections have contributed to aircraft accidents.

In the past 2 years, FAA has initiated actions to address the problems it and others have identified.

FAA Studies Show Inadequacy of Inspections

In February 1984, in response to congressional concerns that the growth of the airline industry since deregulation had increased the potential for safety problems, the Secretary of Transportation directed FAA to review its safety inspection program. FAA then conducted the 1984 NATI program and the 1984-85 Project SAFE. NATI assessed airline compliance with federal standards and safe operating practices. Project SAFE addressed whether FAA's inspector work force was being used as efficiently and effectively as possible. Both studies found serious problems with FAA inspections. In addition, many FAA regional and local studies identified instances of inadequate FAA surveillance of airlines.

National Air Transportation Inspection Program

NATI was a special program of increased surveillance of commercial airlines operating under Part 121 or Part 135 of the FARs. The program was conducted by FAA in two phases from March through June 1984. Phase I assessed the regulatory compliance of 327 airlines and identified those airlines and safety issues warranting further inspection. Phase II involved an in-depth inspection of the 43 airlines identified as needing further inspection, and in addition surveyed such safety issues as contracted maintenance and emergency equipment.

To evaluate and summarize the results of the Phase I and II NATI inspections, FAA assembled a task force of experts with extensive FAA and airline industry experience. The task force pointed to an increasing potential for future safety problems if inadequacies in FAA's inspection program were not corrected, as demonstrated by the following comments:

"Most deficiencies have existed for quite some time. . . . The CHDO [certificate holding district office] has been deficient in surveillance, inspections, and in-office reviews."

"Should an accident or incident occur involving either haz mat [hazardous material] handling or pilot proficiency, the FAA would be in an absolutely untenable position. . . . Lack of surveillance and follow-up by CHDO has allowed much of the FAR non-compliance conditions to develop in airworthiness."

The task force concluded that the NATI inspection results disclosed "a less than desirable overall industry compliance" with federal safety regulations and that FAA's surveillance was often inadequate or ineffective. It further concluded that if routine FAA surveillance had been adequate, most of the deficiencies found by the NATI inspection teams would have been previously detected and corrected. Of the 1,351 problems found in the Phase II in-depth studies, the task force attributed 917 (68 percent) to inadequate or ineffective routine surveillance by FAA.

As a result of the NATI inspections, FAA suspended or revoked operating certificates, grounded aircraft, or restricted the operations of 11 airlines; 5 other airlines voluntarily withdrew pilots from service or suspended operations. Two additional airlines were identified, one by the NATI inspection team and one by the task force, as having deficiencies severe enough to warrant suspending their operating certificates. FAA found that the first airline took corrective action; its certificate was, therefore, not suspended. FAA revoked the operating certificate of the second airline, South Pacific Island Airways, after a series of additional safety violations. (See app. IV.)

Safety Activity Functional Evaluation (Project SAFE)

FAA began Project SAFE in 1984 to assess the efficiency and effectiveness of its airline inspection activities, including the adequacy of regulations, directives, and other guidance as well as staffing levels, hiring practices, and training programs. FAA arranged with the Office of Personnel Management for the Allen Corporation of America to carry out much of the project, which included several phases. In the initial, pilot phase, the contractor surveyed about 10 percent of FAA's inspectors and collected

information on agency operations. Subsequent phases documented job tasks performed by inspectors and recommended changes in FAA policies and practices.

As was the case in the NATI study, Project SAFE found that FAA surveillance of airlines was often inadequate and that significant changes in FAA's inspection program were needed to improve aviation safety. The Allen Corporation's report to FAA concluded that "the surveillance required to ensure high standards of safety is not being performed."

Other FAA and DOT Studies

In addition to NATI and Project SAFE, FAA and DOT conducted other, more limited studies of FAA's airline inspection program. These included FAA district office reviews, special FAA regional evaluations of individual airlines, DOT Inspector General reports, and a 1985 safety study by the Office of the Secretary of Transportation.

For example, various DOT Inspector General reports have criticized the effectiveness of FAA's surveillance program in several regions. A September 1985 Inspector General audit of FAA's Alaska Region concluded that surveillance by the region's three district offices had failed to provide adequate assurances that airlines were operating safely and in compliance with federal regulations. The report stated that inspections were not always performed as frequently as necessary or in a uniform manner. In one district office, the audit found that over one-third of the necessary inspections were not done when due or that follow-up actions were not timely. In another office, a newly-appointed manager had reviewed the office's operations and concluded that

"the records reflect either faulty record keeping or neglect of FAA responsibility in the areas of inspection and enforcement of program guidelines."

In 1985 the Secretary of Transportation's Safety Review Task Force also identified problems within FAA's inspection program. The task force report cited a lack of uniformity in the interpretation and implementation of FAA regulations and policies.

Previous GAO Report Reveals Many Critical Inspections Not Conducted

Our August 1985 report on FAA's fiscal year 1984 inspections for a sample of 92 airlines found wide variation in the number and types of FAA inspections performed on airlines with similar operating characteristics, such as operating hours and fleet size. It also identified many instances in which FAA's records showed that some airlines had received just a few inspections in some categories—or none at all. For example, 29 of the 92 airlines received no avionics inspections, and 4 received no operations inspections.¹

During fiscal year 1984, FAA had no national standards governing the type and number of inspections necessary for each airline. Determining the type and frequency of inspections was left to the discretion of regional and district offices. In October 1985 FAA issued national program guidelines that identified 41 critical types of inspections that FAA headquarters said must be conducted for adequate airline surveillance. Under these guidelines, FAA inspectors must perform a specified minimum number of critical operations, maintenance, and avionics inspections for each airline within a region.

Although these guidelines were published in fiscal year 1985, the inspections would also have been considered critical for ensuring safe operations during fiscal year 1984, according to FAA headquarters and regional officials. We compared 28 of these now-mandatory inspections with FAA's fiscal year 1984 inspection data to determine the extent to which inspectors had performed these critical inspections.²

We found that none of the 92 airlines in our sample had received all of the 28 critical inspections. Overall, FAA inspectors conducted only about half of the critical inspections for the sampled airlines. For example, 15 of the 92 sampled airlines (16 percent) received no spot maintenance inspections, 10 airlines (11 percent) received no en route operations inspections, and 54 airlines (59 percent) received no main base avionics inspections.

¹Compilation and Analysis of the Federal Aviation Administration's Inspection of a Sample of Commercial Air Carriers (GAO/RCED-85-157, Aug. 2, 1985).

²Comparable data were not available for 13 of the 41 types of inspections.

GAO Case Studies Highlight FAA Surveillance Problems

As part of our review, we conducted an in-depth examination of information pertaining to four airlines that FAA had identified as having experienced recent safety problems.³ We developed these case studies to analyze weaknesses in FAA's surveillance that permitted long delays in detecting safety violations or in correcting identified violations. In response to a congressional request, we issued a report on two of these airlines, which provides a chronology of FAA inspections of the airlines over the last several years.⁴

These case studies illustrate some of the problems inherent in FAA's airline inspection program and discussed at length in this report, including:

- work priorities not being followed,
- wide variations in the types and frequency of FAA inspections,
- poor inspector training,
- excessive inspector work loads, and
- inadequate supervisory and management oversight.

Each of the four airlines had one or more instances in which a maintenance-related accident or other major safety incident resulted in fatalities or endangered air travel. These airlines had maintenance or operations problems that were either missed by routine FAA inspections or were allowed to continue uncorrected for long periods. In 1984, FAA suspended the operating certificates of three of the four airlines.

Detailed descriptions of our findings are contained in the following appendixes:

- Appendix I: Flight Trails d/b/a Air Resorts, Carlsbad, California;
- Appendix II: Provincetown-Boston Airlines, Naples, Florida;
- Appendix III: Rocky Mountain Airways, Denver, Colorado; and
- Appendix IV: South Pacific Island Airways, Honolulu, Hawaii.

³The four airlines selected for in-depth analysis were chosen because they met the following criteria: (1) a district office in one of the three FAA regions in our review had the primary inspection responsibility for the airline, (2) the airline had a recent accident or other major safety problem, and (3) the airline had regulatory compliance or safety problems over an extended period. These airlines were not chosen randomly and are therefore not necessarily representative of other airlines in the three regions included in our review.

⁴Aviation Safety: FAA's Surveillance of Two Contract Military Carriers (GAO/RCED 86-128FS, March 13, 1986).

National Transportation Safety Board Cites Link Between Inadequate Inspections and Accidents

NTSB sees a link between inadequate FAA inspections and aircraft accidents. In October 1985 hearings on FAA's inspection program, the NTSB chairman testified before a Senate subcommittee about the apparent lack of quality in FAA inspections. He stated that NTSB's concern about the lack of quality was heightened as a result of three investigations conducted in 1983 in which NTSB found ineffective FAA inspections to be a contributing factor. The three investigations are summarized in appendix V.

Problems Found by NTSB Since 1983

Since 1983, NTSB has continued to find problems with FAA's inspection program. Ineffective FAA surveillance was cited by NTSB as contributing to the 1984 crash of a Vieques Air Link, Inc., aircraft. The pilot and eight passengers were killed when the plane lost power after takeoff and crashed near Vieques, Puerto Rico. In assessing FAA surveillance, NTSB raised concerns about the limited number of FAA inspections covering records, training, and manual procedures. NTSB found that

"there was no record that the FAA ever attended a [Vieques] training session during the 10-month period before the accident."

NTSB also criticized FAA for not detecting problems with the airline's record-keeping and safety procedures. NTSB concluded that if FAA had paid adequate attention to the airline's operating procedures, deficiencies would have been detected and corrected.

Alarmed by the apparent lack of quality in FAA inspections, NTSB announced in late 1984 that it was planning a review of FAA's airline inspection program. According to NTSB, the objective of the review was to

"learn why certain chronic problems and weaknesses, although known for years, continue to plague the FAA's program of air carrier surveillance."

Because of other pressures on NTSB staffing resources, this study was terminated before completion. However, the chairman has stated that NTSB still plans to monitor FAA's initiatives to improve its airline inspections, and that his agency's current accident investigations will continue to place emphasis on evaluating FAA surveillance.

FAA's Actions to Improve Safety Inspections

As a result of its own findings and the others cited in this chapter, FAA is revamping its airline inspection program. Initiatives launched by the Secretary in 1984, including the Department's Safety Review Task Force and the NATI study of airline safety compliance, provided a foundation for these actions. Among other things, FAA is working to update its safety regulations; realign inspector duties and responsibilities to more closely fit conditions in the airline industry; use automated program data and updated staffing standards to manage inspection resources; revise its criteria and procedures for hiring and training inspectors; strengthen its program evaluation capability; and assure that inspection offices receive accurate, timely, and consistent policy and program guidance. In short, FAA has begun to address past shortcomings in every area of its safety inspection and enforcement responsibilities.

Conclusion

FAA's airline inspection and follow-up activities in recent years have not been adequate to identify and ensure correction of major safety problems. Moreover, several NTSB investigations have criticized FAA's inspection program and concluded that ineffective FAA inspections contributed to aircraft accidents. Building upon various department-wide initiatives to enhance transportation safety, FAA has initiated actions to address the problems it and others have identified and is acting to improve its performance on a broad front.

The following three chapters address the underlying causes of FAA's problems, what corrective action FAA has initiated, and what more needs to be done to ensure airline compliance with safety regulations.

Stronger Management System Needed to Ensure Effective Oversight of the Nation's Airlines

FAA has followed a decentralized approach to its management of airline inspections. Under this philosophy, FAA headquarters delegated broad discretion to regional and district offices concerning the quantity and quality of airline inspections without establishing the internal management controls needed to ensure that the offices adhered to essential uniform policies and procedures.

In its 1985 report, the Secretary of Transportation's Safety Review Task Force found a lack of uniformity in the interpretation and implementation of FAA regulations and policies. The report noted that the airline industry perceived that FAA headquarters lacked a broad, national view of the agency's mission and that the agency's decentralized organization has led to a lack of standardized treatment of FAA policies.

Testifying before the Congress in May 1986, the FAA Administrator stressed the need for more standardization in FAA's inspection of airlines. According to the Administrator,

"FAA had grown too decentralized over the years, leaving too much room for regional determinations of how surveillance was to be conducted and, for that matter, how regulations were to be interpreted."

FAA has begun to standardize its inspection program, including issuing national guidelines that include minimum inspection standards, updating other guidance for inspectors and the federal aviation regulations to reflect changes in the aviation industry, and revising hiring and training policies and programs. FAA still does not have in place, however, the internal management controls needed to ensure regional and district office compliance with national guidance. Effective management controls are dependent, to a large extent, upon establishing a system that can provide current and reliable information to FAA management about district office activities such as inspector assignments, implementation of work priorities, and the effectiveness of district office coordination and follow-up of inspections. FAA management to date has not had this type of information. Although FAA has developed plans for improving its management information system, it does not anticipate purchasing the necessary microcomputers to implement needed changes before mid-1988.

Work Program Management Subsystem (WPMS)— An Important Key to Management Control

To facilitate management oversight of its inspection program, FAA in October 1984, after several years of planning, implemented its Work Program Management Subsystem (WPMS)—a computer-based system established to provide data to be used in planning and executing its inspection program. Until October 1984, FAA lacked a management information system to record and consolidate the results of its airline inspections. Although inspection reports were to be completed for each inspection performed, there was no reasonable way for management to assess the information in these reports. To compile information for our August 1985 report on airline inspections conducted from October 1983 to September 1984, we had to review over 12,000 individual inspection reports maintained in FAA's district offices.¹ Time-consuming review of these individual inspection reports was the only way to determine, for example, how many times an airline had been inspected during the fiscal year, the types of inspections performed, or the inspection results. Because of the lack of a system, there was no way to determine how many inspections were planned and whether the airlines were receiving adequate inspection coverage.

WPMS is vital to FAA efforts to improve its airline inspection program; it is the mechanism for informing management of what airline inspections are being planned and performed. At the beginning of the fiscal year, FAA's district offices prepare work programs that show how many of each type of inspection the office intends to perform on each airline throughout the year. During the year, information is entered into WPMS on inspections as they are actually performed. Data on planned and completed inspections are stored in microcomputers at each district office.

WPMS has encountered numerous design and operational problems since its inception, resulting in an unusable fiscal year 1985 data base and limited usefulness of fiscal year 1986 inspection data. As a result, FAA lacks important information on program performance and consequently is not in a position to adequately monitor or enforce key program elements such as district office adherence to inspection priorities, responsibilities stemming from FAA's geographic-area inspection concept (see p. 31), and inspector follow-up when unsatisfactory conditions at an airline are identified. Further, FAA does not have current information on inspector assignments with which to make informed staffing and training decisions.

