United States General Accounting Office

GAO

Report to the Secretary of Transportation

March 1986

AVIATION SAFETY

Serious Problems Concerning the Air Traffic Control Work Force

GAO/RCED-86-121

GAO

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

Resources, Community, and
Economic Development Division

B-222217

March 6, 1986

The Honorable Elizabeth H. Dole
Secretary of Transportation

Dear Madame Secretary:

This letter and the enclosed copy of a statement provide the results of an extensive study of the air traffic control work force we made over the past year and includes our conclusions and recommendations to you. The statement was prepared for a planned hearing before the Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation. Because the hearing was delayed, the Subcommittee on Transportation, House Committee on Appropriations, who originally requested this work, agreed to its release at this time.

Essentially, our work shows that the Federal Aviation Administration (FAA) has not met its goals for fully qualified (FPL) controllers at many major facilities, and that the growth in air traffic activity has caused controller work load to reach a point where controllers are stretched too thin. Despite FAA assurances to the contrary, controllers and their supervisors have expressed serious concerns about their ability to continue to maintain the proper margin of safety.

We asked the Flight Safety Foundation to consider our findings in comparison to an evaluation of air traffic control system safety they had provided FAA in January 1982. They concluded that conditions within the controller work force have changed since their 1981 evaluation and the present system does not provide the same level of safety as before the August 1981 strike.

On the basis of our work, we recommend that FAA impose restrictions on air traffic until both the number of FPL controllers and overtime requirements meet FAA's goals. As noted in our statement, problems relating to both the number of FPLs and overtime are most acute at the air route traffic control centers and FAA must recognize this in deciding what restrictions to impose.

We also recommend that FAA take into account the concerns of its controllers, supervisors and facility managers, and (1) reduce the total amount of time controllers are spending at radar control positions during a shift and the amount of time they are working without some sort of break during normal busy periods, and (2) work with controllers

and their supervisors to change sector configurations where sectors are handling too much traffic or are too complex. FAA should also evaluate the effectiveness of its flow control program.

Our work clearly shows that controllers and their supervisors believe FAA management does not sufficiently consider or respond to their concerns. For this reason, we recommend that FAA include controllers and supervisors in the process of deciding how to improve these conditions.

Finally, to more clearly report its progress in meeting its goals, FAA should report its staffing progress in terms of the ratio of FPLs to the controller work force, exclusive of air traffic assistants, and report overtime use for controllers actually working it and the variations in total usage among centers.

We furnished copies of this statement to FAA and met with various air traffic control headquarters officials to discuss its contents. They confirmed the accuracy of the FAA data we used, but did not provide a position on our conclusions and recommendations.

There were two principal sources for our information. One was data on staffing, overtime, and air traffic activity from FAA's payroll, personnel, and other systems for the period from July 1981 through September 1985. The other source was an extensive questionnaire survey of some 4,500 radar qualified controllers, 1,000 first-line supervisors, and the managers of the 20 air route traffic control centers and the 54 busiest terminal facilities in the continental United States. The principal purpose of the survey was to determine how prevalent those directly involved in air traffic control feel certain prolems are. In that regard, 63 percent of FAA's controllers are employed at the 74 facilities we surveyed. Overall, 75 percent of those we surveyed responded. In addition to answering our questions, about 2,000 persons provided other comments which we also have analyzed. The final tabulated questionnaire responses are enclosed for your information.

I am also enclosing a copy of a statement we delivered on March 3, 1986, which illustrates how the problems we found in many major facilities across the country are manifested in six FAA facilities which provide air traffic control services in the northern New Jersey/New York City area.

As you know, 31 U.S.C. 720 requires the head of a federal agency to submit a written statement on actions taken on our recommendations to

the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We will be happy to meet with you or your staff to answer any questions or discuss these matters in more detail.

Sincerely yours,

J. Dexter Peach
Director

Contents

Abbreviations

ATC	Air Traffic Control
FAA	Federal Aviation Administration
FPL	full performance level (fully qualified)

GAO Statement on Conditions Within the Air Traffic Control Work Force

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

FOR RELEASE ON DELIVERY

STATEMENT OF

HERBERT R. MCLURE, ASSOCIATE DIRECTOR

RESOURCES, COMMUNITY, AND

ECONOMIC DEVELOPMENT DIVISION

BEFORE THE

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

OF THE

HOUSE COMMITTEE ON PUBLIC WORKS

AND TRANSPORTATION

ON

CONDITIONS WITHIN THE AIR TRAFFIC CONTROL WORK FORCE

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Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to comment on conditions within the controller work force at FAA's major air traffic control (ATC) facilities. Because of growing concerns by the Congress and others, we have over the past year, collected and analyzed information on various aspects of the working environment in the ATC system. As agreed, our testimony today will cover in detail

--the size and composition of the controller work force,

--controller workload,

--controller overtime,

--training of new controllers,

--FAA management practices, and controller morale.

There were two principal sources for the information we collected and analyzed. One source was data on staffing, overtime, and air traffic activity from FAA's payroll, personnel, and other systems for the period from July 1981 through September 1985. The other source was an extensive questionnaire survey of some 4,500 radar qualified controllers, 1,000 first-line supervisors, and the managers of the 20 air route traffic control centers (hereafter referred to as centers) and the 54 busiest terminal facilities in the continental United States. The principal purpose of the survey was to determine how prevelant those directly involved in air traffic control feel certain problems are. In that regard, 63 percent of the controllers are employed at the 74 facilities we surveyed.

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Overall, 75 percent of those we surveyed responded and in our statement we have tried to use the questionnaire results to underscore conditions apparent in FAA's data. In addition to answering our questions, about 2,000 persons provided other comments which we also have analyzed. As a supplement to our statement we are releasing the complete questionnaire survey results today along with the details of our objectives, scope, and methodology. Various appendices are also attached to our statement to illustrate the information we obtained from FAA's data systems.

Before we present the specific results of our work, we want to note that most of the controllers, supervisors, and managers who answered our questionnaires rated the overall safety of the ATC system as adequate to excellent. But our testimony shows that the supervisors and controllers also had concerns about their ability to maintain system safety.

