

GAO

September 1989

AVIATION TRAINING

FAA Aviation Safety Inspectors Are Not Receiving Needed Training



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

Resources, Community, and
Economic Development Division

B-232095

September 14, 1989

The Honorable James L. Oberstar, Chairman
The Honorable William F. Clinger, Jr.
Ranking Minority Member
Subcommittee on Aviation
Committee on Public Works and Transportation
House of Representatives

The Honorable Glenn M. Anderson, Chairman
The Honorable Guy V. Molinari
Ranking Minority Member
Subcommittee on Investigations
and Oversight
Committee on Public Works and Transportation
House of Representatives

In response to your request, we examined the Federal Aviation Administration's (FAA) training of its aviation safety inspectors to determine whether they are receiving the training they need to do their jobs. We focused our review on determining (1) whether FAA's operations inspectors are receiving the recurrent flight training required to make pilot flight checks and whether opportunities exist to more efficiently utilize these inspectors and (2) whether airworthiness inspectors are receiving the training they need to perform aircraft maintenance inspections. The scope of our work was limited to FAA training and did not include evaluating the effectiveness of FAA's inspections. (App. I contains our detailed scope and methodology.)

Results in Brief

We found that pilot flight checks are being made by operations inspectors who have not received recurrent flight training and whose qualifications to make pilot flight checks have expired.¹ For the 6-month period ending December 31, 1988, only 37 percent, or 291, of the 786 inspectors making flight checks had received the required semiannual flight training and were therefore fully qualified for such duties. This occurred because FAA assigns more operations inspectors to flight-check duties than it can provide training. Since some inspectors make few flight checks each year, we believe that opportunities exist for FAA to utilize its inspectors more efficiently by assigning fewer of them to

1

¹FAA frequently issues waivers to inspectors to conduct flight checks even though they have not received required flight training and are not fully qualified to make such tests.

inspectors are responsible for (1) evaluating aircraft maintenance programs, (2) inspecting aircraft for safety, and (3) evaluating mechanics and repair facilities.

To accomplish their mission, inspectors require specialized training. For example, operations inspectors, who flight-check pilots by accompanying them during flight to determine their ability to operate an aircraft safely, must be licensed to fly the aircraft in which they are making pilot examinations. Airworthiness inspectors require training in aircraft maintenance practices. Their training needs range from methods for evaluating corrosion and fatigue in older aircraft to maintenance of state-of-the-art equipment on new aircraft. Most of the airworthiness inspector training is provided in-house at the FAA Academy in Oklahoma City. Operations inspector flight training is primarily provided by commercial air carriers and other flight training contractors through contracts administered by the Academy.

Operations Inspectors Are Making Pilot Flight Checks Without Receiving Required Training

To maintain their qualification to make pilot flight checks, operations inspectors must receive flight training every 6 months. Similarly, FAA requires commercial air carrier pilots to receive recurrent flight training once every 6 months. Although the airlines and FAA believe recurrent flight training to be extremely important to aviation safety (see table II.2), our analysis of inspector training showed that 63 percent, or 495, of the 786 operations inspectors assigned to flight-check duties had not received recurrent flight training during the 6-month period ending December 31, 1988. However, FAA often waived this training requirement, and many inspectors continued to make flight checks even though they were not fully qualified to do so. We did not determine the number of inspections made by less than fully qualified inspectors because such data were manually kept at FAA's 90 flight standards district offices and were not readily available. When asked what actions FAA would take against an air carrier if its pilots did not receive recurrent flight training every 6 months, we were told that the air carrier would be subject to fines and a potential loss of its certificate to operate the airline.

The primary reason why inspections are being made by inspectors who are not fully qualified is that FAA assigns most of its operations inspectors to flight-check duties regardless of the number of flight checks that each inspector performs. With the exception of managers and supervisors, almost every operations inspector is assigned to flight-check duties. However, some inspectors perform very few if any flight checks. In recent years, FAA has been unable to obtain enough flight training to

attempted to provide a majority of its operations inspectors with flight training. Since they are pilots, they generally like to fly, and it is considered prestigious to hold a type rating in a turbojet aircraft. With fewer inspectors requiring training, the region expects to perform its flight checks with fully trained and qualified inspectors.