¹GAO/RCED-85-157, August 2, 1985.

Data Accuracy

Although procedures for assuring data accuracy are a prerequisite for any management information system, FAA has no safeguards to assure that data entered into WPMS are accurate and complete. While some districts require data-entry clerks to review input forms for completeness, none have established procedures for ensuring accuracy. According to district officials in the Western Pacific Region, some inspectors consider WPMS an unnecessary burden and are not concerned about the accuracy of the data entered. In addition, inspectors sometimes do not report all inspections performed or properly code their inspections, further diminishing accuracy.

Computer Hardware

The microcomputers being used for WPMS have insufficient capacity to store all necessary data on district office inspection results. According to WPMS coordinators in regional and district offices, this lack of storage capacity means that data summaries in large district offices must be prepared manually, negating some of the advantages of an automated system and placing additional demands on inspectors' time. WPMS hardware deficiencies were confirmed in a study completed by DOT's Transportation Systems Center in April 1985, which recommended that FAA procure additional hardware, from a different manufacturer, in order to obtain equipment with all the necessary capabilities.

According to managers in three FAA regions, inadequate numbers of microcomputers have prevented district offices from effectively using WPMS inspection data as the equipment is not always available when required by the inspectors. Two of the three regional offices included in our review requested additional equipment before the end of 1984 and the third asked for more equipment during 1985. However, FAA headquarters does not anticipate being able to make additional equipment available until late 1987 at the earliest. At that time, it plans to provide additional equipment that will no longer be needed elsewhere within the agency.

FAA is currently training district office staff to use WPMS equipment to access nationally maintained data bases such as the Enforcement Information Subsystem.² However, according to FAA's Flight Standards WPMS coordinator, use of the WPMS equipment to access these data bases compounds the equipment availability problem that FAA is now experiencing.

²The Enforcement Information System contains information on FAA enforcement actions stemming from violations of regulations.

Computer Software

WPMS software underwent several changes during fiscal year 1985 to alleviate system shutdowns and operational delays. In October 1985 FAA installed a completely new software package providing additional capabilities, but did not resolve all of the old software problems. The software still cannot generate summary inspection reports on airlines operating in more than one district office jurisdiction, nor can it compare numbers of planned inspections with those actually performed. This places important restrictions on the value of the information and forces FAA, contrary to the intent of WPMS, to revert to actual inspection reports to develop meaningful data on specific airlines.

FAA has created a national data base to track inspection activities. However, the data base is designed to include only the minimum numbers of inspections specified in the October 1985 program guidelines; it excludes data on any planned and implemented inspections above the minimums required for all airlines. Consequently, FAA does not know how many inspections above the minimums were planned or were actually performed. Further, data input and manipulation procedures are cumbersome and unduly time-consuming. Such problems make WPMS difficult to use for recording, retrieving, and analyzing inspection data. In October 1986 FAA disseminated software changes to its district offices for use during fiscal year 1987 for the purpose of overcoming some of these difficulties, and anticipates additional improvements in later years.

Training

FAA has not adequately trained WPMS users—either inspectors or support staff—on how WPMS works. District office staff often do not know how to properly use the system and therefore enter incomplete or incorrect data, further diminishing the usefulness of the system. For example, we found that some inspectors have not indicated that certain activities recorded on WPMS input forms were a follow-up to inspections already entered. This caused data-input clerks to erroneously create duplicate inspection reports rather than updating existing ones, thereby exaggerating the actual number of inspections performed.

Additional training is needed so that inspectors can use the system to its maximum capability. FAA has taken steps to improve WPMS training; for example, FAA headquarters issued a self-instructional guide in January 1986. In addition, it planned to develop a computer-assisted course on generating reports. However, according to the WPMS project manager, it has not yet done so, due to budgetary constraints. Some FAA regional and district offices, not wanting to wait any longer for FAA to resolve

training problems, have initiated their own WPMS training. We did not evaluate the effectiveness of these efforts.

Clerical Support

Two of the three regions in our review had shortages of clerical staff to support WPMS. These shortages contributed to large backlogs in entering data into WPMS. For example, three Southern Region district offices experienced WPMS backlogs of about 7 months in 1985. Such data-entry backlogs prevented WPMS from supplying all available inspection data to inspectors and managers for use in determining whether airlines were adequately inspected.

To remedy data-entry backlogs, some district offices have contracted for data-input services using administrative funds. The Southern Region has also temporarily reallocated clerical staff among district offices to assist in eliminating backlogs. According to the region's WPMS coordinator, it will probably continue using contract data-input specialists for WPMS input in the larger district offices even if FAA hires clerical staff to fill the authorized positions now vacant.

Future Development of WPMS

FAA recognizes the problems with the current WPMS and intends to install a new type of microcomputer in its district offices that will radically change the system's operation. The FAA manager responsible for WPMS believes that the new computers have the potential to overcome many of the hardware and software problems now associated with WPMS.

However, FAA does not anticipate having these computers available for use until mid-1988 at the earliest. This is because their acquisition is planned as part of a larger, agency-wide procurement. As an interim measure, the WPMS manager hopes during 1987 to provide district offices with some additional computers of the same type that they have now, to be made available from other parts of FAA.

Detailed planning for the changeover of WPMS to the new computers has not yet started. The changeover will require extensive software revisions, major WPMS handbook revisions, and retraining of regional and district office staff. The WPMS manager started to plan the changeover in November 1986. As of December 1986, FAA had not established a target date for full implementation of WPMS as it is now envisioned.

Without Reliable Information, FAA Cannot Provide Effective Management Oversight

To provide effective management oversight of the inspection program, FAA's managers need current and reliable information regarding key program elements. This includes knowing how many FAA inspectors are assigned to each of the various categories of aircraft (Parts 121 and 135), and whether national priorities (inspections above certifications) are being adhered to, proper coordination is taking place among FAA district offices, and inspection follow-up activities are adequate and timely. According to agency studies and our work, FAA managers have not had adequate information in each of these four areas and, as a result, have not been able to provide effective oversight of the inspection program. To improve its oversight, FAA management needs better information than is currently provided by WPMS.

FAA Does Not Know How Its Work Force Is Being Used

FAA does not now know how many of its existing inspectors are assigned to the nation's approximately 325 scheduled airlines operating Part 121 and Part 135 aircraft and how many are inspecting other, less complex aircraft and airline operations. This is important, not only from the standpoint of knowing how many more inspectors are needed and where, but also in knowing, by category, what FAA's training backlog actually is.

General aviation inspectors are not primarily responsible for and may not be trained to inspect airlines operating large, Part 121 passenger and cargo aircraft. Yet because of the shortage of air carrier inspectors, some general aviation inspectors are assigned to inspect Part 121 aircraft.

An informal FAA study completed in early 1984 indicates that about 8 percent of general aviation inspectors were inspecting Part 121 aircraft. FAA's study also indicates that about 33 percent of general aviation inspectors were inspecting Part 135 aircraft, as opposed to aircraft (such as corporate, private, and agricultural) operating under other parts of the FARs. However, FAA has not followed up on its 1984 study to identify exactly who is inspecting what type of airline. As a result, FAA does not have an accurate basis for analyzing its training needs.

Further refinement of FAA's inspector data is necessary for FAA to effectively address a rapidly evolving and growing segment of the airline industry: commuter airlines. Since 1972 NTSB has repeatedly urged FAA to increase its inspections of commuter airlines because of continuing safety problems. Inadequate FAA inspection of commuter airlines was again highlighted in an October 1986 letter from the NTSB Chairman to

the FAA Administrator concerning NTSB's investigation of three recent commuter accidents.

FAA has not developed, at the national level, procedures for collecting and analyzing information on how many air carrier and general aviation inspectors are assigned to inspect Parts 121 and 135 airlines. FAA does not know, therefore, how many of its air carrier and general aviation inspectors are assigned to commuter airlines, whether the number has been increasing or decreasing, or what type of training they require to keep abreast of changes in the commuter industry. Consequently, even if FAA had adequate staffing standards, it would not know how many of the over 700 new inspectors to be hired in fiscal years 1986 and 1987 should be assigned to air carrier and general aviation positions or how many should be assigned to commuter airlines.

FAA Does Not Know If
Work Priorities Are Being
Followed

FAA needs to know if its work priorities are being followed to ensure that inspectors are giving their highest priority to inspecting. FAA's October 1985 flight standards program guidelines emphasized that inspections were the number one work priority for inspectors—ahead of certification work—and established reporting requirements for developing and executing work programs nationwide that reflected these priorities.

FAA has not in the past been successful in enforcing its work priorities. FAA program guidelines issued in September 1977 ranked inspection of existing airlines as the number two work priority, second only to accident investigation. Certification tasks, primarily certification of new airlines and approving manual and other changes (such as route expansions for existing airlines) were assigned lower priorities.

According to both NATI and Project SAFE, inspectors—contrary to national priorities—were spending considerable time on certification work rather than on inspections of existing airlines. The NATI task force reported that inspections of ongoing operations had suffered as a result. Similarly, Project SAFE reported that inspections had clearly been downgraded as certification work assumed a higher de facto priority. As a result, necessary—sometimes critical—inspections have not been performed.

Our review confirmed that FAA inspectors spend only a limited amount of time conducting inspections. For example, fiscal year 1985 records for five district offices show that inspectors spent about 80 percent of

their time on certification and other noninspection tasks. In some district offices, inspectors said, this left insufficient time to conduct necessary inspections of existing airlines. According to them, airline certification and other noninspection tasks such as pilot certification sometimes took precedence because of industry pressure on FAA to certify new airlines and operating changes for existing ones.

Two of our case studies—Provincetown-Boston Airlines (PBA) and South Pacific Island Airways (SPIA)—detailed in appendixes II and IV demonstrate instances where important inspection work on problem airlines was deferred in favor of lower priority work. These cases also show how FAA found substantial resources to quickly recertify these airlines after it took the agency a number of months to revoke their operating certificates for safety reasons.

FAA's October 1985 program guidelines, which reaffirmed the high priority of inspections along with better inspector training and guidance, should reinforce FAA's position that inspections come first. However, FAA still needs an effective management information system to make sure that this actually happens. As indicated, current limitations with WPMS inhibit FAA's ability to ensure that work priorities are being followed. FAA is able to track nationally only those inspections performed to meet the minimal requirements applicable to all airlines.

FAA Cannot Manage District Office Coordination

FAA has not been effective in inspecting airlines operating in more than one of its districts or regions. Under FAA's geographic-area concept, district office inspectors are responsible for inspecting any airline that operates within that office's geographic boundaries, regardless of which district office actually holds the airline's operating certificate. However, FAA's principal inspectors (avionics, maintenance, and operations) assigned to an airline and located in the certificate-holding office have overall responsibility for ensuring that an airline is complying with federal safety regulations and receives a sufficient number of inspections.

Compliance with the geographic-area concept has been hampered by problems that have diminished its effectiveness. The NATI task force found that the geographic-area concept was ineffective in assuring an adequate number of airline inspections and that some FAA managers acknowledged that inspections mandated under this concept were frequently not being accomplished.

Project SAFE also found major problems with how the concept was being implemented. The study found that inspectors were often unfamiliar with the operations and maintenance procedures of an airline whose operating certificate is held by another district office. Consequently, inspectors may not recognize improper procedures or may overlook violations. In addition, the large number of airlines and associated work loads in some district offices prevents them from allocating inspection resources to airlines having certificates held by other district offices. Inspections of these airlines typically received a district office's lowest priority. Project SAFE concluded that problems with the geographic-area concept were an urgent matter requiring immediate corrective action by FAA.

The DOT Inspector General has also questioned the effectiveness of the geographic-area concept. For example, one Inspector General report found that required inspections were not performed because the assisting district office placed a low priority on its geographic-area responsibilities.

Our review supports these findings. According to principal inspectors and supervisors,

- little inspection support was provided by other district offices,
- inspectors who were asked to assist principal inspectors from other offices often lacked knowledge about an airline's manuals and procedures, and
- travel budget limitations and other resource constraints deter principal inspectors from traveling to other districts when other district offices are unable or unwilling to conduct required inspections.

Continued expected airline industry growth, coupled with district office coordination problems, makes it important that FAA management have a means of checking the degree to which the geographic-area concept is being carried out. Effective coordination is an important facet of FAA's coverage of airline inspections; an effective information-tracking system is a necessary tool for management oversight. However, WPMS cannot currently provide the necessary information for FAA managers to manage this key program element.

**FAA Needs Better
Information to Ensure
Effective Inspection Follow-
Up**

Inspections often identify instances of airline noncompliance with FAA's safety regulations. When this happens, effective follow-up—either to ensure that corrective action has been taken by the airline or for FAA to be in a position to initiate appropriate enforcement action—is essential to ensuring that airlines are operating safely. However, FAA's follow-up actions have not ensured that airline safety problems were corrected—or corrected as quickly as they should have been—once they were identified.

Our case studies provide examples of how poor FAA inspection follow-up contributed to safety deficiencies not being corrected as quickly as they should have been (see apps. I-IV). For example, significant deficiencies at Air Resorts remained uncorrected for up to 8 months due to inadequate follow-up of known problems. Similarly, deficiencies at Provincetown-Boston Airlines likewise went uncorrected for up to 2 years.

NTSB has also identified instances of poor follow-up. For example, after investigating a near-ditching of an Eastern Air Lines aircraft, it concluded that FAA's lack of follow-up to ensure that known airline problems were corrected contributed to the incident. In NTSB's opinion, FAA inspectors did not conduct follow-up inspections to ensure that identified maintenance problems were corrected.

Many of the actions FAA is taking or plans to take to address deficiencies in its inspection program should improve inspection follow-up. These include increasing its inspector work force and providing its inspectors with better training and guidance. However, it is also important that FAA have an adequate system of inspection oversight to monitor whether timely follow-up of unsafe airline conditions is actually taking place. To effectively perform this function, FAA needs accurate, reliable, and timely information on inspection results—which WPMS has not yet been able to provide.

**More Direct Oversight
and Evaluation of
Regional and District
Offices Needed**

Program oversight and evaluation are integral parts of effective agency management. They provide needed management feedback to measure performance against objectives and, where necessary, correct performance problems or modify objectives.

In April 1979 we reported that FAA management had placed little emphasis on formal program evaluation and that no systematic process existed by which comprehensive program evaluation studies were

planned or conducted.³ As a result, FAA lacked information necessary to manage and evaluate resources and to control work.

Following our 1979 report, FAA did little to evaluate the effectiveness of its airline inspections until 1984, when it initiated NATI and Project SAFE. According to the Project SAFE director, FAA had not evaluated airline inspection activities because of its decentralized management approach and staff shortages. Top FAA management had not provided any guidance to the regions for evaluating inspections, and regional offices had done little in the way of evaluating district office performance.