MAJOR FINDINGS

These are the main findings we will be discussing today:

--FAA does not have as many fully qualified, experienced controllers at major ATC facilities as managers, supervisors, and controllers believe are needed and as are called for by FAA's standards and goals, and this problem cannot be resolved right away. In addition FAA could lose more supervisors and controllers through retirement than it expects, especially at key facilities.

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--Air traffic activity has reached record levels and is at the point where controllers and their supervisors believe they are overworked during peak periods, especially at centers. Moreover, air traffic is expected to continue to grow.

--FPL controllers report spending about 25 percent more time at a radar control position during typical day and evening shifts than managers believe they should have to.

--Overtime is likely to remain high at the centers and controllers and supervisors we sampled feel the overtime being worked is negatively affecting controllers' ability to perform their duties.

--There are problems with the quality and amount of on-the-job training being given to new controllers.

--There are fairly widespread communications and other employee/management problems at the facility level that are adversely affecting the morale of controllers and supervisors.

In their responses to our questionnaire, supervisors confirmed that each of these factors negatively impacts the maintenance of ATC system safety.

We also found that the information FAA provides the Congress does not clearly describe its progress in rebuilding the controller work force and the status of improvements to the operation of the ATC system.

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We have met with FAA's Administrator and other FAA officials on several occasions to share our results. We have also briefed FAA on the findings and proposed recommendations we will present today. We found FAA to be both interested and receptive.

I will now present the specifics on each of these findings.

SIZE AND COMPOSITION OF THE CONTROLLER WORK FORCE

Today the ATC system is being operated with fewer controllers overall, and far fewer full performance level (FPL)[1] controllers than before the August 1981 strike.

At the time of the 1981 strike, FAA believed that the 16,200 controllers it had were more than it needed. Since then, FAA has set out to rebuild the work force to a level of several thousand fewer controllers. For fiscal years 1984 and 1985, FAA said its goal for controllers was about 12,500 as part of a total work force goal of about 14,300.

As of September 30, 1985, FAA had met its goal of about 12,500 controllers. However, the composition of the controller work force was far different than it was before the strike. As of July 31, 1981, there were 13,200 FPLs comprising over 80 percent of the work force. Only about 3,400 FPLs remained after the strike and as of September 30, 1985, there were about 8,300 FPLs comprising about 66 percent of the work force. In addition, FAA had about 4,200 developmental controllers[2] and

[1]A full performance level controller is one who is fully certified to operate all positions in a defined area.

[2]A developmental controller is one who is undergoing training.

1,500 air traffic assistants,[3] a new position established since the stike. At the 74 FAA facilities we studied there were 8,200 FPLs before the strike and as of September 30, 1985, there were 4,700.

FAA's FPL staffing goal

FAA has established an FPL staffing goal of 75 percent[4] at all ATC facilities. FAA had not achieved its FPL staffing goal at any of the 20 centers or at 22 of the 54 major terminal facilities we studied, as of September 30, 1985. Moreover, there were proportionately fewer FPLs at the 20 centers we studied than at the terminals. FPLs made up an average of only 53 percent of the controllers at the centers. At the terminals, on the other hand, about 73 percent of the controllers were FPLs.

In reporting to the Congress on the size of the controller work force and its progress towards reaching its goals, FAA uses the term "operational controllers."[5] This term lumps together controllers who have significantly different levels of

[3]Air traffic assistants are not trained to and do not control air traffic. They perform less skilled tasks of mainly a clerical nature.

[4]DOT informed the Office of Personnel Management, in a May 1985 request for a continuance of a waiver of time-in-grade requirements for controller promotions, that it was essential to have at least 75 percent of the controllers at a facility as FPLs. We, therefore, have used that as FAA's goal for FPL controller staffing.

[5]According to FAA, all FPLs and those developmental controllers certified on at least two nonradar or radar positions are operational controllers.

experience, training, and responsibilities making it difficult to track FAA's real progress toward its goals and the actual composition of its work force. For example, on April 23, 1985, FAA testified it had attained 82 percent of its operational controller goal at the centers but even 5 months later only 53 percent of center controllers were FPLs.

Perspectives of controllers, supervisors, and managers on staffing adequacy

We asked controllers, supervisors, and facility managers their opinions on staffing. Ninety-one (91) percent of the controllers, 86 percent of the supervisors, and 72 percent of the facility managers said they believe there are fewer FPLs than are needed. In addition, over one-third of the facility managers also reported that aside from concerns about their current on-board staffing, their authorized controller staffing levels are not adequate. We also asked the supervisors and managers their opinion about how much positive or negative impact several factors, including the number of FPLs available, were having on maintaining system safety. Seventy-two (72) percent of the supervisors said the lack of FPLs was having a negative impact. Of the 69 facility managers who answered the same question 26 or 38 percent had the same opinion.

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Obstacles to rebuilding the controller work force

FAA faces some difficult obstacles in building toward its staffing goals. First, it takes time for a controller to acquire the training and experience to qualify as an FPL. Second, training attrition has been higher than FAA originally anticipated. And third, many of the experienced FPLs and supervisors have retired or are approaching retirement. These add up to a long term controller staffing problem.

Before the strike, it took an average of 4 to 5 years to qualify as an FPL. Since the strike, the Office of Personnel Management has waived time-in-grade requirements so that controllers can become FPLs in about half that time. Even so, FAA had added fewer than 1,700 FPLs to the 74 facilities we studied in the 4 years since the strike.

Regarding training attrition (failures and withdrawals), about half of those hired have been able to pass the FAA Academy and facility level training requirements, whereas FAA originally had planned for a combined attrition rate of 35 percent. The Academy's poststrike attrition rate has averaged 42 percent, 9 percent higher than the comparable prestrike period. And facility attrition rates for those who graduated from the Academy have averaged 35 percent at the centers and 15 percent at the terminals.

FAA attributes the higher rates mainly to fewer applicants having air traffic control or aviation experience than before the strike and to deficiencies in administering the tests given

applicants. About 70 percent of the facility managers responding to our survey cited the lack of aptitude in controller candidates as a reason for training attrition at their facilities.

Finally, our survey suggests that the retirement issue is volatile and many more controllers and supervisors will retire in the next few years than FAA is planning for. FAA projects its annual retirements based on its historical experience that only 14 percent of those eligible to retire actually do so.