Airworthiness Inspectors Are Not Receiving Critically Needed Training

Airworthiness inspectors received about one-half of the training that FAA's training plan called for in fiscal year 1988. The plan contained a total of 2,320 airworthiness training slots; however, only 1,045, or 45 percent, of the training slots were actually accomplished. In addition, 6 of FAA's 9 regions expressed concern about the agency's ability to provide training in state-of-the-art aircraft and the effectiveness of its state-of-the-art avionics training. The importance of maintenance inspections and inspector training was recently reinforced by the National Transportation Safety Board's investigation of the April 1988 Aloha Aircraft accident in Hawaii, in which 18 feet of the aircraft's fuselage was torn away. In its report, the Board found that FAA contributed to the accident by failing to properly evaluate Aloha's maintenance program, and by failing to require inspections of cracks in the fuselage.

The primary reason for the large cut-back in planned airworthiness inspector training was that several scheduled courses were not developed and available for training. Sixty percent of cancelled training was due to unavailable courses. According to FAA, this occurred because headquarters and Academy staff assigned to develop new training courses had higher competing job demands. Other factors contributing to the lack of training included job conflicts, lack of travel funds, short notice of planned training courses, and inspector illnesses or vacations.

To ascertain the importance of cancelled training courses, we asked the Flight Standards Managers of FAA's nine regions to identify the extent to which their inspectors needed training in eight new courses that were planned to be taught in 1987, but had to be cancelled because they were not developed. These courses involved technical training in subjects such as emergency evacuation and survival equipment, principles of composite structures, advanced safety analysis, and aircraft icing. All nine regions identified training in composite aircraft structures as a critical or major training need, and at least one region identified each of the other cancelled courses as critically needed training. (See table II.1.)

FAA's regions also expressed concern about the agency's ability to initiate inspector training in new state-of-the-art technologies. Such training

return to the Academy for initial training. In addition, FAA plans to upgrade Academy training by having the best instructors, the latest technology in aviation training, and the latest innovations in training development. To attract and retain the best technical instructors for the Academy, FAA plans to provide both career and pay incentives. In addition, FAA plans to recruit the best available instructional technologists to guide the design, development, and delivery of training.

Conclusions

FAA inspectors are not receiving the training that FAA's managers say they need to effectively perform their assigned jobs. In 1988, less than 40 percent of the operations inspectors received the flight training that FAA says they must have to perform pilot flight checks, and airworthiness inspectors received less than 50 percent of the training that FAA said they needed. Although FAA has several initiatives underway, further improvements are needed in the aviation safety inspector training program.

Traditionally, FAA has attempted to provide flight training to most of its operations inspectors. However, this approach to assigning inspector duties has resulted in inspections' being performed by inspectors who have not received required flight training and who, according to FAA regulations, are not qualified to perform such inspections. We believe that opportunities exist for FAA to perform its flight-check responsibilities in a more efficient and effective way. By realigning its workload and assigning the minimum number of inspectors that are necessary to perform flight-check duties, as was done in FAA's Southwest Region, FAA can better ensure that those inspectors needing flight training receive it and that flight checks are performed by fully qualified inspectors.

For different reasons, airworthiness inspectors are not receiving all of the training that FAA managers believe is necessary to maintain currency and proficiency in their skill areas. An inadequate number of instructors have adversely affected the development of training courses and results in the Academy's emphasizing training, with course development receiving a lower priority. As a result, a number of new, topical technical courses that managers have identified as critical are not being taught.

This work was performed under the direction of Kenneth M. Mead,
Director for Transportation Issues (202) 275-1000. Other major contributors are listed in appendix III.