Regional Offices Vary in Their Degree of Oversight

Lacking headquarters guidance, regional offices have varied in the way they evaluate airline and district office performance. For example, two of the three regions in our review have special-purpose inspection teams at the regional level to supplement the work of district office inspectors. The teams periodically select an airline they suspect is operating under potentially unsafe conditions and then conduct an intensive, short-term evaluation of the airline's compliance with FAA-approved procedures and federal safety regulations.

When conducting these special inspections, the regional teams can perform a program evaluation function by assessing the quality of district office inspections of the targeted airline. At times, these teams have found serious deficiencies in routine FAA inspections. For example, two reports by special regional teams in the Western Pacific Region during 1986 showed that routine district office inspections had failed to identify numerous safety deficiencies at two large airlines.

In addition to using special-purpose inspections of airlines as a means of exercising district office oversight, some regional offices perform district office evaluations. These evaluations, when used, communicate to regional management how well a district office is performing its various functions, including airline inspections. As such, they serve as an important tool of management oversight that can help assure the quality of FAA inspections. For example, a 1984 evaluation of a district office by FAA's Northwest Mountain Region found a "lack of standardization and quality control in most functional areas [and that] national and local

³Evaluation of Programs in the Department of Transportation—An Assessment (PAD-70-13 April 3, 1979).

directives are not being followed." The study found that only one operations inspector had attempted to establish an airline surveillance program, that little emphasis had been given to prioritizing various inspections to ensure adequate coverage, and that no follow-up system had been established to monitor whether unsatisfactory conditions identified during earlier inspections were corrected.

A 1985 evaluation of a district office in FAA's Western Pacific Region found similar problems. The study found that district office procedures and instructions were not followed and that the operations unit had not implemented a work program that included national work priorities. The other FAA regions we reviewed varied in their performance of district office evaluations. In one region, evaluations were done infrequently and not in accordance with intervals that had been established by the region. However, in the remaining region a comprehensive evaluation of all district offices was conducted in late 1984 and early 1985.

National Inspection Plan Evaluation Is Just Beginning

In 1986 FAA organized a small headquarters evaluation unit to coordinate regional office evaluations of district offices and oversee the National Inspection Plan, which was established in February 1986 to provide intensive inspections of selected airlines. This unit had begun to develop instructions to the regions for evaluating district offices. As of October 1986 the unit had four staff members, and intended to test its evaluation approach at a regional office by the end of 1986.

Supervisory Oversight of Inspectors Should Be Improved

Analysis of FAA inspection reports has indicated that day-to-day supervisory review of inspections and inspectors has been inadequate. For example, the NATI task force reported that supervisors were not holding inspectors accountable for the poor quality of their inspections:

"The time and resources being lost through the poor quality and/or illegibility of reports are significant. The tangible and intangible losses and potential effect on aviation safety are unacceptable."

Of the approximately 13,600 inspections conducted under NATI, over 6,100 (45 percent) were either not conducted in accordance with agency directives (4 percent) or the inspection reports contained little or no elaboration of findings (41 percent), according to the task force report.

Our review also found many instances of inadequate FAA inspection reports, reflecting a lack of supervisory oversight. Reports were illegible, incomplete, or contained findings of airline deficiencies without any indication of follow-up or corrective action. Other reports did not describe the scope of the inspector's work, showed only a minimal amount of inspection time, or incorrectly identified the type of inspection. Supervisors in the three FAA regions in our review said they lacked sufficient time to review inspection reports and monitor work quality.

FAA headquarters officials acknowledge that supervisory review of inspection quality is inadequate, citing insufficient guidance on inspection practices and excessive work loads as contributing to inadequate oversight. In their opinion, better accountability depends on improving inspector handbooks and other guidance and by hiring more inspectors.

FAA is performing a study of weaknesses in the supervisory review of inspections and is considering recommendations for improvement. The study was scheduled for completion in February 1987. In the interim, some FAA regions and district offices have independently implemented procedures to strengthen supervisory control over inspections. For example, one of the three regions in our review requires that supervisors accompany inspectors on at least two inspections per year. A similar requirement has been adopted by at least one district office in each of the other two regions.

Conclusions and Recommendations to the Secretary of Transportation

FAA needs current and reliable management information about the quantity of inspections and quality of inspector performance. It must be able to access reliable, up-to-date information on current conditions; analyze and compare current conditions with planned objectives; make informed decisions; and follow through to ensure that action—where needed—is taken. The degree to which managers are able to do this will play a major role in determining the success of the agency's plans for improving oversight of its inspection program.

FAA has lacked an information system capable of providing managers with reliable data with which to measure program performance and make changes as required. Recognizing this need, FAA has in recent years developed tools with which it hopes to exercise more effective management control: a computer-based information system and a plan for evaluating regional and district office performance. However, despite its efforts to date, FAA's new computer-based information system—WPMS—is of limited use because of design and operational problems. FAA's plan

to resolve these problems depends upon the purchase of microcomputers planned for mid-1988.

For effective management control, FAA needs information on program performance—in particular, who is inspecting which airlines, whether inspectors are following established work priorities, the extent to which regional and district offices are following practices mandated under FAA's geographic-area concept, and on the effectiveness of follow-up systems to ensure correction of identified problems. These are essential program components that must be monitored and controlled if FAA is to have an effective airline inspection program. Until FAA establishes effective controls in these areas, it cannot say with assurance that airlines are complying with safety regulations.

Further, efforts to establish an agency-wide program for oversight of regional and district office activities have begun, but there is no target date for full implementation. FAA is also performing a study of weaknesses in the supervisory review of inspections and is considering recommendations for improvement.

To help expedite the implementation of FAA's efforts and better ensure their effectiveness, we recommend that the Secretary of Transportation direct the Administrator, FAA, to take the following actions:

- ensure that FAA's management information system is adequate to (1) identify who is inspecting which airlines, thereby permitting FAA to better allocate its inspector work force and identify the current training needs of all its inspectors and (2) analyze nationwide inspection results for each airline to provide FAA with a better picture of each airline's compliance with safety regulations;
- develop a plan to ensure that the extensive software and handbook revisions, as well as the retraining necessary to effect the smooth change-over to the new type of microcomputer for the Work Program Management Subsystem, have been made by mid-1988, when the new computers are expected to be available for use; and
- establish measurable goals and target dates for implementing agency-wide evaluations of regional and district office compliance with inspection work priorities, the adequacy of supervisory oversight, and the quality of the periodic and follow-up inspections being performed.

**Chapter 3
Stronger Management System Needed to
Ensure Effective Oversight of the
Nation's Airlines**

Agency Comments

DOT generally concurs with our findings and recommendations, stating that each of the programs addressed by our recommendations is being revised or developed under the auspices of Project SAFE.

FAA Should Develop Better Standards to Determine Staffing Levels

Since deregulation, changes in the airline industry have dramatically increased FAA's inspector work load, with the rapid turnover of new airlines entering the market, then departing and being replaced by new entrants. FAA did not fully recognize that a fiercely competitive, deregulated environment highlights aircraft maintenance and other safety-related activities as controllable expenses that directly affect an airline's financial health. Although such a climate requires greater oversight vigilance, FAA—in response to budgetary mandates—decreased the number of its inspector positions by about 15 percent between 1981 and 1983. However, after congressional urging and on the basis of several studies documenting the need for more inspectors, the Secretary of Transportation requested that Congress increase the number of inspector positions to the highest level in FAA's history. (See table 4.1.)

While an increase in inspector positions is apparently warranted, FAA does not at present know how many inspectors are needed or where they should be assigned. FAA will not be able to determine its staffing needs or develop adequate staffing standards for making these determinations until guidance for determining the types and frequency of inspections is more complete.

FAA Did Not Respond Effectively to Changes Brought About by Deregulation

When considering airline deregulation legislation in 1978, the Congress was concerned that FAA would not have enough inspectors to monitor the safety of a deregulated industry. As a result, section 107 of the Airline Deregulation Act requires that FAA annually assess its inspector staffing needs and report its findings to the Congress.

Table 4.1: Authorized Inspector Positions (Fiscal Years 1978-87)

Fiscal year	Air carrier inspectors	General aviation inspectors	Total
1978	605	975	1,580
1979	645	981	1,626
1980	640	981	1,621
1981	674	1,074	1,748
1982	576	971	1,547
1983	569	925	1,494
1984	674	932	1,606
1985	674	936	1,610
1986	750	1,060	1,810
1987 (planned)	825	1,150	1,975

Source: Office of Aviation Standards, FAA.

Between 1981 and 1983, the number of FAA's inspector positions decreased from 1,748 to 1,494. In November 1983, during oversight hearings before the Subcommittee on Aviation, House Committee on Public Works and Transportation, the FAA Administrator outlined a plan to make the agency's inspector work force more productive by modernizing equipment, consolidating offices, and improving resource management. The Administrator's plan also called for further reducing the inspector work force by 77 positions by the end of fiscal year 1984. However, in February 1984, the Secretary of Transportation directed that the number of inspector positions be increased. For fiscal year 1985, FAA increased the number of inspector positions to 1,610.

Several studies subsequent to the Secretary's February 1984 decision to increase inspector positions, including FAA's 1984 NATI program and the 1984-85 Project SAFE—as well as our August 1985 report—documented problems with FAA's inspection program, some of which were caused by inadequate inspector staffing. These findings, coupled with intensifying public awareness and continuing congressional concern over airline safety, prompted the Secretary to request that Congress authorize an additional 365 air carrier and general aviation inspector positions by the end of fiscal year 1987, yielding an inspector work force of 1,975.

FAA's Inability to Determine Staffing Needs Hindered Management of Its Inspector Work Load

Throughout this period of wide fluctuations in the number of FAA's inspector positions, FAA has not had adequate staffing standards on which to base staffing needs. Until January 1985, when it issued new staffing standards, FAA's staffing decisions were made judgmentally, without reference to standards. The previous staffing standards, which had been issued in 1975 (3 years before deregulation), had been discarded soon after issuance as unrealistic.

Compounding this problem was the lack of agency-wide guidance on the types and frequency of inspections FAA needed to perform to ensure that airlines were operating safely. These decisions were left primarily to the judgment of individual inspectors and their supervisors, on the basis of their own knowledge and experience, along with any guidance developed by the FAA district or regional office. Many different inspection levels resulted. In the absence of agency-wide guidance, some regional and district offices established their own guidance, while others did not; inspectors throughout the United States were applying different criteria in determining the number and types of inspections that airlines should receive. The number of airlines and aircraft grew under deregulation without any consistent criteria in place to assess staffing levels to ensure that there were enough inspectors to meet the increasing demands. As a result, FAA inspectors faced growing work loads that became increasingly unmanageable.

Developing Adequate Staffing Standards: Initiatives Underway Yet Problems Remain

Realizing the problems inherent in its staffing situation, FAA has, in the past 2 years, begun to respond by issuing staffing standards and national guidelines for the minimum types and frequency of inspections. FAA's January 1985 staffing standards were regarded by the Associate Administrator for Aviation Standards as an interim measure because they were issued to meet immediate staffing needs for the fiscal year 1986 budget request, and did not include the work task analysis then underway as part of Project SAFE. They were, however, based on over 300 work elements previously identified, including inspections, certifications, and investigations, as well as allowances for indirect work such as travel, training, and technical assistance. Using these standards, a May 1985 study determined that FAA needed additional inspector positions. This study was FAA's primary justification for increasing its inspector work force by 365 positions—200 in fiscal year 1986 and 165 in fiscal year 1987.

Revised staffing standards developed by FAA in June 1986, for use in the fiscal year 1988 budget request, recognize that the minimum inspection

requirements in FAA's planning guidelines are not adequate to ensure necessary inspection coverage of all airlines. To compensate for this, the new staffing standards were based on inspection frequency standards that were developed judgmentally by the headquarters staff. The new staffing standards assume, for example, that FAA will conduct cockpit en route inspections on 25 percent of all Part 121 aircraft. However, this inspection rate is not directly related to actual staffing needs because it is not reflected in any planning guidance for developing annual inspection work plans.

Important Safety-Related Airline Characteristics Should Be Considered in Planning Airline Inspections

A vital ingredient in determining staffing needs is knowing how many inspections should be performed. FAA's October 1985 flight standards program guidelines provide direction and criteria to FAA regional and district managers for developing and executing annual work programs. The guidelines affirm that inspections—not certification of potential new airlines or certifying changes to existing airlines—are the inspectors' number one priority, and set nationwide minimum standards for the 41 types of critical airline inspections, usually one of each type of inspection per airline per year. While ensuring that each airline will receive a specified level of critical inspections yearly is an improvement over the previous hit-or-miss approach, these minimum standards still do not ensure airline compliance with appropriate FAA regulations or safe operating practices. This is because the minimum specified levels do not take into account the specific inspection needs of individual airlines based on certain airline characteristics that FAA has identified as being indicators of potential airline safety problems.

In a September 1985 letter to two House subcommittee chairmen, responding to questions they raised on the basis of our August 1985 report, the FAA Administrator identified the need to take into account the complexity and individual operating characteristics of each airline in determining the minimum necessary number and mix of inspections. He stated that characteristics such as an airline's fleet size and expansion rate, type and age of its aircraft, aircraft-use rates, and the airline's history of regulatory compliance should all be considered.

In addition, FAA's 1984 NATI study found that airlines having safety deficiencies usually had one or more of the following characteristics:

- a relatively large amount of contracted maintenance and/or training;
- inadequate internal audit procedures;

- a major change in operating scope, such as significant route expansion, fleet expansion, or in type of aircraft;
- financial, labor/management, or other corporate problems; and
- management skills and philosophy incompatible with sound safety practices.

None of these characteristics, however, are specifically addressed in FAA's new guidelines. FAA's NATI study showed that inconsistencies exist in the application of policies and practices within FAA and among airlines. As a result, inspectors have not had adequate information and guidance in selecting airlines for inspections. However, because the October 1985 guidelines do not include the safety-related characteristics, decisions on targeting inspection resources above the minimum standards are left to office manager and inspector judgment, without guidance from FAA headquarters. In the past, lack of guidance has led to inconsistent inspection practices throughout FAA.

National Inspection Plan Resources Should Be Factored Into FAA's Staffing Standards

To supplement its regular inspection program, FAA in December 1985 established the National Inspection Plan¹ to provide special, in-depth inspections of selected airlines. As mentioned, the plan calls for special teams to inspect targeted airlines according to detailed guidance prepared by FAA headquarters. FAA's goal, under this plan, is to eventually inspect every airline.