Based on our survey, however, about 84 percent or 467 of the 558 controllers and 81 percent or 355 of the 436 supervisors eligible to retire then or within 2 years said they would retire when eligible. For example, 26 of the 44 supervisors at the New York Center are already eligible to retire, and our survey indicated that 82 percent of them definitely or probably will retire within the next 2 years. The most frequently selected reason for wanting to retire when eligible was concern over proposed changes in the federal retirement system. The second most frequently selected reason by both supervisors and controllers was dissatisfaction with FAA management.

FAA's ongoing efforts will have little short-term impact on staffing

FAA has several efforts underway to improve controller staffing--recently announced plans to add new controllers in fiscal years 1986 and 1987, a special program to encourage transfers into seven centers where the lack of FPLs is acute, and a new Academy admittance policy and screening program. However, these efforts will have little effect on staffing for the short term.

In September 1985, the Secretary of Transportation announced that FAA will add 1,000 more controllers--500 each in fiscal years 1986 and 1987. But even with the time-in-grade waiver, new controllers will still take 2 years or more to progress to FPL status.

To improve the FPL staffing at 7 of the 20 centers having 50 percent or fewer FPLs FAA announced a special program in November 1985 permitting FPLs from other facilities to transfer to these centers. Those selected will receive a 90-day assessment and training period. Those who do not qualify can return to their former location with no loss of pay or position. (Normally, controllers who transfer and then fail training cannot return to their former facility and they may lose their job.) FAA received about 500 bids and, as of January 1986, hoped the program will provide about 200 FPLs to the seven centers. Adding 200 FPLs to the seven centers, however, will only increase their FPL staffing ratio from 47 percent to 52 percent while reducing the FPL ratios at the other facilities.

Finally, FAA is attempting to reduce its training attrition rate by trying to limit acceptance to the Academy to those applicants who score 95 percent or better on the entrance test and limiting the frequency with which an applicant can take the test to not more than once in an 18-month period. FAA also expects the facility attrition rate to decrease because of a new screening program started at the Academy in October 1985. Rather than deciding where a trainee is to be assigned as soon as they are hired, FAA now delays the decision until it has a chance to evaluate the trainee's potential to succeed at a specific type of facility given the complexity and volume of air traffic it handles.

Rehiring fired controllers

Some members of the Congress recently endorsed rehiring fired controllers as a way to add experienced controllers to the system and a bill (H.R. 4003) was introduced to reappoint at least 500 in each of fiscal years 1986 and 1987.

Since we did not cover this issue in our work, all we can say at this point is that there are several major unknowns. Namely, (1) how long it would take to complete the administrative, retraining, and recertification processes; (2) how many of the former controllers are interested in being reappointed; and (3) what the sentiments are among the current work force about rehiring the former controllers. We are working to find answers to the latter two questions at the request of the House Committee on Post Office and Civil Service to which H.R. 4003 was referred.

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CONTROLLER WORKLOAD

Controller workload is affected by the number and type of aircraft they are handling at any one time, the complexity of what they have to do, and the amount of time they spend at a control position during their shift. Immediately following the strike, FAA imposed special restrictions that reduced air traffic activity by about 20 percent because of the severe shortage of controllers. As FAA hired and trained more controllers, it lifted the last of the restrictions in December 1983, with the exception of flow control[6] which has been used in some form since 1970.

Air traffic has now reached record levels and is expected to continue to grow. At the 74 facilities included in our review, air traffic activity has grown from 26 million operations in the first 6 months in 1981 to over 28 million operations for the same 6 months in 1985, an increase of over 7 percent. However, the first major labor-saving features of FAA's planned automated air traffic control system will not be available until at least the early 1990s. Thus, controller workload will likely continue to be a concern for some time.

Our survey showed that 70 percent of the controllers who work radar believe they are required to handle more traffic during daily peak periods than they should be handling. While

[6]This is FAA's centrally managed national program designed to control aircraft departures and enroute flows based on weather conditions and capacity at arrival airports.

their supervisors said that a much lower percentage--38 percent of the controllers under their supervision--are required to handle too much traffic, even their estimate represents over 2,000 controllers. Facility managers, on the other hand, disagreed with both the controllers and supervisors stating that only 4 percent of the radar controllers are required to handle more traffic than the managers feel is appropriate.

Over 80 percent of the controllers who believe that their workload is too high selected (1) the shortage of radar controllers, (2) inadequate flow control procedures, and (3) airline schedules as the top three reasons. Over 70 percent of the supervisors who said controllers under their supervision are required to handle too much traffic also selected these reasons.

Controllers selected the configuration of the air traffic sectors[7] as a fourth major reason for workloads that are too high. Again their supervisors strongly concurred. Following the strike, FAA reduced the number of enroute sectors from 721 to 558, or by 22 percent, and initiated a program to realign them. In general, reducing the number of sectors reduces the number of controllers needed, but correspondingly increases the amount of airspace a controller working radar is responsible for. Thus, the way a sector is configured can affect controller workload in terms of both traffic volume and complexity to some degree. FAA has reinstated many sectors but there are still about 80 fewer than before the strike.

[7]A sector is a designated section of airspace within which a controller has responsibility and authority for the separation of aircraft.

FAA headquarters officials told us they reconfigure sectors when requested by facility managers. Based on our questionnaire, two-thirds of the supervisors confirmed that some of their sectors had been reconfigured but 70 percent said further changes are needed, principally because the sectors were handling too much traffic and were too complex. In that regard, about 40 percent were dissatisfied with the amount of say they had in the reconfigurations that had taken place.

Based on our questionnaire, 50 percent of the controllers believed that they had to spend too much time during a shift at a radar position. Current FAA staffing standards are based on the premise that controllers should work 6-1/2 hours on position during an 8-hour shift. The standards do not specify how the 6-1/2 hours should be allocated to radar or nonradar duties. While many FPL controllers believe they should work somewhat less than 6-1/2 hours on positions, their concerns center more on the total time they are required to work a radar position. They reported working more than 4 hours a day at a radar position and believe they should work about 1/2 hour less. Their supervisors and managers said they should be working even less time on radar--only about 3 hours during an 8-hour shift.