J. Dexter Peach
Assistant Comptroller General

Selected Questionnaire Results From FAA's Nine Regions on Aviation Safety Inspector Training

Below is a list of courses that were cancelled in fiscal year 1987 because they were either unavailable or not approved. For each course, please place a check in the box that best describes the extent to which this type of training is needed by inspectors in your region.

Table II.1: Views on the Need for Training Courses That Were Cancelled

Course	Critical need	Major need	Some need	Little/no need
Emergency Evacuation and Survival Equipment	4	3	2	0
Control Technology and Airborne Systems	3	3	3	0
Quality Assurance of Computer Software	2	2	5	0
Principles of Composite Structure	5	4	0	0
Advanced Safety Analysis	3	2	4	0
Damage Tolerance Technology	1	4	4	0
Electronic Flight Instrument System	4	4	1	0
Aircraft Icing	2	5	2	0

FAA policy requires that operations inspectors receive recurrent flight training every 6 months. How important do you feel it is for the operations inspectors to receive recurrent flight training every 6 months?

Table II.2: FAA Views on the Importance of Recurrent Flight Training*

Importance
8 Extremely important
1 Moderately important
0 Somewhat important
0 Not very important
0 Not at all important

*In addition to asking FAA's 9 regions about the importance of recurrent flight training, we asked 10 air carrier and 2 other FAA flight training contractors about the importance of recurrent flight training. All 12 responded that recurrent flight training is extremely important for maintaining aviation safety.

To what extent is the Academy able to provide airworthiness inspectors training in new aircraft technologies such as the A-300 aircraft?

Table II.3: Views on the Extent to Which the Academy Provides Training in New Technologies

Extent
0 Very great extent
1 Great extent
2 Moderate extent
0 Some extent
6 Little/No extent

Major Contributors to This Report

**Resources,
Community, and
Economic
Development Division,
Washington, D.C.**

Victor Rezendes, Associate Director
Thomas J. Barchi, Assistant Director
Robert Shideler, Assignment Manager

**Kansas City Regional
Office**

Virgil N. Schroeder, Evaluator-in-Charge
Gary L. Nelson, Site Senior
Julie M. Cline, Evaluator
Debra L. Wilken, Evaluator

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office
Post Office Box 6015
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are \$2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made

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

**Official Business
Penalty for Private Use \$300**

**First-Class Mail
Postage & Fees Paid
GAO
Permit No. G100**

Appendix II
Selected Questionnaire Results From FAA's
Nine Regions on Aviation Safety
Inspector Training

How effective has the Academy been in providing state-of-the-art avionics training for avionics inspectors?

Table II.4: Views on How Effective the Academy Has Been in Providing State-of-the-art Avionics Training

Effectiveness	
0	Highly effective
1	Moderately effective
2	Somewhat effective
5	Not very effective
1	Not at all effective

Scope and Methodology

In examining FAA's inspector training program, we reviewed FAA's procedures for developing training courses, obtained the region's views on the effectiveness of inspector training, and identified the Academy's role in providing training and obtaining out-of-agency training contractors. We conducted our review primarily at FAA headquarters in Washington, D.C., and at the FAA Academy in Oklahoma City. In addition, we visited or contacted FAA's nine regional offices. The Flight Standards Division of each region was mailed a questionnaire to obtain regional management's views on the adequacy and effectiveness of FAA's training program.

Our review of operations inspector training focused primarily on FAA's ability to provide inspectors with mandatory flight training every 6 months. We analyzed FAA training histories for operations inspectors responsible for making pilot flight checks to determine how frequently they were receiving flight training, and we obtained copies of training waivers that each region issued its inspectors in lieu of the required flight training. In reviewing the Academy's success in providing airworthiness training, we identified the number of inspectors scheduled for training from FAA's annual training plan and compared it with the number of inspectors actually receiving training. We identified reasons why certain training courses were cancelled or were not available. We talked with Academy officials about developing and revising training courses, and problems in obtaining qualified instructors at the Academy.