According to FAA, NATI and other special projects have shown that large teams can be an effective approach to performing inspection work: they permit more effective planning, more thorough inspections, and provide on-the-job training for younger staff. Teams can also provide a more objective review of an airline's compliance with regulations than is usually provided by inspectors who work with particular airlines on a continuing basis.

NATI also showed that teams can provide FAA with feedback on the adequacy of the inspections performed by the airlines' principal inspectors. FAA believes that the airline safety problems we and others found to be undetected or uncorrected for long periods would more likely be identified and resolved much sooner using this approach.

¹In fiscal year 1987 FAA renamed this program. It is now called the National Aviation Safety Inspection Program. In its comments on a draft of this report DOT refers to the National Inspection Plan by its new title.

Because the National Inspection Plan is new, some of its elements must still be developed. These include (1) criteria for selecting which airlines will be inspected first, (2) how district offices should factor the plan into their annual inspection program, and (3) the resources needed to implement the plan. According to the plan's manager, inspection teams require a relatively high level of FAA resources because of the number of people involved and the travel and temporary duty required.

For fiscal year 1986, FAA planned to inspect 44 airlines under the plan. About half of the 44 were selected for intensive inspection as a result of the Secretary's January 1986 directive to conduct special inspections of airlines operating under military charter. The remainder were picked by regional offices without any specific guidance from headquarters staff. The plan's manager intends to develop procedures for selecting airlines in the future.

Because of the impact of the plan's required resources on total staffing needs, FAA in May 1986 reduced to 17 the number of airlines to be inspected under the plan in fiscal year 1986. The reduction was made to "free up" inspector resources to meet the agency's minimum inspection requirements. Since then, FAA has taken an initial step to improve resource planning for the National Inspection Plan. FAA included in the June 1986 staffing standards rough estimates for the time needed to perform these inspections. These estimates, however, did not consider how inspections under the plan would fit into FAA's annual work program for the airlines selected, or how the plan's requirements would affect the staffing needs of the various regional and district offices providing staff for these inspections. As of October 1986, FAA had not decided how many airlines would be inspected under the plan during fiscal year 1987.

Conclusions and Recommendations to the Secretary of Transportation

• While an increase in inspector positions is apparently warranted, FAA does not at present know how many inspectors are needed or where they should be assigned. FAA does not now have agency-wide inspection standards that permit an accurate analysis of staffing needs; current inspection guidelines specify only minimum inspection requirements applicable to all airlines—typically one inspection of each type per year. As a result, FAA's current estimates of staffing needs are based on staff judgments that are not supported by guidance to inspectors about how many inspections should be performed. Current inspection guidance does not take into account an airline fleet's size, type and age, aircraft-use rates, and the airline's record of compliance. FAA should supplement

its across-the-board minimum inspection requirements with guidance that takes into account airline characteristics that affect safety compliance. These revised guidelines for the number and types of inspections should then be incorporated into FAA's estimated staffing needs.

FAA also needs to consider the impact of the supplemental National Inspection Plan on its inspector work force and its overall surveillance of individual airlines. In this regard, FAA—using experience to date—needs to develop criteria for targeting airlines for these special inspections, refine its estimates for staffing the plan, and incorporate such estimates in its staffing standards. Further, the relationship between the special, in-depth inspections and routine surveillance for the targeted airlines must be defined.

We recommend, therefore, that the Secretary of Transportation direct that the Administrator, FAA

- supplement FAA's minimum standards for the type and frequency of airline inspections to provide guidance that takes into account the need to target airlines displaying characteristics that may indicate safety deficiencies, such as a relatively large amount of contracted maintenance and/or training, inadequate internal management controls, or management experience and philosophy incompatible with sound safety practices. These minimum type and frequency standards should be incorporated into FAA's inspector staffing standards.
- develop criteria for targeting airlines for special inspections under the National Inspection Plan and define the relationship between the special inspections and routine surveillance.
- refine estimates for staffing the National Inspection Plan and incorporate these estimates in its inspector staffing standard.

Agency Comments

DOT generally concurs with our findings and recommendations, stating that each of the programs addressed by our recommendations is being revised or developed under the auspices of Project SAFE.

Concerning the National Inspection Plan, now referred to as the National Aviation Safety Inspection Program, DOT commented that the initial thrust of the program was to focus on Department of Defense contract carriers. Teams of inspectors performed in-depth inspections of maintenance and operations activities of these carriers, utilizing inspectors from many different disciplines and FAA regions. According to DOT, this

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concept allows for greater in-depth review, healthy exchange of information, and standardization of inspection work practices. DOT believes that the program has produced excellent results. While continuing to examine Department of Defense contract carriers, the program is being expanded to include inspections of other segments of the industry.

FAA Initiatives to Improve Inspector Hiring, Training, and Guidance

The planned increase in inspector positions, coupled with projected attrition, will require FAA to hire over 700 new inspectors in fiscal years 1986 and 1987. These new inspectors will comprise about 37 percent of FAA's inspector work force and, according to FAA, will require between 2 and 4 years of experience to become fully effective.

FAA is hiring these new inspectors before it has resolved problems concerning their hiring and training and before it has developed adequate guidance about how inspections should be conducted. Although FAA has begun efforts to resolve problems in each of these areas, it will be several years before these efforts are completed, particularly the revision of the FARS.

Improved Hiring Practices Will Not Be in Place Until 1988 or Later

Both the NATI task force and Project SAFE noted shortcomings in FAA's hiring practices for inspectors. According to the task force report,

"FAA's present hiring practices are not in all cases bringing into the organization the people with the experience and characteristics to develop into competent inspectors."

The report points out that FAA has been hiring younger applicants who, although possessing more academic education, have less aviation experience and skill than those hired in the past. The report concluded that proper screening of applicants is essential because new inspectors who are placed in responsible positions may not have the background necessary to make appropriate safety and compliance decisions.

More than half of a sample of 76 experienced inspectors interviewed in 1984 as part of Project SAFE said that new inspectors—both from outside the agency and internal transfers—were not qualified for their jobs. According to the Project SAFE report,

"New aviation safety inspectors should meet realistic minimum qualifications (those considered credible to the aviation industry) before employment by the FAA."

FAA's hiring difficulties have been compounded by private industry's demands for personnel. For example, FAA has had difficulty hiring inspectors qualified in avionics, a rapidly expanding technical specialty with heavy industrial demands for personnel. FAA's difficulty in hiring avionics inspectors is reflected in the low number of such inspections

performed during fiscal year 1984.¹ In FAA's Puerto Rico district office, for example, no avionics inspections were performed during 1984 because the avionics inspector position was vacant. According to the chief of FAA's avionics branch, FAA continues to have difficulty hiring qualified avionics inspectors.

FAA is taking several steps to strengthen its hiring practices. It has completed an analysis of inspection functions in order to identify options for how work can best be performed; this will be followed by the development of new inspector position descriptions. Tasks defined in the analysis developed by the Allen Corporation as part of Project SAFE will be incorporated into the new position descriptions, which will serve as the basis for specifying qualifications inspectors must possess when they are hired. However, FAA does not expect to complete studies and finish developing new qualifications until fiscal year 1988, and is uncertain what effect new qualification requirements will have on its ability to hire qualified inspectors. In the meantime, FAA expects to hire more than 700 new inspectors.

FAA is also taking other steps to strengthen its hiring procedures. It has developed and issued a structured guide for regional office staff to follow in interviewing applicants. To promote more consistency in its hiring practices, FAA is also developing screening tests based on current position descriptions and qualifications requirements and plans to revise job announcements. FAA had originally planned to complete these tasks prior to the start of fiscal year 1987, but completion is now scheduled for April 1987 because of the need to perform additional studies.

FAA Must Ensure That Inspectors Receive Necessary Training; Course Quality Must Also Be Improved

Problems in training quality and in FAA's ability to provide inspectors with necessary courses have been identified by FAA studies, NTSB investigations, and our review. According to NATI inspection teams, the lack of inspector training and experience has contributed to incidents of ineffective surveillance and airline safety problems. The task force found that many inspectors were working with unfamiliar concepts and had not been trained to resolve unsatisfactory inspection results.

Project SAFE concluded that FAA was not providing inspectors with necessary training on subjects important to performing their jobs. The study reported, for example, that insufficient training in evaluating the growing practice of contracted maintenance hampers FAA's attempts to

¹GAO/RCED-85-157, August 2, 1985.

monitor airline maintenance practices. Training problems were particularly evident in areas of recent technological development, such as advanced composite materials used by aircraft manufacturers, new navigation systems, and other computerized systems. According to the study, the inability of FAA inspectors to keep abreast of current technology reduces the effectiveness of their inspections and directly affects the credibility of both the inspectors themselves and FAA. A special FAA study of Provincetown-Boston Airlines (PBA), completed in 1985 after the airline's three fatal 1984 accidents, concluded that FAA did not adequately train its inspectors in basic investigative and surveillance techniques.²

In addition to noting that FAA's training courses were inadequate, studies showed that inspectors were not receiving training when they needed it. Project SAFE found that many newly-hired inspectors had to wait months before attending indoctrination courses, limiting their usefulness in the interim. More experienced inspectors were not receiving training when they needed it. The Associate Administrator for Aviation Standards does not know how large the training backlog for inspectors is.

On the basis of its accident investigations, NTSB also cited examples of inadequately trained FAA inspectors. For example, in its investigation of the October 1983 crash of an Air Illinois aircraft, NTSB found that the inspector temporarily assigned to perform avionics inspections was neither specifically trained nor qualified to perform such inspections. The temporary inspector made no avionics inspections. NTSB also found that the principal operations inspector for Air Illinois was assigned to the airline in 1980 but had not received any retraining since last serving as a principal inspector—11 years earlier.

We also found instances in which FAA inspectors were assigned to airlines without having received all mandatory or recommended training that FAA views as necessary to develop required skills. Our analysis of training records for 17 maintenance and avionics inspectors in two Northwest Mountain Region district offices showed that none had received all of the training designated by FAA as mandatory for their assigned responsibilities. According to the assistant manager of the Flight Standards Division in FAA's Northwest Mountain Region, there is a shortage of fully trained and qualified inspectors for certain types of aircraft operated by some airlines. As a result, he said, inspectors are assigned to airlines even though they may not be fully trained to FAA

²See appendix II for a full discussion of problems found at PBA.

standards. He added that inspectors who were "nominated" for training often did not receive it because of funding limitations. We cross-checked our information with the NATI study and found that several of the airline inspections conducted by the 17 inspectors were inadequate—both in terms of quantity and quality.

We found other examples of inadequately trained inspectors not receiving mandatory or recommended training. The principal operations, maintenance, and avionics inspectors in FAA's Northwest Mountain Region assigned to Rocky Mountain Airways at the time of our review had not received all FAA mandated or recommended training courses. As of January 1986 each inspector had not attended at least three of these training courses, involving such subject areas as enforcement procedures and aircraft systems. At another airline in the same region, the principal maintenance inspector assigned to the airline for 16 years had not received five required technical training courses on the type of aircraft he was assigned to inspect.

An FAA study also found that inspectors did not receive needed training in FAA's Southern Region. The principal operations and maintenance inspectors assigned to PBA in 1984-85 had not received some of the recommended training courses, including one on compliance and enforcement.

On-The-Job Training

On-the-job training (OJT), considered by FAA to be an integral part of an inspector's development, is used to assist an inspector to more fully develop the skills learned in FAA training courses. Project SAFE found, however, that OJT was ineffective in many district offices. The study found that in most offices, OJT often amounted to little more than unsupervised reading of regulations and handbooks. Project SAFE pointed out that OJT requires that an experienced inspector spend a considerable amount of time with the trainee, and that the heavy work load for experienced inspectors in most district offices precluded this. Moreover, FAA has a number of inspectors who, not having received all the mandatory or recommended training themselves, may not be in a position to adequately train new inspectors.

Project SAFE found that many FAA inspectors were disappointed in the OJT they had received. Maintenance and avionics inspectors, in particular, stated that OJT was critical to their competence, but, according to many, the OJT they received did not adequately develop needed skills. A

1984 FAA Southern Region study also determined that district office OJT had been inadequate.

Some FAA Training Initiatives Will Not Be Available When They Could Do the Most Good

As a result of Project SAFE, FAA began a series of studies intended to develop new overall training strategies. It is already taking actions that it hopes will improve the training of new inspectors, strengthen OJT, and deal with other specific training needs. The completion dates for some of the actions, however, are fiscal year 1988 and beyond—long after many new inspectors will have been hired, trained, and assigned to district offices. Further, FAA officials do not know how long it will take to eliminate the training backlog.

Between August 1985 and January 1986, FAA revised its initial training program for inspectors by updating existing courses, eliminating overlaps in course content, and establishing a new orientation course. FAA then condensed the orientation and other training new inspectors formerly received during their first 2 to 3 years into a block of indoctrination training lasting from 7 to 10 weeks and to be given immediately or soon after employment. According to the manager of the Aviation Standards Branch at the FAA Training Academy, during fiscal year 1986, new inspectors attended the indoctrination course from 2 to 4 months after entering FAA, depending on their inspector classification. However, the course manager anticipates longer waiting periods during the first part of fiscal year 1987 due to backlogs created by the high hiring rate at the end of fiscal year 1986. Also, by December 1986, FAA planned to implement an automated program to plan and monitor OJT.

FAA has also taken steps to meet some immediate training needs of its more experienced inspectors. In 1985 it conducted a series of 4-day refresher courses for maintenance and avionics inspectors. The courses addressed such tasks as records review, reliability programs, and contracted maintenance, in an effort to instruct and promote standardization of inspections.

FAA also intends to give all its principal operations inspectors a new training course to make them (1) aware of the need for standard application of inspection requirements, (2) familiar with the latest techniques and procedures, and (3) more able to deal with airlines having compliance problems. Although FAA's Administrator testified before the Congress in 1985 that such a course was needed to address these weaknesses and FAA had developed a prototype, the course has not been scheduled to begin until early 1987 because of the priority given to

revising the training program for new inspectors and the lack of qualified inspectors to serve as instructors. FAA still plans, however, to have all its principal operations inspectors attend the course by September 1989.

In two projects relying heavily on contractors, FAA is studying how to improve inspector training courses and the management of training services. The Allen Corporation is being used to identify weaknesses in inspector training and to develop better training courses. Under current plans, new courses will be developed by January 1988. A separate study, being carried out under contract with Advanced Technology Incorporated, examined weaknesses in identifying training needs and scheduling staff for training for all of FAA. A follow-up study focusing specifically on managing air carrier inspector training has been delayed because of a lack of funds. FAA plans to make needed changes in the management of its inspector training, particularly in the areas of scheduling and budgeting for training, by January 1988.