FAA's policy is that controllers should not work more than 2 hours at a radar position without a break or change of position. About half of the controllers reported working continuously for 2 hours or more on position during peak periods.

Over 60 percent said they are working too long without a break during peak periods, and more than 40 percent of their supervisors agreed.

On average, supervisors themselves spend over 35 percent of their time working traffic, and almost half of them believe this hinders their ability to carry out their supervisory responsibilities.

With regard to our question about the impact certain factors have on maintaining ATC system safety, 78 percent of the supervisors believed that the amount of traffic workload was having a negative impact. We also asked controllers about two air traffic control additional services[8] which can have a bearing on safety and which they provide pilots when they have time--responding to pilots' requests for traffic advisories and weather advisories. Even though a quarter of the controllers said they seldom, if ever, declined requests for traffic advisories, another third said they often did. About half said they seldom, if ever, declined weather advisory requests, but one in five said they often did.

FAA's efforts to reduce and/or stabilize controller workload

In addition to traditional flow control, FAA is working on several programs to better manage the flow of traffic and help reduce and/or stabilize controller workload. The controllers

[8]Air Traffic control additional services include various advisories that are provided to the extent possible contingent only upon the controllers capability to fit them into the performance of higher priority duties and on the basis of the limitations of the radar, volume of traffic, radio frequency congestion and controller workload. The controller has complete discretion in regards to providing these services.

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and supervisors identified inadequate flow control procedures as a reason why they were being required to handle more traffic than they thought they should. FAA's flow control program improvements are not far enough along for us to ask about their effectiveness, but we did note that FAA has reported improvement before it actually occurred. For example, FAA testified about a year ago that a key program to predict overloads in specific enroute sectors was operational, yet we noted that it has not been fully operational because of limited computer capacity.

THE USE OF OVERTIME TO OPERATE THE ATC SYSTEM

FAA is heavily dependent on overtime to operate the ATC system. During fiscal year 1980 (the last full fiscal year before the strike), overtime for the entire system was about 377,000 hours and cost about $8.1 million. In contrast, during fiscal year 1985, overtime totaled 908,000 hours and cost about $28 million. FAA testified in April 1984 that it is more economical to use overtime judiciously rather than to staff facilities at prestrike levels. In that regard, FAA subsequently testified that its poststrike goal is between 600,000 and 700,000 hours of overtime.

FAA is trying to bring overtime down to its goal, and overtime at terminals shows a consistent downward trend. However, overtime at centers has remained high. In addition, during fiscal year 1985, 10 centers accounted for about 75 percent of the total overtime worked at all 20 centers in the continental

United States. Those 10 centers also accounted for 58 percent of the total overtime worked at the 74 facilities we surveyed.

FAA has assured the Congress that the overtime situation is improving by citing systemwide data. For example, the FAA Administrator testified in October 1984 that the need for overtime had continued to go down. He stated that comparing the period from January through July, overtime use declined 6 percent from 1983 to 1984. While this statement was accurate for the entire system, including Flight Service Stations,[9] we found that during this same period overtime use by controllers at the centers actually increased by over 6 percent.

The use of systemwide data also obscures the significant variation in overtime use among FAA facilities. To illustrate the difference we tested one pay period ending August 3, 1985. The composite systemwide overtime average was about 2 hours for the 2 week pay period, but FPLs who actually worked overtime at the centers averaged from about 1 hour at 1 center to over 9 hours at 12 centers for the pay period.

Effects on controllers

It is clear that a large share of controllers at centers where overtime and air traffic activity have remained high are concerned about its effects. For example, 42 percent of center

[9]Flight Service Station personnel provide weather information and other services primarily to general aviation pilots. They do not control air traffic.

controllers said they were working more overtime than they wanted. Of those, the overwhelming majority also said overtime was having a negative impact on their overall ability to perform their duties.

Center supervisors responding to our survey basically expressed the same overall views as the center controllers concerning overtime. With regard to our question about maintaining system safety, 52 percent of center supervisors believed that the amount of overtime is having a negative impact. Also, 9 of the 18 center managers who responded said controllers are working more overtime than they should.

Even though many controllers and supervisors said overtime adversely affects their ability to do their job well, some controllers and supervisors said that the amount of overtime authorized at their facilities was too little to provide adequate coverage for staff shortages, leave use, and training requirements.

TRAINING NEW CONTROLLERS

To rebuild its controller workforce, FAA has had to hire and train thousands of new controllers since 1981. As of November 1985, about 13,400 controller candidates had entered the FAA Academy for screening and basic training since the 1981 strike.

In responding to our questionnaires, controllers and supervisors expressed concern about the skill level of developmental controllers, and the amount and quality of training they receive. For example, about half the controllers and supervisors said they believe the training developmental controllers receive

before beginning on-the-job training (OJT) is less than adequate. Controllers and supervisors also pointed to four areas where they thought the quality of OJT was less than adequate to poor--using back-up systems, emergency procedures, holding patterns, and controlling traffic in bad weather.

Facility managers' responses showed that they disagreed with both the controllers and supervisors. The managers considered training quality adequate to excellent.

Many of the 800 written comments we received about training suggested that the people providing OJT lacked the experience and capability to do it properly. We found that some OJT is provided by developmentals to other developmentals, and received comments from both new FPLs and developmentals stating that, because of their own limited experience, they were concerned about being required to train others. For example, one controller said:

> "I have been an FPL for only 8 months and I am already training my second student. Both students were given to me against my will. I have the ability to control traffic on my own, but I have no business giving OJT considering my current experience level."

FAA recognizes problems

FAA told us they are aware of several shortcomings in the OJT programs and are developing changes which could address the major concerns expressed by controllers and supervisors. For example, FAA said that under current conditions they have to use

all available controllers as OJT instructors, but in the future, instructors will be selected only from those who desire to provide training. Moreover, FAA is working to enhance the quality and standardization of OJT instruction; standardize certification requirements; and have better training, quality control, and accountability.