We reviewed FAA's 1988 internal control reports submitted in response to the Federal Manager's Financial Integrity Act of 1982, and found that they did not identify any internal control weaknesses in these areas. Our review was performed between June 1988 and March 1989 in accordance with generally accepted government auditing standards.

Contents

Letter	1
Appendix I Scope and Methodology	12
Appendix II Selected Questionnaire Results From FAA's Nine Regions on Aviation Safety Inspector Training	13
Appendix III Major Contributors to This Report	15
Tables	
Table II.1: Views on the Need for Training Courses That Were Cancelled	13
Table II.2: FAA Views on the Importance of Recurrent Flight Training	13
Table II.3: Views on the Extent to Which the Academy Provides Training in New Technologies	13
Table II.4: Views on How Effective the Academy Has Been in Providing State-of-the-art Avionics Training	14

Abbreviations

FAA Federal Aviation Administration

Recommendations

To improve the aviation safety inspector training program, we recommend that the Secretary of Transportation direct the Administrator, FAA, to

- reevaluate the roles and responsibilities of the operations inspectors and identify the number of operations inspectors that are needed to conduct flight checks and provide these inspectors flight training.

We are not making any recommendations concerning airworthiness inspector training and the inadequate number of Academy instructors because FAA has ongoing studies and initiatives in these areas. These efforts include revisions in the inspector training curricula and incentives to attract additional instructors and are expected to be completed by 1990.

Views of Agency Officials

We provided a draft of this report to the Department of Transportation and FAA for comment. FAA provided official oral comments on the draft. In general, FAA agreed with the report's findings, conclusions, and recommendations, and we have incorporated the agency's comments in the report as appropriate. Specifically, FAA agreed that inspectors making flight checks should be fully qualified and receive recurrent flight training every 6 months. FAA noted that it is agency policy to provide all operations inspectors with this training. As indicated in the report, however, FAA has been unable to provide flight training to all inspectors. We believe that through more efficient use of its operations inspectors, as done by the Southwest Region, FAA can better prioritize training needs and ensure that inspectors needing flight training get it and that flight checks are done by fully qualified inspectors.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to interested congressional committees; the Secretary of Transportation; and the Administrator, FAA. We will also make copies available to other interested parties upon request.

is important because FAA inspectors are responsible for determining whether air carrier maintenance practices on new technologies are effective and appropriate. Six of the nine regions described the extent of FAA's training in new aircraft technologies, such as the A-300 aircraft, as little or none. (See table II.3.) Similar responses were received on FAA's ability to provide state-of-the-art avionics training. Six of the nine regions described the training as being less than effective. (See table II.4.)

The Academy Is Having Difficulty in Attracting Instructors

Although student enrollments have dramatically increased, the number of Academy instructors has decreased. In fiscal year 1984, the Academy had 82 instructors compared with 77 in 1988, a decrease of 6 percent. In comparison, the student enrollments have increased from 2,968 in fiscal year 1984 to 4,322 in 1988, an increase of 46 percent.

The reduction in instructors has forced the Academy to concentrate its efforts on teaching existing courses, which has adversely affected its ability to develop new courses. For example, in 1989, FAA requested the Academy's avionics section to develop six new training courses. The section could only provide enough instructors to develop three courses. In addition, the inadequate number of instructors led to the cancellation of 75 percent of the avionics classes planned for the last half of fiscal year 1989. The cancellations involve 18 classes and 113 inspector training slots.

FAA recognizes the need for additional Academy instructors and is evaluating the qualifications needed to be a quality instructor as well as the criteria used in selecting instructors. Further, FAA is analyzing barriers to the recruitment of instructors and incentives to attract instructors to the Academy.

FAA Training Initiatives

On August 5, 1988, FAA's Administrator announced that FAA was embarking on an ambitious evaluation to upgrade and modernize its training system. On the basis of recommendations from the evaluation, FAA defined nine major training initiatives. Two initiatives have particular significance for inspector training—improving the training curricula for inspectors and upgrading Academy training.