Inadequate Guidance to Inspectors Hinders Enforcement of FAA Regulations

Shortfalls in inspector training and experience can be offset, in part, by clear and current guidance to facilitate consistent interpretation and application of safety regulations. However, guidance provided to inspectors has lacked the clarity and specificity needed to provide for adequate standardization, according to the NATI task force. This has resulted in inspectors sometimes making varying interpretations of the same condition or regulation and has accounted for wide variation in the degree to which safety standards are applied during inspections. Moreover, federal aviation regulations themselves—the cornerstone of the nation's aviation system—are not being updated quickly enough to keep pace with changes in the aviation industry.

Inadequate FAA Guidance Has Affected Inspection Quality

FAA studies have identified the need to review and update inspector guidance. Such guidance is provided to inspectors through various documents, primarily handbooks. The 1984 NATI task force report found that inspector guidance lacked the clarity and specificity needed to ensure consistent inspections and that district offices were therefore devising solutions in a piecemeal fashion. The task force reported that

“policy and procedure as issued by headquarters appear to be diluted and reinterpreted at all levels. This has aggravated existing problems and caused others, including variations in the quality of inspections.”

During NATI, FAA found that FAA offices had differing ideas about the acceptable approaches to regulatory requirements. NATI participants saw nonstandard application of policies and practices, particularly in the areas of maintenance programs, use of flight simulators, and training activities.

Project SAFE confirmed the need for better inspector guidance. The study found that FAA guidance was inadequate and incomplete, often scattered across many documents—handbooks, advisory circulars, and letters—and was subject to personal interpretation. The study reported, for example, that FAA inspectors lacked adequate guidance on how to assess contractual arrangements among airlines and other entities, under which such services as maintenance and training are provided under contract by another airline or company. According to an Allen Corporation study during Project SAFE, inspectors saw the lack of standardized methods and procedures as one of FAA's greatest problems.

Initiatives to Improve Guidance

FAA has initiated action to resolve deficiencies in its guidance to inspectors. In October 1985 it issued an order establishing design and content specifications for the format, presentation, and development of inspectors' handbooks. It also established a handbook review board to ensure consistent development.

In November 1985 FAA formed a task force to revise inspector handbooks. The task force is now preparing drafts of three main handbooks—an airworthiness (avionics and maintenance) handbook and two operations handbooks, one for large, Part 121 aircraft and one for general aviation, including Part 135 aircraft. To provide expert knowledge on specific handbook issues, regional and district office inspectors will assist the task force. FAA plans to complete publication of the handbooks by May 1988, a slippage of 10 months from a previous planning target date of July 1987 due to delays in preparation.

Revision of Regulations Will Delay Completion of Revised Inspector Guidance

One major impediment to improving guidance to FAA inspectors is the need to incorporate planned regulatory revisions into inspector guidance documents. The FARs, established by FAA, set minimum acceptable standards for aviation safety. Over the years these have not kept pace with technological, management, and structural changes taking place in the aviation industry.

Prior to Project SAFE, FAA had identified 61 regulations needing revision, 26 of which were assigned a high priority for staff resources and given target dates for completion. The 26 included regulations requiring aircraft to carry low-level wind shear-detection systems. The remaining 35, identified as being not as critical, were not being addressed as intensively due to staffing shortages, according to FAA. Project SAFE identified 50 recommendations for improving regulations in addition to the 61 described above, thus adding to FAA's backlog of regulatory revisions.

According to the FAA headquarters official responsible for coordinating regulatory revisions, FAA's planned rewriting of Parts 121 and 135 regulations will be a major undertaking, requiring years of intensive effort. He could not be more precise in projecting a completion date, but stated that additional staffing would help expedite the process.

Conclusions

FAA expects to hire over 700 new inspectors in fiscal years 1986 and 1987. Although the need for new inspectors is apparently warranted, FAA is not well prepared to absorb an increase in its inspector work force. In fact, it will be at least 2 years before all the needed improvements in inspector hiring, training, and guidance are in place, and completion dates for important regulatory revisions have not yet been established. As a result, FAA will reach its fiscal year 1987 staffing goal of 1,975 on paper much sooner than it will in practice. Also, new inspectors will not be immediately capable of fully performing all inspection work and will require more time to perform inspections and receive needed training. The number of new inspectors will place added demands on experienced inspectors' time to train and supervise them.

FAA's problems in these areas are deep-seated, interrelated, and complicated. Although completion of its initiatives to address these problems should improve its inspector hiring, training, and guidance, FAA management recognizes that strong management vigilance will be required to ensure that the initiatives progress as scheduled and that needed program changes are implemented as soon as possible.

Case Study: Flight Trails d/b/a Air Resorts¹

FAA inspections of Air Resorts during 1983-84 uncovered several serious deficiencies, some remaining uncorrected for up to 8 months due to inadequate follow-up of noted problems. This, in turn, stemmed from inadequate training of inspectors and unreasonably heavy inspector work loads. In its investigative report of a fire aboard an Air Resorts charter, NTSB cites indications of inadequate routine surveillance of Air Resorts by FAA.

Background

Air Resorts, based in Carlsbad, California, is a charter air service that has operated some scheduled flights. It also contracts with the Military Airlift Command (MAC) to transport personnel from bases in California to naval facilities in the Channel Islands off the California coast. Air Resorts began service in 1981 with three aircraft—one Convair and two DC-3s—and by 1983 had expanded its fleet to 16 propeller-driven aircraft—14 Convair 240/340/440 and 2 DC-3 aircraft.

The airline received its air carrier operating certificate from FAA on September 16, 1981, permitting it to operate aircraft under Part 121 (supplemental) of the FARs (used for airlines with no fixed schedules). On January 15, 1983, Air Resorts' certificate was extended to include the operation of aircraft under Part 121 (domestic and flag), allowing it to operate on a fixed schedule anywhere in the United States and between the U.S. and overseas destinations. FAA's San Diego FSDO is responsible for surveillance of Air Resorts.

Airline Operating Problems

In April 1983, shortly after Air Resorts was certified to operate aircraft under Part 121 (domestic and flag) of the FARs, FAA inspected the airline. According to the San Diego FSDO manager, he requested that the Western Pacific Region provide an experienced air carrier inspector to review Air Resorts' operations because the airline had expanded rapidly and the San Diego FSDO lacked sufficient staff to undertake the inspection.

The inspection performed by an experienced air carrier inspector from the Los Angeles FSDO found that as a result of Air Resorts' rapid growth, mass confusion existed in updating operations specifications, manuals, and organizational structure. Air Resorts needed to update its policies, procedures, instructions, and records to comply with Part 121 regulations. The inspection report concluded that some Air Resorts personnel

¹See chapter 2 for criteria used in selecting airlines for these case studies.

were not well trained or experienced, and that many management changes had disrupted the operation.

A follow-up FAA inspection by the same inspector in mid-July 1983 noted that approximately 80 percent of the "needed and agreed-to changes" resulting from the April inspection had been satisfactorily completed and that the remaining 20 percent were being addressed.

In March 1984 Air Resorts was inspected as part of the NATI program; serious discrepancies were discovered in aircraft maintenance manuals, procedures, and records. On the basis of results of the first NATI inspection, Air Resorts underwent a second, more in-depth NATI inspection.

The second inspection uncovered a number of problems with the airline's operation, including noncompliance in the area of FAA airworthiness directives, minimum equipment lists, required inspection items, test equipment, operations specifications, parts inventory control, and adherence to maintenance manual procedures. (A number of these same discrepancies had been identified a year earlier in the April 1983 inspection.) After FAA briefed the airline on the results of the NATI inspections, Air Resorts—on May 1, 1984—voluntarily grounded 12 of its 16 aircraft. Air Resorts began operating these aircraft over the next month as it addressed each identified discrepancy.

On June 13, 1984, FAA formally notified Air Resorts of the discrepancies identified in the NATI inspections. On June 25 Air Resorts responded that it had addressed each discrepancy and that corrections had been made. In August FAA concluded that legal enforcement sanctions for violation of federal regulations were not warranted. FAA then issued a letter of correction, a lesser enforcement action.

On December 16, 1984, an Air Resorts charter carrying 34 passengers and a crew of 5 experienced an engine fire that forced the plane into an emergency landing at Jasper, Alabama. Both right main gear tires exploded upon landing and the pilot lost control, causing the plane to run off the runway and through a drainage ditch. The plane was destroyed by fire. One person was seriously hurt; three others suffered minor injuries.

An on-site investigation of the accident was begun the following day by FAA and NTSB. The results raised serious questions about the airworthiness (mechanical and structural integrity) of the aircraft and the qualifications of the crew. NTSB determined the probable causes of the accident to be engine failure, engine fire, and landing gear failure.

In its October 25, 1985, report, NTSB stated that during the course of its investigation, sworn testimony from the flight crew, the chief pilot, and the vice president for operations indicated that immediate corrective actions should be taken in certain areas of the airline's operation. Because of Air Resorts' initiative in taking corrective action and the immediate review of its operation undertaken by FAA, NTSB did not propose any safety recommendations. However, NTSB did state that the existence of discrepancies prior to the accident could indicate inadequate routine FAA surveillance, which probably should have detected and corrected such problems.

As a result of the accident, FAA conducted a special investigation to determine Air Resorts' compliance with regulations. That inspection, completed in December 1984, showed that a number of the discrepancies identified during the NATI inspections remained uncorrected—some 8 months later. These deficiencies involved calibration of equipment, the method of determining compliance with airworthiness directives, minimum equipment list requirements, required inspection items, and control of parts inventory.

On December 18—for the second time in under 8 months—the airline voluntarily grounded its aircraft. Three days later, FAA formally suspended Air Resorts' certificate to operate; it lifted the suspension 13 days later, on January 3, 1985. The chief of FAA's investigation team explained that the order was lifted because Air Resorts had corrected some of the discrepancies and because those remaining were not serious enough to warrant the continued grounding of the airline.

FAA subsequently reviewed the maintenance records of the destroyed aircraft. On May 15, 1985, FAA's Birmingham, Alabama, district office informed Air Resorts of discrepancies in aircraft maintenance and record keeping. On November 22, 1985, the regional counsel notified Air Resorts' director of maintenance that the investigation showed him to have intentionally falsified aircraft maintenance records and that, consequently, FAA was contemplating revoking his mechanic's certificate.

On December 2, 1985, the regional counsel informed Air Resorts that the investigation revealed violations of 11 FAA regulations, including operating aircraft in an unsafe condition, operating without complying with airworthiness directives, operating aircraft without complying with the appropriate inspection requirements, and failing to maintain a listing of persons authorized to sign required inspection items. Air Resorts took exception to ten of the violations, accepting only the one citing the director of maintenance as having inspected an item that he actually did not inspect.

The regional counsel proposed a penalty of \$30,000. As of February 1987 both cases—the mechanic's certification and the penalty—were still unresolved.

FAA Surveillance Problems

Inadequate Initial Certification

Air Resorts was certified to operate Part 121 (domestic and flag) aircraft in January 1983. An FAA inspection 3 months later revealed discrepancies in its basic documents and procedures for operating such aircraft.

In reviewing the inspection report, the acting manager of FAA's Western Pacific Flight Standards Division found that some of the deficiencies concerned inadequate operations specifications, a poor general maintenance manual, and insufficient personnel training.

Undetected Deficiencies

In the 5-month period before the NATI inspection that found significant problems at Air Resorts that had not been identified by routine FAA surveillance, 38 routine airworthiness inspections had been performed. Of these, five were not marked as either satisfactory or unsatisfactory. An analysis of the remaining 33 shows that 32 were satisfactory while 1 was classified as unsatisfactory. Seven of the 38 inspections did, however, call for some corrective action by the airline.

An analysis of the 26 similar inspections performed by the NATI team revealed that 25 of the 26 were unsatisfactory and required further corrective action by Air Resorts. The principal maintenance inspector (PMI)

was reassigned and demoted to assistant PMI on the basis of the results of the NATI inspection.

Inappropriate Response to Inspection Deficiencies

As mentioned, FAA on August 8, 1984, issued a letter of correction—an administrative action indicating that it had approved actual or planned corrective action and that no significant unsafe conditions existed—in response to the 23 deficiencies identified by NATI and that FAA warned in June might constitute violations of FAA regulations. In view of the evidence, FAA's taking administrative action rather than applying civil penalties may have been inappropriate. FAA Order 1000.90 states that an administrative action can be taken only if no significant unsafe condition exists. According to experienced FAA inspectors, the 23 discrepancies identified constituted a significant unsafe condition. In fact, the NATI team unanimously agreed that Air Resorts should cease operation because of unsafe conditions.

A further review by a task force of experts also indicated that conditions were not safe. Hired by FAA to evaluate NATI reports, the experts agreed that an unsafe condition existed and that Air Resorts should cease operations until necessary corrections were made. Because these discrepancies clearly affected aircraft safety, FAA's administrative action may have been improper.

Inadequate Verification of Aircraft Airworthiness

After the NATI team on April 30, 1984, recommended that Air Resorts cease operations immediately, the airline on May 1 told FAA that it had grounded its regular fleet, yet requested permission to continue to serve its MAC contracts with four of its aircraft. Air Resorts stated that it had fully inspected these aircraft and that it would guarantee that the aircraft would pass a safety inspection. FAA approved the request. According to the San Diego office manager, he allowed Air Resorts to operate the four aircraft because FAA had planned to inspect the aircraft immediately. The NATI team leader stated that he did not agree with allowing the four aircraft to fly, but had no authority to override the office manager. During the next 30 days, Air Resorts carried 3,326 personnel under its contract with MAC.

An analysis of FAA inspection reports indicates that FAA made five inspections of Air Resorts during the next 30 days. On May 2, 1984, FAA performed a spot check on one of the four aircraft operating under the Navy contract, finding an improper cargo tie-down. The inspection did not address the deficiencies identified in NATI.

On May 5 the PMI gave the Air Resorts chief inspector a master listing of airworthiness directives for the Convair aircraft operated by the airline—because, he stated, Air Resorts did not have one of its own. Without a master listing, a determination of compliance with airworthiness directives cannot be made.

On May 7 FAA performed a spot inspection of a second aircraft being operated under the Navy contract, finding a minor deficiency that was immediately corrected.

FAA inspected the airline's aircraft records on May 16. The inspection included two of the four operating aircraft; the inspector found aircraft records to be incomplete. Another inspection was performed on June 1, 1984. The inspector determined this time that the airworthiness directives on one of the four aircraft were now complete. However, he also found that another of the four operating aircraft had 30 discrepancies in its component card history file, limiting both the airline's and FAA's ability to determine the airworthiness of the aircraft.