CONTROLLERS' AND SUPERVISORS' PERSPECTIVES ON FAA MANAGEMENT PRACTICES AND MORALE

Although we did not ask any specific questions about FAA management, both controllers and supervisors commented extensively on FAA's management practices and the state of their morale. Overall, we received almost 1,300 comments related to management, of which about 92 percent were negative. Two predominate themes surfaced about management: (1) managers were not responsive to employee concerns and (2) the overall quality of management was poor from the standpoint of employee relations. About 85 percent of the controllers' comments were directed to management levels above the first-line supervisor.

The state of controller morale frequently has been brought into question and FAA has continually asserted that morale is good despite some undesirable aspects of today's working conditions. All told, we received over 600 comments on morale from controllers and supervisors, and of those, only 76 were favorable. In examining comments about morale problems, the most frequently mentioned factor was the poor quality of facility management followed by workload. Center controllers also

pointed to overtime as another major cause of their morale problems.

Various other comments were made regarding the workings of employee organizations at the facility level. The two principal ones are the Human Relations Committees which were established to improve human relations and the Facility Advisory Boards which provide a forum for employees to advance suggestions to facility managers on technical matters. The nature of the comments closely paralleled those on FAA management in that they were overwhelmingly negative. Both organizations were viewed as more ineffective than effective because management too often gave only lip service and was not really responsive to what came out of the workings of the organizations.

FAA knows it has employee-management problems, and the Administrator has spoken of the need to "change the culture" of the agency. Our survey instruments were not designed to measure the quality of FAA management and the state of employee morale and the written comments cannot be projected to the entire work force. Nevertheless, our analysis of the comments indicates that the problems are broad in scope and fairly serious at the major air traffic control facilities. Moreoever, there is very little difference in the tone or nature of the comments made by supervisors, FPLs, and developmental controllers.

THE LEVEL OF ATC SYSTEM SAFETY HAS DIMINISHED SINCE THE STRIKE

In August 1981, the FAA Administrator asked the Flight Safety Foundation to evaluate ATC system safety. The Foundation is an international membership organization established in 1945 dedicated solely to the improvement of flight safety.

The Foundation's objective in its evaluation was to provide the Administrator with an independent and objective appraisal of the strengths and weaknesses of the ATC system during the period from late August to mid-December 1981. In appraising safety, the Foundation considered "matters that history has shown lead to accidents or unacceptable risks to human life and property." In its January 1982 report following its evaluation, the Foundation concluded that the ATC system at that time, had "an equivalent level of safety to the pre-strike system." But the report also stated that "until staffing can be increased with properly qualified individuals, safety considerations require the FAA to maintain control of traffic flows" and recommended that FAA keep the restrictions on the volume of instrument flight rule traffic and only allow it to increase as controller staffing permits.

The topics the Foundation considered included many that we considered in our study, such as the composition of the controller work force, work load, overtime, training, and retirements as well as controller perspectives on FAA management practices and morale. We asked the Foundation, our technical

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consultant throughout our study, to compare our analysis of FAA's data and the responses to our questionnaires to their 1981 study results. The Foundation concluded that conditions within the controller work force have changed since their 1981 evaluation and the present ATC system does not provide the same level of safety as before the strike.

CONCLUSIONS AND PROPOSED RECOMMENDATIONS

What we think this all adds up to is that FAA needs to more fully consider the effects the growing demand for air traffic services is having on the controller work force. Controllers at many major facilities are being stretched too thin and over time, the situation could impair their ability to continue to maintain the proper margin of safety. Since FAA cannot quickly increase the number of qualified controllers or provide new equipment and other measures to reduce workload immediately, the only options available today are to continue to stretch the controllers or to limit the air traffic they are responsible for. Limiting air traffic before conditions worsen seems to be the prudent choice.

Accordingly, at this time we recommend that FAA impose restrictions on air traffic until both the number of FPL controllers and overtime requirements meet FAA's goals. As noted in our statement problems relating to both the number of FPLs and overtime are most acute at the air route traffic control centers and FAA must recognize this in deciding what restrictions to impose.

We also recommend that FAA take into account the concerns of its controllers, supervisors and facility managers, and (1) reduce the total amount of time controllers are spending at radar control positions during a shift and the amount of time they are working without some sort of break during normal busy periods, and (2) work with controllers and their supervisors to change sector configurations where sectors are handling too much traffic or are too complex. FAA should also evaluate the effectiveness of its flow control program.

Our survey clearly shows that controllers and their supervisors believe FAA management does not sufficiently consider or respond to their concerns. For this reason, we recommend that FAA include controllers and supervisors in the process of deciding how to improve these conditions.

Finally, to more clearly report its progress in meeting its goals FAA should report its staffing progress in terms of the ratio of FPLs to the controller work force, exclusive of air traffic assistants; and report overtime use for controllers actually working it and the variations in total usage among centers.