FAA has drafted a 5-year inspector training plan to be implemented by 1990 for all inspectors. The plan includes updating FAA's initial training courses and, to enhance standardization, requires on-board inspectors to

meet recurrent training needed for all inspectors. Because of industry growth, some airlines that previously contracted with FAA to provide such training can no longer do so. This is because the airlines are making greater use of their training simulators and aircraft to train new pilots.

Opportunities Exist to Make Inspections With Fully Qualified Inspectors

To increase the number of inspections made by fully qualified inspectors, FAA's Southwest Region made a study of its pilot flight-check workload. By reassigning those inspectors with three or less flight checks during the past year to other full-time duties, and by assigning inspection responsibilities to those district offices having the greatest activity for a particular type aircraft, the region reduced the number of inspectors needing recurrent turbojet flight training by more than one-half.

Eight of the region's nine district offices were asked to submit the names of those inspectors having aircraft type ratings² and the number of pilot checks that each inspector had performed during the past year. In some cases, the region found that inspectors held ratings for aircraft types that no longer operated in their district. Other cases were found where inspectors had received training during the past 6 months for aircraft for which they had not performed any flight checks during the past year. In addition, inspectors had been scheduled for flight training in 1989 in aircraft types for which they had not performed flight checks in 1988.

In taking corrective actions, the region assigned pilot flight-check responsibilities for turbojet aircraft to 25 inspectors. These inspectors will receive training in the aircraft for which they have been assigned inspection responsibilities. The region's 31 other inspectors will generally spend their full time on other inspection activities. These inspectors may need to conduct flight checks on smaller, prop-engine aircraft, but they will not require expensive recurrent flight training in turbojets. The region emphasized that it will not be reducing the overall number of inspectors or the number of inspections made.

As part of its plan for increasing efficiency, some inspectors will not only make pilot evaluations within their own district, but will also perform evaluations in other districts where the workload is too small to justify a local inspector. According to regional officials, this is a departure from the traditional way of doing business. Historically, FAA has

²"Type rating" refers to the specific aircraft type that a pilot is certified and licensed to operate by FAA.

flight-check duties. This would reduce the number of inspectors requiring flight training and allow FAA to more readily meet its flight training requirements.

Airworthiness inspectors received about 50 percent of the training that was planned for them in fiscal year 1988. The primary reason for this is the FAA Academy's difficulty in attracting a sufficient number of qualified instructors to teach existing courses while at the same time developing new courses. Further, FAA's regions expressed concern about the agency's not providing inspectors with critically needed training in repairs of composite structures and state-of-the-art aircraft and avionics. FAA is studying incentives to attract additional instructors to the Academy.

FAA recognizes the need to improve its aviation safety inspector training program and has undertaken a series of initiatives to improve inspector training. While we believe that FAA is moving in the right direction, further improvements are needed if FAA is to effectively meet its training requirements as the inspector work force grows from the present 2,100 to about 3,000 in the early 1990s.

FAA's Aviation Safety Inspection Program

Although the Airline Deregulation Act of 1978 (P.L. 95-504) removed federal control of U.S. airline fares and routes, FAA's role as a safety regulator was not changed. FAA's aviation safety inspectors are the core of the FAA safety team responsible for carrying out almost every facet of aviation, including the certification of aircraft, pilots, and mechanics.

FAA's Office of Flight Standards is responsible for ensuring the safe operation of aircraft. The office's headquarters staff develop guidance on how FAA inspectors should perform inspections. Flight Standards Divisions in FAA's nine regional offices interpret headquarters guidance, supervise the inspection operations of district offices, and perform special inspections. Most inspections are conducted by inspectors in FAA's 90 flight standards district offices located throughout the United States.

FAA employs about 2,100 aviation safety inspectors to oversee compliance with air safety regulations. These inspectors are divided into two groups—operations inspectors and airworthiness inspectors. Operations inspectors are pilots employed by FAA. They are responsible for (1) checking pilots to determine their capability to operate aircraft safely, (2) evaluating air carrier operations for compliance with safety regulations, and (3) investigating accidents and incidents. Airworthiness