A comparison of the discrepancies found under NATI and those identified in the special inspection in December shows that a number continued to exist for almost 8 months. These discrepancies concerned systemic items such as manuals, policy, and procedures, rather than problems that might have recurred after being corrected. This points to inadequate follow-up by FAA.

Inadequate Qualifications and Training of Inspectors

At the time that Air Resorts received its Part 121 (domestic and flag) operating certificate, the PMI and his supervisor, the airworthiness chief, had not completed training that FAA itself considers essential to carrying out the functions of these positions. FAA Order 8000.52, dated January 5, 1982, states that the air carrier airworthiness indoctrination course is mandatory for effective utilization of airworthiness inspectors. The inspector assigned as acting PMI to Air Resorts in mid-1982 and promoted to PMI in March 1983 did not receive the mandatory air carrier indoctrination until November 1983—more than a year after his initial assignment to Air Resorts. His supervisor, the unit chief, was assigned to the airline in May 1981 but did not receive his air carrier indoctrination until July 1983. The April 1983 FAA inspection report concluded that some Air Resorts and FAA personnel were not well trained or experienced.

The FAA unit supervisor stated that the PMI was assigned to Air Resorts because he was the only inspector available. The only other PMI in the FAA district office already had an excessive work load. The supervisor also stated that the staffing level was more than 50 percent below what was called for by FAA staffing standards.

Current Status

The San Diego FSDO conducted an inspection of Air Resorts April 7-11, 1986. The inspection revealed no discrepancies or deficiencies in Air Resorts' operational or maintenance programs.

On June 18, 1986, FAA conducted an inspection of Air Resorts' sub-base at Oxnard, California. Following an inspection of evacuation slides in several Air Resorts aircraft, FAA informed the airline of its concern regarding the condition of the slides. On July 28 Air Resorts replied that it had inspected all of its evacuation slides and had found all to be in compliance with regulations. On August 14 FAA reinspected the evacuation slide on one aircraft and found that portions of the slide had holes in the loop fabric. The slide was subsequently sent to an outside contractor for evaluation and repair. The contractor found the slide to be unairworthy and beyond repair, finding that in addition to the holes, the fabric had deteriorated. During the month of August, the aircraft was operated on at least 17 flights with a defective slide.

In a subsequent letter to Air Resorts regarding these slides, FAA stated that the airline failed to have an inspection program that ensured that each aircraft released to service was airworthy and had been properly maintained.

Also on June 18, FAA conducted an inspection of an aircraft used to transport U.S. Navy personnel. FAA found that the aircraft, although found fit for service by Air Resorts, had the following unsafe conditions:

- The left aileron servo-trim tab (on the trailing edge of the wing) was completely cracked through the upper and lower surfaces of the tab at a point near the center tab hinge fitting (part of the aileron).
- The three tab hinge fittings showed evidence of severe corrosion.
- The right aileron servo-trim tab and three associated tab hinge fittings also showed evidence of corrosion.
- Also, several unpainted areas of the wing surfaces showed evidence of moderate to heavy corrosion.

The defective parts were removed the same day. During removal of the left aileron servo-trim tab, the center tab hinge fitting was found to be so completely corroded that it broke in two with finger pressure.

The next day FAA conducted another inspection of an Air Resorts aircraft, which revealed that the cargo was not properly restrained and that the restraining belts that were used did not meet FAA standards. The aircraft was therefore not airworthy when dispatched for operations in this condition. Further, an interview with the flight crew indicated that they were not informed about procedures and techniques in securing cargo.

On October 24, 1986, in a letter to Air Resorts, the FAA Regional Counsel proposed a penalty of \$22,000 for the above violations. As of December 1986, no final action had been taken.

Case Study: Provincetown-Boston Airlines, Inc.

Provincetown-Boston Airlines (PBA) is one of the nation's largest regional airlines, serving New England and the South. FAA inspections of PBA have detected deficiencies (some recurrent), several of which went uncorrected for long periods of time. Moreover, FAA's inspections did not reveal certain problems which—when eventually identified—were significant enough to result in PBA's decertification.

Background

PBA is a commercial airline with headquarters in Naples, Florida. It originally operated a shuttle service between Boston and Provincetown, Massachusetts, but expanded to the South Florida area in the late 1950s. In the early 1980s PBA took advantage of the new markets emerging due to deregulation; its size doubled between 1981 and 1984. PBA operates aircraft under both Part 121 and 135 regulations. As of December 1986, PBA was operating 62 aircraft. FAA's Miami District Office holds PBA's operating certificate and is responsible for oversight of the airline.

Airline Operating Problems

Since 1978, FAA inspections of PBA have revealed numerous deficiencies. FAA revoked PBA's certificate in November 1984. PBA was issued a new Part 135 certificate (for operating small aircraft) approximately 2 weeks following revocation. In May 1985 FAA reauthorized PBA to operate aircraft under Part 121 regulations. In 1984 PBA had three fatal accidents—two prior to certificate revocation and one shortly following recertification of its Part 135 operations. In these three accidents PBA was not found in violation of the FARs.

During a May 1981 inspection of PBA by the Southern Region's Aircraft Quality Assurance Field Office (AQAFO), FAA found many deficiencies and violations of its standards. The AQAFO inspection report noted outdated and incorrect operations and maintenance manuals, poor record keeping, undocumented operating experience, and inaccurate load manifests. FAA recommended that PBA revise its manuals, reissue instructions to flight and ground personnel, and train PBA agents in weight and balance requirements. According to an internal FAA case study of PBA, similar deficiencies had been discovered as early as 1978, during the Southern Region's safety and compliance inspection.

An August 1983 AQAFO inspection of PBA disclosed several areas of non-compliance, including crew member training, outdated or erroneous operations and maintenance manuals, and undocumented operating experience. FAA conducted a follow-up inspection in October 1983 and concluded that PBA had satisfactorily responded to the AQAFO findings.

During the August 1983 AQAFO inspection, a former PBA pilot alleged that PBA was involved in illegal activities, including falsifying flight records, allowing pilots to exceed flight time limitations, and operating unsafe aircraft. The AQAFO member advised the principal operations inspector (POI) of the allegations.

In December 1983 FAA's South Florida Flight Standards District Office received a letter from the Aviation Safety Institute concerning additional allegations. Neither a February 1984 special inspection, which emphasized the areas identified in the letter, nor the March 1984 National Air Transportation Inspection, however, disclosed any significant discrepancies.

In June 1984 a PBA Cessna 402 crashed in Boston, killing one person. The accident was attributed to pilot error, according to the accident report.

According to an FAA internal study, base inspections of PBA's Naples, Florida, and Hyannis, Massachusetts, facilities in August and September, 1984, respectively, surfaced several areas of noncompliance, many of which had been noted in previous inspections. In addition, evidence from the Cessna 402 wreckage indicated that PBA pilots were not, as required, logging aircraft discrepancies.

PBA suffered a second fatal crash in September when a Cessna 402 crashed on takeoff from the Naples airport after having been improperly serviced with the wrong fuel.

In October FAA took depositions from several past and present PBA employees, who corroborated the former pilot's allegations. As a result, the Southern Region's Flight Standards Division, regional counsel, and South Florida FSDO determined that another special investigation was warranted.

FAA's special investigation of PBA, which concentrated on operations, ultimately led to the revocation of PBA's certificate. FAA's November 10, 1984, Emergency Order of Revocation stated that PBA had, among other violations, (1) intentionally filed false statements, (2) administered invalid pilot proficiency checks, (3) operated unsafe aircraft, (4) administered deficient training programs, and (5) violated maintenance and inspection standards.

PBA was permitted to resume its Part 135 operations about 2 weeks after the revocation, however, following the resignation of key PBA management and concerted efforts by both the airline and FAA to bring it into compliance. By November 25, 1984, PBA was operating its smaller planes on more limited routes.

On December 6, 1984, a PBA flight crashed, killing all 13 passengers and crew members. In its preliminary report, NTSB attributed the crash to faulty tail construction.

FAA Surveillance Problems

On the basis of our review of FAA files (including inspection reports), discussions with FAA personnel, and FAA's December 1984 case study concerning PBA, we conclude that FAA's monitoring of PBA was inadequate. For example, FAA did not consistently follow up on the results of its inspections of PBA and allowed some deficiencies to remain uncorrected for considerable periods of time. In addition, FAA did not always detect significant violations of FAA standards by PBA. Contributing factors appear to be insufficient inspector training, lack of guidance concerning FAA inspection follow-up, and heavy inspector work loads.

Undetected Deficiencies

Neither FAA's special nor routine inspections identified long-standing violations at PBA. Also, FAA did not confirm allegations of fraud at PBA for over a year after they were initially made by a former PBA pilot. FAA filed notices of violation against PBA prior to revoking its certificate to operate, but these notices were not related to the violations for which PBA's certificate was eventually revoked.

FAA took approximately 15 months (August 1983 to November 1984) to confirm the former PBA pilot's charge that the airline was administering false proficiency and competency checks and operating unsafe aircraft, in addition to violating other FAA standards. From August 1983, when the AQAFO team turned over the pilot's allegations to the POI, to January 1984, when additional allegations surfaced, FAA apparently took no action concerning the allegations. As a result of a February inspection emphasizing areas noted in the allegations, five minor items were identified for follow-up. The March 1984 NATI inspection likewise resulted in no major findings of noncompliance.

Although inspections of PBA in August and September identified several areas of noncompliance, it was not until late September and October, when past and present PBA employees provided information to FAA

investigators, that FAA determined that PBA was possibly involved in fraudulent activities. In November 1984 FAA determined that PBA made false statements on its records and violated maintenance and inspection standards.

Inadequate FAA Follow-Up

We believe that the high frequency with which FAA detected certain deficiencies indicates a lack of effective follow-up to assure corrective action. According to FAA's case study, some of PBA's problems can be traced back to 1978. Between 1978 and 1983, routine and special inspections identified repeated deficiencies in certain areas, including

- load manifests (five inspections),
- training programs (four inspections),
- pilot records (five inspections), and
- maintenance manual requirements (three inspections).

FAA's study concluded that it might have taken stronger enforcement action against PBA had it tracked trends in its inspection results.

Training and Guidance

The training and guidance provided by FAA to its inspectors responsible for PBA was inadequate. For example:

- Not all inspectors received such courses as accident investigation and compliance and enforcement.
- FAA training did not equip inspectors to detect fraudulent activities.
- FAA has not established tracking procedures to ensure correction of identified problems.
- FAA guidance lacks criteria for judging the adequacy of airline record-keeping systems, upon which many inspections are based.

According to FAA Orders 8400.7 and 8000.52 (for operations and maintenance inspectors, respectively), inspector training for the first year must include a basic indoctrination course. In addition, courses such as compliance and enforcement and aircraft accident investigation, focusing on specific job functions, are considered "highly desirable." According to FAA training requirements, without these courses, inspector skills cannot be developed to required levels.

While all four inspectors had taken the mandatory basic indoctrination course, only one had received all of the recommended courses listed in the FAA training profiles. Neither of the POIs responsible for PBA had

received the compliance and enforcement course; in fact, the POI responsible for PBA until June 1984 did not receive any courses other than basic indoctrination. The current PMI had not received a training course in aircraft accident investigation.

In addition, as mentioned, FAA inspectors are not trained to detect certain violations, including fraudulent activities. According to FAA's case study, the Miami FSDO office manager, and the assistant manager of the Southern Region's Flight Standards Division, FAA's normal and routine inspections of PBA lacked comprehensiveness. According to the study, FAA inspections of PBA tended to emphasize paperwork and recording problems rather than PBA's compliance with FAA regulations. The study recommended that inspectors be trained in basic investigation and surveillance techniques. According to the FSDO manager, FAA would not have identified fraudulent activities without the assistance of PBA's own employees.

FAA lacks guidance and procedures to ensure airline compliance once problems are detected. Because FAA had no procedures for tracking inspection results, for instance, recurring problems at PBA went uncorrected for long periods of time.

FAA's study also indicated that its guidance does not include criteria for adequate airline record-keeping systems. According to the study, PBA's records were insufficiently detailed to show compliance with FAA operating rules. The study also stated that FAA's record-keeping requirements are confusing for those airlines that operate aircraft under both Parts 121 and 135, as did PBA. The lack of criteria for record keeping was also evidenced when FAA could not verify the accuracy of load manifests because PBA shipped them to another location and did not maintain duplicates at the stations where flights had been released.

The case study recommended that FAA issue guidance containing criteria for adequate record-keeping systems and that the regulatory requirements for Parts 121 and 135 be reviewed for possible standardization.

Work Load

FAA's case study noted that inspector work loads did not change commensurately with changes in PBA's size and complexity.

From 1980 to 1984, PBA experienced rapid growth. Within that time period, PBA became the nation's largest regional airline, operating up to eight types of aircraft.

Due to staffing constraints, FAA responded to these major changes in PBA's operations by delegating more and more authority to the airline, such as pilot examination authority. As a result, PBA's employees were monitoring its own pilots' qualifications and administering proficiency checks to them. The agency granted such authorization because of the large pilot population, which required constant proficiency checks, and because of geographic considerations.

Relatedly, the case study noted that an airline of PBA's size and complexity would normally warrant principal inspectors (with no additional responsibilities), assistant principals, airman certification inspectors (to assist the POI), and clerical help. However, both the POI and PMI responsible for PBA also handled several other airlines, as well as assisting certificate applicants. The POI also had airman certification duties. The two current inspectors told us that in fiscal year 1984, their work was more than they could properly handle. The case study recommended that FAA develop criteria defining requirements for full-time principal inspectors, and evaluate and update inspector classification guidelines.

FAA's Concerted Efforts to Recertify PBA

FAA devoted considerable effort in a short period of time to recertifying PBA's Part 135 operation. According to FAA's team leader in charge of both the special investigation that led to the revocation and the initial certification activities, FAA used as many as 14 inspectors and an estimated 1,200-plus staff hours in its attempt to recertify PBA for Part 135 operations. As noted, the recertification effort was completed within 2 weeks of the revocation.

PBA was authorized to fly its Cessna 402s within 15 days of the November 10 revocation; 7 days later, PBA was authorized to operate its Embraer 110s, and by December 17 it was authorized to operate its DC-3 aircraft, completing the Part 135 fleet.

FAA allocated four inspectors to oversee PBA's recertification under Part 121. PBA was granted its Part 121 certificate in May 1985.

Current Status

PBA has recently been purchased by People Express Airlines, Inc. (itself recently bought by Texas Air, Inc.), but still maintains its headquarters in Naples, Florida. In December 1986 the current POI stated that PBA is complying with regulations and has had a good overall record.