74 MAJOR AIR TRAFFIC CONTROL FACILITIES INCLUDED IN GAO'S SURVEY

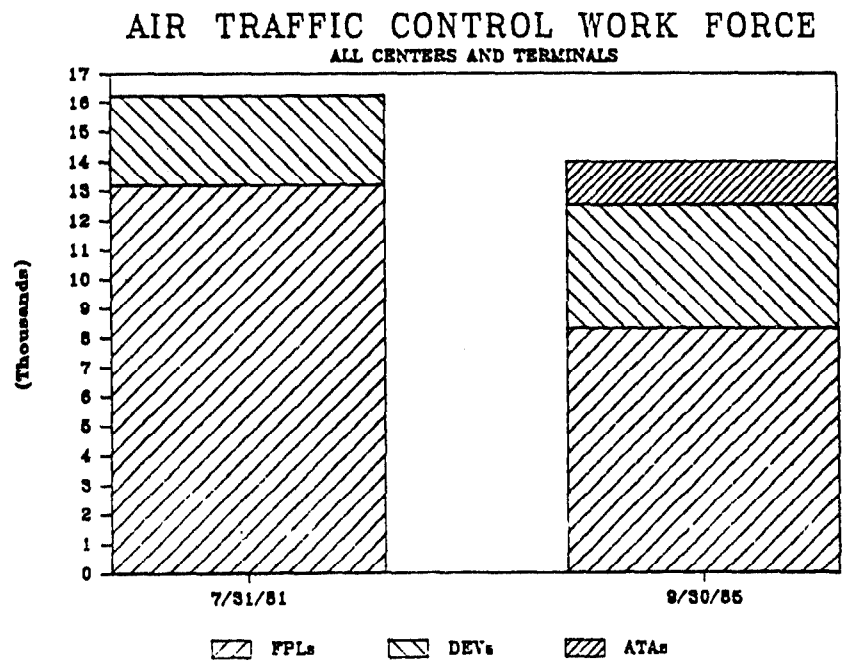
AIR ROUTE TRAFFIC CONTROL CENTERS

1. Albuquerque
2. Atlanta
3. Boston
4. Chicago
5. Cleveland
6. Denver
7. Fort Worth
8. Houston
9. Indianapolis
10. Jacksonville
11. Kansas City
12. Los Angeles
13. Memphis
14. Miami
15. Minneapolis
16. New York
17. Oakland
18. Salt Lake City
19. Seattle
20. Washington, D.C.

TERMINAL FACILITIES

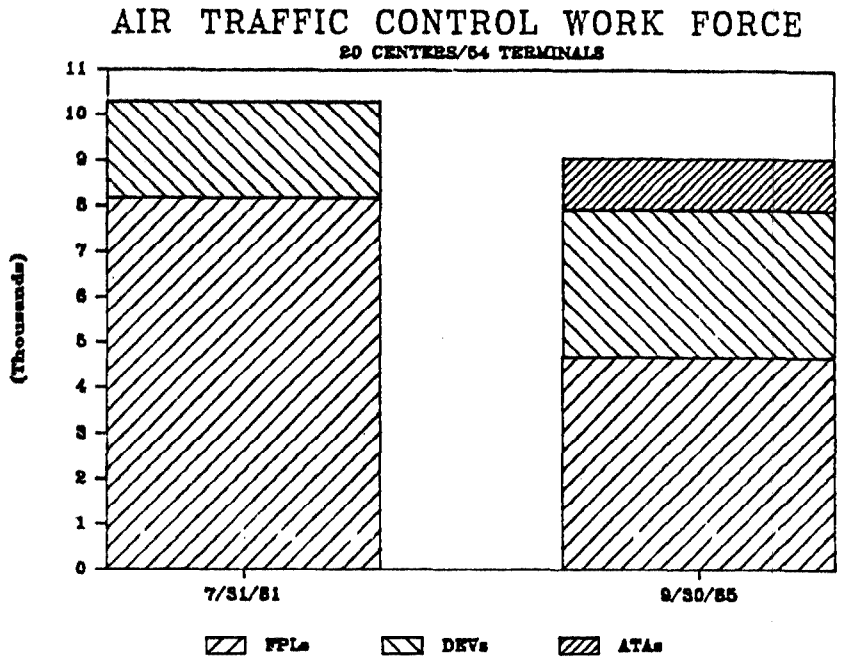
1. Atlanta
2. Balt.-Wash.
3. Boston
4. Burbank
5. Charlotte
6. Chicago (O'Hare)
7. Cleveland
8. Columbus
9. Dallas-Fort Worth
10. Dayton
11. Denver
12. Detroit
13. Edwards AFB
14. Fort Lauderdale
15. Houston
16. Indianapolis
17. Jacksonville
18. Kansas City
19. Kennedy
20. LaGuardia
21. Las Vegas
22. Los Angeles
23. Los Angeles TRACON[1]
24. Lubbock
25. Memphis
26. Miami
27. Milwaukee
28. Minneapolis
29. Newark
30. New Orleans
31. New York TRACON
32. Norfolk
33. Oakland TRACON
34. Oklahoma City
35. Ontario TRACON
36. Orlando
37. Pensacola
38. Philadelphia
39. Phoenix
40. Phoenix TRACON
41. Pittsburgh
42. Portland
43. Sacramento
44. St. Louis
45. Salt Lake City
46. San Antonio
47. San Diego
48. San Francisco
49. Santa Ana
50. Seattle
51. Tampa
52. Wash. National
53. West Palm Beach
54. Windsor Locks

[1]TRACON = Terminal Radar Approach Control facility



Air Traffic Control Work Force:

	7/31/81	9/30/85
Full Performance Level Controllers (FPLs)	13,205	8,315
Developmental Controllers (DEVs)	3,039	4,217
Air Traffic Assistants (ATAs)	0	1,466
	16,244	13,998



Air Traffic Control Work Force:

	7/31/81	9/30/85
Full Performance Level Controllers (FPLs)	8,176	4,676
Developmental Controllers (DEVs)	2,120	3,259
Air Traffic Assistants (ATAs)	0	1,131
	10,296	9,066

RATIO OF FULL PERFORMANCE LEVEL (FPL)
CONTROLLERS TO TOTAL CONTROLLERS AT 14
SELECTED FACILITIES ON 7/31/81 AND 9/30/85

FIELD FACILITIES	7/31/81 FPLs	7/31/81 Total Controllers	7/31/81 FPLs as a Percent of Total	9/30/85 FPLs	9/30/85 Total Controllers	9/30/85 FPLs as a Percent of Total
CENTERS						
Atlanta	340	392	87	237	404	59
Chicago	337	503	67	147	352	42
Cleveland	422	543	78	195	395	49
Indianapolis	282	412	68	119	263	45
Los Angeles	217	339	64	141	276	51
Minneapolis	230	325	71	118	259	46
New York	344	514	67	158	267	59
Oakland	195	280	70	100	263	38
TERMINALS						
Dallas-Fort Worth	93	93	100	59	79	75
Kennedy	29	33	88	18	25	72
La Guardia	30	36	83	18	29	62
Newark	21	28	75	17	28	61
New York TRACON	124	180	69	87	111	78
San Francisco	26	26	100	24	24	100

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FULL PERFORMANCE LEVEL (FPL) CONTROLLERS AND SUPERVISORS AT 14 SELECTED FACILITIES WHO WERE ELIGIBLE TO RETIRE AS OF DECEMBER 31, 1985