Case Study: Rocky Mountain Airways, Inc.

At Rocky Mountain Airways, Inc. (RMA), some safety deficiencies were not detected for at least a year by FAA inspectors, and other deficiencies identified by FAA and brought to the airline's attention in 1984 and 1985 remained uncorrected for long periods. Following a March 1986 special investigation, which, according to FAA, disclosed deficiencies in many areas, FAA requested that RMA submit a detailed description as to how the airline complied with each applicable section of the FARs.

Background

RMA is a small airline operating scheduled flights in the Midwest. It serves cities in Colorado, Nebraska, and Wyoming. It was initially certified in 1968 to operate aircraft under Part 135 of the FARs. In 1984 it obtained FAA authorization to operate some of its aircraft under Part 121 regulations. As of October 1986, RMA operated a fleet of eight aircraft.

Problems With Airline Operations and FAA Surveillance

RMA's problems fell into three basic categories: inconsistent pilot proficiency procedures, errors in weight manifests, and inadequate manuals for maintenance and training. Each one, together with problems in FAA's attempts to resolve the matter, is discussed below.

Inconsistent Pilot Proficiency Procedures

In November 1983, according to a principal operations inspector assigned to RMA, FAA informed the airline of inconsistent procedures used by the airline in checking pilot proficiency. The POI provided training guidelines to RMA, and in January 1984 the airline agreed with FAA's findings and stated that current and future training would follow the guidelines. FAA apparently did not ensure that RMA took corrective action on the matter since, in May 1985, FAA again noted inconsistent procedures. The current POI said the problem had never been corrected. In June 1985 the airline notified FAA that new procedures were being implemented. FAA increased its inspections to assure correction of this deficiency.

Weight Manifest Errors

The then-assigned POI wrote to RMA in January 1984 concerning errors detected in several of the airline's weight manifests—errors that could cause serious problems since proper aircraft balance depends on accurate weight figures.

According to the current POI, RMA did not respond to FAA's letter requesting corrective action. We found no evidence that the then-

assigned POI initiated any follow-up. About 1-1/2 years later, in May 1985, FAA again noted errors in the airline's weight manifests. The POI surmised that the problem was probably corrected in 1984 but recurred in 1985.

Inadequate Airline Manuals

RMA also experienced deficiencies in its training and maintenance manuals. For example, in December 1984, the POI notified the airline that a newly-hired ground handler was directing taxiing aircraft without the necessary training. The POI questioned the level of safety with which RMA conducted ramp operations and requested the airline's prompt review and corrective action. In May 1985 RMA revised its manual covering ground-handler training.

In July 1985 FAA's principal maintenance inspector reviewed the airline's general maintenance manual and found it lacking in numerous areas and not meeting the minimum requirements of the federal aviation regulations. According to the PMI, the deficiencies had existed for at least 1 year. After the problem was identified, RMA submitted a corrective action plan. FAA followed up on the matter 3 months later and found that the manual remained unacceptable.

We believe that FAA's inability to ensure that the airline promptly corrected its maintenance manual deficiencies can be attributed, in part, to insufficient FAA maintenance inspections. For example, during fiscal year 1984, only 1 of 11 maintenance-related inspections of RMA specifically targeted the airline's maintenance manual. None of the 11 inspections had revealed any problem with the airline's manuals. A March 1986 FAA special inspection also identified a number of deficiencies and errors in the maintenance manual.

Inadequate FAA Inspector Training

The principal operations, maintenance, and avionics inspectors assigned to RMA have not received all FAA-mandated training courses, and lack courses that FAA has recommended as highly desirable for satisfactory job performance. As of January 1986, each inspector lacked at least three courses:

- The current POI had not received a mandated course in turbojet evaluation or recommended courses in compliance/enforcement procedures and aircraft accident investigation.
- The PMI had not received mandated systems courses covering two of the three types of aircraft used by RMA. In addition, the PMI lacked a

refresher course in air carrier operations. The refresher course is to be taken 5 years after the initial indoctrination course, which the PMI received in 1979. Like the POI, the PMI also lacked a recommended course in advanced aircraft accident investigation.

- The principal avionics inspector (PAI) also lacked mandated systems courses for all three types of aircraft that RMA operates. In addition, the PAI has not received recommended training in compliance/enforcement and accident investigation.

Current Status

In March 1986, after becoming increasingly concerned about the airline's operations, FAA conducted a special investigation of RMA. According to FAA, this investigation revealed many areas of noncompliance with federal regulations and problems with the airline's manuals.

- The general maintenance manual contained inadequate procedures for winter operation and no description of the airline's system for scheduling routine maintenance.
- The reliability program for the airline's de Havilland DHC-6 and DHC-7 aircraft was ineffective.
- The training records lacked documentation to verify pilot and mechanic training.
- The airline operated aircraft over extended periods of time without making repairs.
- The airline had not in all cases performed maintenance in accordance with acceptable methods and standard industry practices.
- The airline's quality control function was not adequate.

In its correspondence with RMA about these deficiencies, FAA stated that the findings indicated the possibility of additional problems if a more in-depth inspection had been performed. FAA asked that RMA correct the identified deficiencies within 45 days and submit a detailed description as to how the airline complies with each applicable section and subsection of the federal aviation regulations.

RMA does not concur with the FAA position on numerous items of FAA's special investigation. As of March 1987, according to FAA's principal avionics inspector assigned to the airline, this matter had not been resolved.

Case Study: South Pacific Island Airways

From August 1983 to October 1984 FAA found South Pacific Island Airways (SPIA) not in compliance with federal regulations, including operating unauthorized flights and not reporting infractions (as required). We believe that FAA's actions to enforce correction of repeated violations and to effect suspension of the airline's operating certificate were inadequate.

Background

SPIA is based in Honolulu, Hawaii. It operates as a scheduled commuter and charter service in American Samoa, Western Samoa, and other South Pacific Islands. SPIA held contracts with the U.S. military to transport personnel between bases on the United States mainland and Hawaii, Alaska, Japan, and Guam. As of November 1986, SPIA was operating four aircraft in the Pacific region.

SPIA was initially certified by FAA to operate aircraft under Parts 135 and 121 of the FARs, in 1973 and 1981, respectively. In October 1984 FAA revoked SPIA's operating certificate. At that time SPIA operated four propeller-driven de Havilland DHC-6 (Twin Otter) aircraft under Part 135, and a fleet of four Boeing 707 jets under Part 121. FAA recertified SPIA in early 1985. FAA's Honolulu FSDO—part of its Western Pacific Region—is responsible for surveillance of SPIA.

Airline Operating Problems

SPIA experienced continuous operating problems from 1983 to 1985; during this period, FAA inspections revealed numerous deficiencies. FAA initially found serious problems with SPIA's Part 121 operation and later with its Part 135 commuter operation. FAA records show that SPIA was slow and sometimes unresponsive in taking corrective action.

On April 30, 1984, a special NATI inspection of SPIA was performed. Ten days later, on the basis of discrepancies noted, the Honolulu FSDO recommended that SPIA's Part 121 operations be immediately suspended. FAA's Western Pacific Region's Flight Standards Branch reviewed the report and concurred, stating that SPIA did not have acceptable maintenance, inspection, reliability, or continuing analysis/surveillance programs. It further stated that, in the interest of safety, SPIA's air carrier operating certificate should be suspended immediately in the face of a large list of serious infractions of FAA regulations. On May 17, 1984, it sent the report to the regional counsel for review.

On June 21, 1984, the FAA regional counsel issued a Notice of Proposed Certificate Action to suspend SPIA's Parts 121 and 135 certificate. As

provided by section 609 of the Federal Aviation Act of 1958, as amended, SPIA was allowed to answer the deficiency allegations and state why its certificate should not be suspended. On June 29 SPIA responded in writing to FAA, requesting an informal conference to discuss the proposed suspension.

On July 21, 1984, a SPIA aircraft operating under Part 135 regulations crashed in American Samoa. There were seven serious injuries and one fatality resulting from the accident. An NTSB investigation determined that the probable cause of the accident was a break in a corroded elevator cable. The accident investigation did not identify any maintenance violations.

On August 24, FAA held an informal conference with SPIA to discuss issues involved in FAA's June 21 notice. SPIA voiced its contention that, with the exception of two or three items, no violations of federal regulations had occurred, and that the two or three violations had been corrected. Over a month later, on September 28, FAA issued an Order of Suspension of SPIA's Part 121 and 135 operations for 30 days. SPIA appealed the order and continued to operate. (Section 609, as amended, allows certificate-holders to appeal any FAA order to the NTSB and to continue to operate during the appeal process.)

One day later—on September 29—a SPIA charter flight carrying United Nations peacekeeping forces nearly penetrated Soviet airspace. The flight, following a polar route from Anchorage to the Netherlands, strayed from its intended flight path. Realizing that the flight was off course, the pilot contacted a Norwegian radar station, informing the station of the flight's navigational difficulties. Norwegian Air Force fighters were dispatched to identify the aircraft and to assist it.

On October 7, a week after the polar flight, FAA was notified by the Norwegian government of the SPIA flight; SPIA had not reported the incident to FAA, as it was required to do. The next day, FAA began an investigation into the polar flight and discovered that the flight was in violation of SPIA's operating specifications. The FAA also found that SPIA had made three other similar flights, likewise in violation of its operating specifications. On October 12, FAA issued an emergency order revoking SPIA's Part 121 and Part 135 operating certificate on the basis of the airline's continuing noncompliance with federal regulations.

In the next few days SPIA took a number of actions. On October 15 it filed a petition with the Ninth Circuit Court of Appeals for a stay of the

emergency provision of the revocation order and one day later appealed the emergency order to NTSB. The Court delayed the emergency revocation for 7 days, allowing SPIA to operate.

On October 18 FAA amended the emergency order and charged SPIA with numerous additional maintenance and operations violations associated with its Part 135 operation. The revocation order became effective on October 22 when the Ninth Circuit Court removed the stay.

An NTSB administrative law judge, although finding that FAA had not proven all of the alleged violations, affirmed the order on November 12. The next day, SPIA notified FAA of its intent to file for a new operating certificate.

Within a month—in December 1984—FAA sent a team of inspectors from the Western Pacific Region to SPIA's office in Honolulu to assist the airline in its effort to be recertified. FAA's recertification of SPIA's Part 121 operations consumed about 660 inspector work hours—and cost \$7,173 in travel funds alone.

SPIA revised its documents to meet FAA regulations and changed its management structure. FAA recertified SPIA as a Part 121 airline on January 29, 1985—less than 3 months after the effective date of its grounding. Just 4 months later, however—on May 29, 1985—FAA effectively grounded SPIA's Part 121 fleet by denying SPIA's noise exemption request.¹ FAA found that SPIA did not demonstrate good faith in its compliance effort concerning its acquisition of noise "hush kits." Subsequently, on February 26, 1986, FAA granted SPIA an exemption.

FAA began its review of SPIA's Part 135 operation for certification in January 1985. This effort consumed approximately 500 inspector work hours and cost approximately \$6,400 in travel funds. On March 25, 1985, FAA approved SPIA's specifications to operate aircraft under Part 135 regulations.

¹Effective January 1, 1985, federal regulations required subsonic turbojet aircraft flying to or from U.S. airports to comply with noise level restrictions. Some aircraft were able to comply with the requirement with the use of "hush kits." (See 14 C.F.R. 91.301 et. seq. (1986)).

FAA Surveillance Problems

Inadequate Follow-Up

Our analysis of inspection reports indicates that many discrepancies identified by FAA were not corrected by SPIA. For example, in a November 28, 1984, memo, FAA's Western Pacific regional counsel stated that the over 300 violations charged in the emergency revocation order demonstrated a prolonged and continuous lack of compliance. He also stated that although the NATI team briefed SPIA in May 1984 concerning the deficiencies found, the airline had not completed all necessary corrective actions.

Our review of FAA's correspondence with SPIA indicates that FAA was ineffective in obtaining corrective action from the airline. For example, in August 1983 the principal maintenance inspector performed a spot-check of SPIA's maintenance facilities. He found irregularities concerning maintenance procedures and records and informed SPIA of these discrepancies in a detailed letter. SPIA responded the following month, outlining the corrective action taken. The PMI conducted a follow-up inspection in January 1984 and identified several of the same discrepancies noted in August 1983. He informed the airline of discrepancies concerning maintenance procedures and records, including the uncorrected irregularities noted in August 1983. According to the PMI, he did not have the time to give SPIA the necessary attention, since he was also PMI for two other large airlines and also helped with the certification of a new airline.

In early 1984 FAA identified more discrepancies concerning SPIA. Correspondence from FAA to SPIA shows continued prodding, with little success in obtaining corrections. On February 16, 1984, for example, the principal operations inspector sent a letter to SPIA outlining a number of discrepancies. He noted, among others, an outdated minimum equipment list, an inadequate Boeing 707 manual, and an unreliable ground power unit. He also noted that these problems were not recent, but had been going on for many months.

Some of the same discrepancies cited in the February 16 letter were again cited on March 23; the POI called it apparent that SPIA was unable to keep pace with required changes on a timely basis. He added that SPIA's administrative practices should be reviewed and staffing increased.

Other inspections revealed additional discrepancies. In September 1984 FAA intensified its inspections of SPIA's Part 135 operation in American Samoa as a follow-up to maintenance discrepancies identified both in the NATI report and in FAA's June 1984 notice. FAA found additional discrepancies, including improper and erroneous record keeping.

From September 14-19, 1984, FAA inspected SPIA's station at Guam to follow up on previously identified discrepancies. New problems were uncovered. A week later, on September 24, FAA informed SPIA that the airline's maintenance personnel at Guam were not following SPIA's maintenance manual or adhering to procedures and instructions; on the same day, they began a follow-up inspection at Guam to obtain additional evidence on the September 14-19 findings. On October 2 FAA informed SPIA that some discrepancies noted in NATI operations inspections at SPIA facilities at Guam and American Samoa remained uncorrected; FAA gave the carrier 13 days in which to complete necessary corrections or revisions.

Two weeks later, FAA amended the emergency order and charged SPIA with numerous additional maintenance and operations violations associated with its Part 135 service.

Lengthy Delay in FAA Enforcement Action

According to the FAA counsel involved, the 5-week delay between the suspension recommendation and the notice of proposed action was caused by lack of specific evidence to substantiate the allegations. The FAA counsel further stated that he was not able to work with the NATI report in its initial form because it contained insufficient evidence. He added that he waited 4 weeks, until the NATI team leader came to assist him, in reviewing the allegations and the supporting evidence.

An informal conference with SPIA was held on August 24, 1984. After the conference, it took FAA over a month—until September 28—to issue the order of suspension. A major issue at the conference was SPIA's engine reliability program for its Boeing 707 fleet. American Airlines had, under contract, monitored SPIA's engine reliability program, but American cancelled this service. SPIA stated that although American had formally cancelled its support service, SPIA thought that the engine reliability program continued to exist on an informal basis.

According to the FAA counsel, however, it took at least 2 weeks for FAA to determine that SPIA did not, in fact, have in place any engine reliability program—informal or otherwise.

During the 5-month period beginning in May 1984 between the first recommendation for immediate suspension and FAA's issuing of an emergency revocation order, SPIA continued its normal operations, carrying both civilian and U.S. military passengers.

Inadequate Initial Certification?

The team of inspectors that FAA sent to recertify SPIA's Part 121 operation in December 1984 found that most of the airline's previously accepted or approved (by the Honolulu FSDO) materials did not meet Part 121 certification requirements without extensive revision.

FAA's recertification of SPIA's 135 operation was conducted between January and March 1985. During the period February 11-21, FAA inspectors found that SPIA did not have management control, had not shown itself able to conduct operations, and did not have an organization that was adequate to perform the work, as required by Part 135. On the basis of these findings, the FAA team discontinued the recertification evaluation. SPIA subsequently made the changes necessary to meet Part 135 regulations, however—and was recertified on March 25, 1985. This raises some question as to the adequacy of SPIA's original Part 121 and Part 135 certifications.

Current Status

In January 1987, FAA conducted a special inspection of SPIA that disclosed numerous defects and discrepancies resulting in violations of the FARs. As a result, FAA on February 28, 1987, issued an Emergency Order of Suspension suspending SPIA's Part 121 operations. SPIA has appealed the suspension to the NTSB. Meanwhile, SPIA continues to operate its Part 135 service.

National Transportation Safety Board

Investigation Findings

Eastern Air Lines

In 1983 a near-ditching of an Eastern Air Lines Lockheed L-1011 occurred near Miami, Florida. The plane experienced engine problems, dropped nearly 9,000 feet without power, and narrowly averted an emergency water landing. NTSB concluded that the incident was partially caused by the failure of FAA maintenance inspectors to (1) assess the significance of a series of maintenance incidents involving omission of engine O-ring seals and (2) take effective steps to prevent them from recurring. Omitting the O-ring seals, according to NTSB, can lead to a loss of lubrication and to engine damage.

NTSB noted that although FAA maintenance inspectors became aware of the O-ring problems in September 1981, FAA did not follow up to ensure that the airline's revised maintenance procedures, approved by FAA in December 1981, were followed or were effective in eliminating the problem. NTSB's report stated that

"The fact that nine additional incidents, many involving in-flight shutdowns and unscheduled landings, occurred proves that the FAA did no systematic analysis of the continuing problem. . . . The information available to FAA should have caused special surveillance and actual revision of the work procedures . . . along with a more forceful effort to require Eastern Air Lines maintenance management to give greater attention to the situation. . . ."

Sierra Pacific Airlines

In February 1983 a 19-passenger Sierra Pacific Airlines de Havilland DHC-6-300 crashed during its final airport approach at Hailey, Idaho, seriously injuring seven persons. NTSB found that FAA's failure to detect the airline's deviation from approved maintenance procedures contributed to the crash. The NTSB report stated:

"The FAA Principal Maintenance Inspector should have been aware of the limitations of the company's inspection program inherent in the part-time presence of the Company's Director of Quality Control, his distance from the maintenance facility, the commingling of the mechanics' and inspectors' responsibilities, and the commingling of the duties and responsibilities of the Directors of Maintenance and Quality Control. These circumstances should have alerted him to the possibility of a compromise of safety in the maintenance department unacceptable in air carrier operation."

NTSB concluded that FAA failed to provide the level of sustained and discerning surveillance necessary to maintain a high level of safety in air carrier operations.

Air Illinois

In October 1983 an Air Illinois Hawker-Siddeley crashed near Pinckneyville, Illinois, killing all 10 aboard. NTSB concluded that FAA's inspections of Air Illinois "were not conducted in sufficient depth to detect the areas of noncompliance with company procedures and Federal regulations." The NTSB report cited many examples of inadequate FAA inspections, including failure to (1) detect that pilots were not logging in-flight maintenance malfunctions as required by company procedures and federal regulations, (2) note that parts inspections were not performed within the required time intervals, (3) detect that aircraft components were not removed and replaced within the specified time limits, and (4) detect omissions of emergency procedures in the carrier's training program.

Listing of Reports Concerning FAA Airline Inspections

United States General
Accounting Office

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

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

The Federal Aviation Administration Can Improve the Operation of Its General Aviation District Offices (CED-81-114, June 29, 1981)

Evaluation of Programs in the Department of Transportation—An Assessment (PAD-79-13, April 3, 1979)

Federal Aviation
Administration

Project SAFE: A Blueprint For Flight Standards, September 20, 1985

Resource Requirements, Flight Standards Safety Programs, June 13, 1985

Memorandum on Evaluation of National Air Transportation Inspection Program Reports, April 1985

Pilot Study Report—Safety Inspection Program Review, Allen Corporation of America, November 9, 1984

National Air Transportation Inspection Program, Federal Aviation Administration, March 4, 1984-June 5, 1984, Report for the Secretary

Department of
Transportation, Office of
the Secretary of
Transportation

Report and Recommendations of the Safety Review Task Force, DOT 80-15, August 15, 1985

Appendix VI
Listing of Reports Concerning FAA
Airline Inspections

Department of
Transportation, Office of
Inspector General

Report on Audit of the Aviation Safety Enforcement Program, Report No. RO-FA-5-128, FAA Northwest Mountain Region, April 25, 1985

Report on Audit of the Air Carrier Enforcement Program, Report No. RO-FA-5-084, FAA Northwest Mountain Region, April 25, 1985

Report on Audit of FAA's Inspection and Surveillance of Air Taxi and Commercial Operations, FAA Central Region, March 11, 1985

Report on Audit of Violation Enforcement Program, FAA Western Pacific Region, September 25, 1984

Report on Audit of FAA's Inspection and Surveillance of Air Taxi and Commercial Operations, Report No. R1-FA-4-069, FAA New England Region, April 26, 1984

Audit of Adjudication of Alleged FAR Violations, Report No. R6-FA-4-031, FAA Southwest Region, December 19, 1983

Review of FAA Investigation of Alleged FAR Violations, Report No. R6-FA-3-093, FAA Southwest Region, May 11, 1983

Report on Survey of Enforcement of Violations Under the FAA Act, Report No. R5-FA-3-129, FAA Great Lakes Region, March 17, 1983

Report on Audit of Surveillance and Inspection of Airports and Air Carrier Facilities, Report No. R4-FA-2-016, FAA Southern Region, February 4, 1982

Report on Audit of Air Carrier Maintenance, Report No. AT-FA-79-11.15, FAA Southern Region, September 19, 1979

Report on Audit of Air Carrier Maintenance Operations, Report No. SF-FA-79-11.27, FAA Western Pacific Region, July 27, 1979

Report on Audit of Air Carrier Maintenance Program, Report No. CH-FA-79-2.6, FAA Great Lakes Region, July 5, 1979

National Transportation
Safety Board

Aircraft Accident Report: Eastern Air Lines, Inc., Lockheed L-1011, B334EA, Miami International Airport, Miami, Florida NTSB/AAR-84/04, May 5, 1983

Appendix VI
Listing of Reports Concerning FAA
Airline Inspections

Aircraft Accident Report: Sierra Pacific Airlines, de Havilland DHC-6-300, N361V, Hailey, Idaho, NTSB/AAR-84/03, February 15, 1983

Comments From the Assistant Secretary for Administration, U.S. Department of Transportation



U.S. Department of
Transportation

Assistant Secretary
for Administration

400 Seventh St. S.W.
Washington, D.C. 20548

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Mr. J. Dexter Peach
Assistant Comptroller General
Resources, Community, and Economic
Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

Enclosed are two copies of the Department of Transportation's comments concerning the U.S. General Accounting Office draft report entitled, "Aviation Safety: Needed Improvements in FAA's Airline Inspection Program Are Underway."

Thank you for the opportunity to review this report. If you have any questions concerning our reply, please call Bill Wood on 366-5145.

Sincerely,


Jon H. Seymour

Enclosures

Appendix VII
Comments From the Assistant Secretary for
Administration, U.S. Department
of Transportation

DEPARTMENT OF TRANSPORTATION REPLY
TO
GAO DRAFT REPORT OF JANUARY 13, 1987,
ENTITLED:
"AVIATION SAFETY: NEEDED IMPROVEMENTS IN FAA'S
AIRLINE INSPECTION PROGRAM ARE UNDERWAY"

SUMMARY OF GAO FINDINGS AND RECOMMENDATIONS

The General Accounting Office (GAO) report states that while deregulation of airlines led to large increases in the number of airlines and aircraft requiring inspection, the Federal Aviation Administration (FAA) cut its inspection force and placed its emphasis on certifying new airlines rather than assuring that periodic inspections of existing airlines were performed at an acceptable level.

Until 1985, GAO states, FAA did not develop systems or standards for determining how many inspectors it needed, what inspections should be performed, or analyzing what the inspections showed about airline compliance with safety regulations. Further, its review—as well as FAA and Department of Transportation (DOT) studies—found that the inspection program often did not identify major safety problems or assure their correction through appropriate followup.

According to GAO, FAA has acknowledged these program weaknesses and, building upon initiatives launched by the Secretary of Transportation, is taking corrective action on a broad front. Among other corrective actions, FAA: (1) is increasing the size of its inspector work force and has established minimum inspection standards to identify what inspections need to be performed and how frequently; and (2) has begun to address needed improvements in its internal controls and management information systems.

Additional actions that GAO believes FAA could take to improve its inspection program include: (1) revising its inspection guidance to consider factors influencing airline inspection staff goals; and (2) improving its management information system (MIS) to assure that current and reliable inspection information is available.

GAO recommends that the Secretary of Transportation direct the Administrator, FAA, to: (1) revise FAA's standards for the type and frequency of airline inspections to take into account the need to target airlines displaying characteristics that may indicate safety deficiencies (the resources required to implement the revised standards, as well as FAA's National Inspection Plan, should then be included in FAA's inspector staffing need estimates); and (2) improve its MIS to ensure that current and reliable information is available to FAA management about district office inspection activities.

SUMMARY OF DEPARTMENT OF TRANSPORTATION POSITION

The Department generally concurs with GAO's findings and recommendations. We are gratified that GAO recognizes the initiatives taken to identify internal problems and correct them.

While we might disagree with some particulars, overall, GAO has reached many of the same conclusions previously reached by the Secretary's Safety Review Task Force and by studies directed by the FAA in conjunction with the 1984 National Air Transportation Inspection (NATI) program and the Safety Activity Functional Evaluation (Project SAFE). We support those conclusions, and we agree with the intent of the six recommendations stated on pages 47, 48, and 58. Each of the programs addressed by these recommendations is being revised or developed under the auspices of Project SAFE. We will ensure that the intent of the GAO recommendations is specifically addressed during the development of each affected program.

The progress of Project SAFE is currently tracked using an automated project management system, and the Congress is furnished a detailed quarterly report on those activities. Under Project SAFE, we are accelerating the hiring and training of Flight Standards safety inspectors.

In addition, we have established the National Aviation Safety Inspection Program (NASIP). This program is similar to our earlier NATI program. The initial thrust under NASIP, which began in December 1985, was to focus on Department of Defense (DOD) contract carriers. Teams of inspectors performed indepth inspections of maintenance and operation activities of these contract carriers, utilizing inspectors from many different disciplines and FAA regions. This concept allows for a greater indepth review, healthy exchange of information, and standardization of our inspection work practices. The concept has produced excellent results in assuring that certificated air carriers are in compliance with the Federal Aviation Regulations. While continuing to examine DOD contract carriers, NASIP is being expanded to include inspections of other segments of the industry. We intend to continue this national program for the foreseeable future and believe that this is a very prudent use of our critical inspector resources.

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Glossary

Aviation Safety Analysis System (ASAS) - FAA's national aviation standards computer system for acquisition, retrieval, and analysis of data relating to FAA's responsibilities to promote effective and safe aviation.

Avionics - that specialized branch of electronics pertaining to aircraft-installed electronic devices, primarily used for navigation and flight control functions.

Certification - inspector tasks associated with establishing an airline's initial compliance with federal regulations and issuing a certificate permitting operation.

FAA District Office - an office within an FAA regional office through which the policies, practices, and regulatory oversight of FAA are carried out.

FAA Regional Office - one of nine geographically dispersed offices of FAA that provide supervision to FAA's district offices.

Federal Aviation Regulations (FARS) - that part of the U.S. Code of Federal Regulations that includes the rules, regulations, and standards by which FAA ensures the safety and airworthiness of aircraft and airline operations.

Geographic-area Concept - a philosophy under which FAA places the same inspection and surveillance responsibilities for those airlines operating within its boundaries but whose operating certificates are held by another FAA district office as it does for those whose certificates it holds. This system does not lessen the assigned principal inspector's responsibility for overall certificate management.

Inspection - inspector tasks associated with determining ongoing compliance with federal aviation regulations.

National Program Guidelines - standards reflected in an FAA order, issued in October 1985, prescribing the minimum acceptable number of inspections to be performed and the process for developing district office work programs.

Part 121 Airline - any operator who undertakes, whether directly or indirectly, to engage in air transportation under the rules contained in Part 121 of the federal aviation regulations. Such operations would

characteristically be conducted with aircraft having a maximum passenger seating capacity of more than 30 seats or a payload capacity of more than 7,500 pounds.

Part 135 Airline - any operator who undertakes, whether directly or indirectly, to engage in air transportation under the rules contained in Part 135 of the federal aviation regulations. Such operations would characteristically be conducted with aircraft having a maximum passenger seating capacity of 30 seats or fewer and a maximum payload capacity of 7,500 pounds or less.

Principal Avionics, Maintenance, or Operations Inspector - an FAA employee providing continuing surveillance of a particular airline's avionics, maintenance, or operations program, respectively, and working at the regional or district office level.

Staffing Standards - standard average times, developed by FAA, allowed to accomplish a specific flight standards task. By comparing the standards, the national program guidelines, and the number of operations in the industry, FAA can determine its flight standards staffing requirements.

Work Program - planned and actual investigation, certification, inspection, and enforcement tasks.

Work Program Management Subsystem (WPMS) - a subsystem of ASAS that contains data on actual and planned inspection activity. Data are entered into WPMS at the district office and will be monitored and analyzed in the regions and nationally through a national data base made up of routine input from district offices.

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