FIELD FACILITIES	NUMBER OF FPL CONTROLLERS			NUMBER OF FIRST LINE SUPERVISORS		
	On-Board	Eligible	Percent	On-Board	Eligible	Percent
CENTERS						
Atlanta	246	22	9	51	20	39
Chicago	150	15	10	42	21	50
Cleveland	199	31	16	43	26	60
Indianapolis	122	12	10	28	16	57
Los Angeles	143	9	6	34	13	38
Minneapolis	116	4	3	32	6	19
New York	165	17	10	44	26	59
Oakland	115	13	11	30	11	37
TERMINALS						
Dallas - Fort Worth	48	6	13	13	6	46
Kennedy	18	0	-	5	1	20
La Guardia	16	0	-	5	0	-
Newark	21	0	-	7	5	71
New York TRACON	88	4	5	26	9	35
San Francisco	24	0	-	5	1	20

GROWTH IN AIR TRAFFIC ACTIVITY

Comparison of First and Second Quarters in 1981 to Same Period in 1985

Centers and Terminal Facilities With More Than a 10 Percent Increase

Centers	Percent Increase
Atlanta	25.2
Salt Lake City	18.5
Washington, D.C.	16.6
Kansas City	15.9
Albuquerque	15.6
New York	14.1
Boston	13.9
Minneapolis	13.8
Cleveland	11.7
Denver	10.7
Los Angeles	10.6

Terminal Facilities	
Newark	54.3
Chicago (O'Hare)	41.5
Baltimore-Washington	37.9
New York TRACON	32.5
Charlotte	26.8
Dallas-Fort Worth	24.6
Edwards AFB	24.1
Detroit	22.1
St. Louis	19.4
Ontario TRACON	17.6
Minneapolis	17.0
San Francisco	16.4
Atlanta	16.0
Oakland TRACON	11.9
Jacksonville	10.2
Phoenix TRACON	10.1

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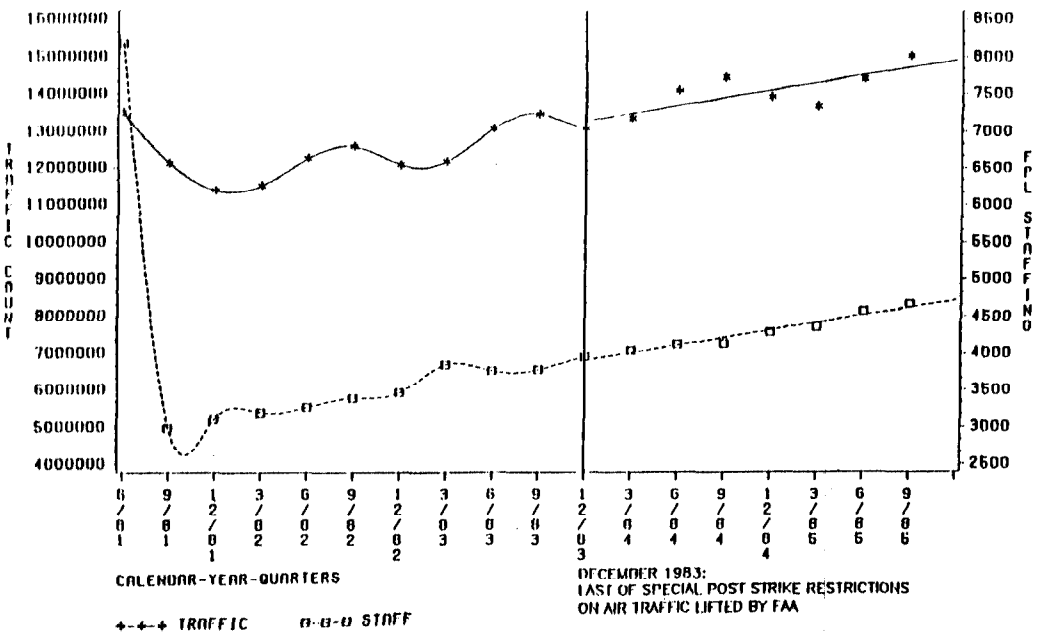
FULL PERFORMANCE LEVEL CONTROLLER STAFFING
AND AIR TRAFFIC ACTIVITY AT 74 MAJOR FACILITIES
INCLUDED IN GAO'S SURVEY
TRAFFIC COUNT
FPL STAFFING
16000000
15000000
14000000
13000000
12000000
11000000
10000000
9000000
8000000
7000000
6000000
5000000
4000000
8600
8000
7500
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
6/01
9/01
12/01
3/02
6/02
9/02
12/02
3/03
6/03
9/03
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3/04
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9/04
12/04
3/05
6/05
9/05
CALENDAR-YEAR-QUARTERS
DECEMBER 1983:
LAST OF SPECIAL POST STRIKE RESTRICTIONS
ON AIR TRAFFIC LIFTED BY FAA
+-+-+ TRAFFIC
o-o-o STAFF

Supplement to GAO Statement on Conditions Within the Air Traffic Control Work Force

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

FOR RELEASE ON

SUPPLEMENT TO STATEMENT OF

HERBERT R. MCLURE, ASSOCIATE DIRECTOR

RESOURCES, COMMUNITY, AND

ECONOMIC DEVELOPMENT DIVISION

BEFORE THE

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

OF THE

HOUSE COMMITTEE ON PUBLIC WORKS

AND TRANSPORTATION

ON

CONDITIONS WITHIN THE AIR TRAFFIC CONTROL WORK FORCE

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FOREWARD

This is a supplement to our testimony before the Subcommittee on Investigations and Oversight of the House Committee on Public Works and Transportation regarding conditions within the air traffic control work force. It contains the results of GAO's surveys of air traffic controllers, first line supervisors, and facility managers at the 20 continental air route traffic control centers and 54 major radar terminal facilities.

Contents

ABBREVIATIONS

GAO	General Accounting Office
FAA	Federal Aviation Administration
FPL	full performance level
FSF	Flight Safety Foundation
NTSB	National Transportation Safety Board

SECTION 1

OVERALL OBJECTIVES AND SCOPE OF GAO's AIR TRAFFIC CONTROL SURVEY

GAO undertook this survey primarily to determine how prevalent those directly involved in air traffic control feel certain problems are. The survey was also to identify areas that may warrant management attention and allow a comparison of the views of controllers about selected issues with the views of their direct supervisors and facility managers.

The 74 facilities that GAO surveyed employed approximately 63 percent of Federal Aviation Administration (FAA) controllers as of September 30, 1985. The 20 centers represent all continental centers, and the 54 level 4 and 5 terminal facilities are the major radar terminal facilities that have handled about 64 percent of all instrument operations at FAA-operated terminal facilities.

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SECTION 2

METHODOLOGY AND RESULTS OF AIR TRAFFIC CONTROL WORK FORCE SURVEY

Between May 2, 1985, and July 26, 1985, GAO conducted a mail survey of radar-certified controllers working at 74 FAA facilities. The questionnaire was designed to obtain information about their opinions and experiences concerning the

-- radar controllers' workload,

-- amount of overtime worked,

-- adequacy of staffing levels,

-- FAA implementation of the Automated Operational Error Detection Program,

-- training of developmental controllers,

-- extent to which various factors impact on maintaining system safety, and

-- issues such as planned retirement and part-time employment.

PRETEST

Draft questionnaires were pretested with a total of 18 controllers and first line supervisors. Pretests were conducted at the Indianapolis Terminal, Indianapolis Center, Cleveland Center, and Philadelphia Terminal. During a pretest session an individual respondent completed the questionnaire in the presence of two GAO observers. GAO observers timed the respondent and observed reactions to questions and question flow. GAO observers then debriefed the respondent to identify any technical errors, ambiguities, potential bias, or other problems.

Questionnaire deficiencies identified during pretesting were corrected.

EXPERT REVIEW

A draft of the questionnaire was provided to the Flight Safety Foundation (FSF), National Transportation Safety Board (NTSB), and FAA for review and comment.

Relevant modifications based on comments received from FSF and NTSB were made to the questionnaire. FAA provided no substantive comments.

METHODOLOGY

To establish the universe of radar-certified controllers, we used an FAA computer file of all controllers (GS-2152 series) employed at the 74 facilities as of February 28, 1985. Since some of the controllers on this file were not radar certified, criteria developed in consultation with FAA were used to identify those controllers qualified to be radar certified. This procedure identified a total of 668 developmental and 1,435 full performance level (FPL) controllers[1] at the 54 terminal facilities and a total of 1,231 developmental and 2,914 FPL controllers at the 20 centers. All the developmental and FPL controllers at the 54 terminal facilities were surveyed. However, because of the large numbers of radar controllers working at the 20 centers, a random sample of developmental and FPL controllers was selected from each center. The number of controllers sampled at each center was large enough to yield a sampling error of no more than 8 percent at the 95-percent confidence level for each center. This approach resulted in questionnaires being mailed to 872 developmental and 1,497 FPL controllers at the 20 centers.

Recognizing that the controllers identified as qualified for radar certification may, for various reasons, not have been radar certified, a screening question was included in the questionnaire. Responses to this question were used to make adjustments to our original sample and universe. As a result, individuals indicating they were not radar-certified controllers on the questionnaire were deleted from our analyses. The following tables show the original universe and sample sizes, the number of respondents who reported not being radar certified, and the adjusted universe and sample sizes for the work force survey.

[1]A developmental controller is one who is undergoing training. Those we surveyed were certified to operate at least one radar position. A full performance level controller is one who is fully certified to operate all positions in a defined area.

Table 2.1 Original Universe and Sample Sizes

Type of facility	Controller type	Universe	Sample
Terminal	Developmental	668	668
	Full performance	1,435	1,435
Center	Developmental	1,231	872
	Full performance	2,914	1,497
Total		6,248	4,472

Table 2.2 Number of Respondents Not Radar Certified

Type of facility	Controller type	Sample	Respondents	Not radar certified
Terminal	Developmental	668	463	182
	FPL	1,435	1,060	43
Center	Developmental	872	619	269
	FPL	1,497	1,140	18
Total		4,472	3,282	

Table 2.3 ADJUSTED UNIVERSE AND SAMPLE SIZES[a]

Type of facility	Controller type	Adjusted universe	Adjusted sample
Terminal	Developmental	405	281
	Full Performance	1,392	1,017
Center	Developmental	691	350
	Full Performance	2,868	1,122
Total		5,356	2,770

[a]Adjustments to universe of terminal facilities were based on the percentage of respondents from terminals who reported not being radar certified. Adjustments to universe of centers were based on the weighted percentage of respondents from centers who reported they were not radar certified.

Questionnaires were mailed to controllers' home addresses. A follow-up notice encouraging participation in the survey was sent to each facility for public display. In addition, a personal follow-up reminder with another copy of the questionnaire was mailed to individual nonrespondents.

Of the 4,472 controllers originally mailed questionnaires, 3,282 responded for a response rate of 73 percent. Overall, the results of the Air Traffic Work Force Survey are projectable to 3,981 or 74 percent of the 5,356 radar certified controllers at these 74 facilities as of February 28, 1985.

Appropriate weights were assigned to sampled cases prior to performing analyses of survey results.

SURVEY RESULTS

A copy of the work force questionnaire, annotated to show overall responses to each item, follows. The results reported represent responses in aggregate for the 74 facilities. These overall survey results are subject to sampling errors of not more than 2 percent at the 95-percent confidence level.

U.S. GENERAL ACCOUNTING OFFICE
AIR TRAFFIC CONTROL WORKFORCE SURVEY

INTRODUCTION

The U.S. General Accounting Office (GAO) is reviewing FAA's management of its air traffic control (ATC) workforce. This review is focusing on controller workload, staffing, overtime, training and other important areas. We are making every attempt to use existing information in our review but we have found it impossible to provide the Congress with quality information about these areas without first learning how those engaged in the day-to-day control of air traffic feel about them.

Your cooperation is vital to the success of our review. The more of you who respond, the more significant the information we collect will be. Your quick response will save us the time and expense of costly follow-up mailings.

Your responses to this survey will be held in complete confidence. All questionnaires will be under the control of GAO and our report will contain only summary information. The number on the questionnaire is for follow-up purposes only.

If you have any questions concerning this survey please call Tom Hubbs of GAO's Philadelphia Regional Office on FTS 597-4330 or collect on (215) 597-4330.

In the event the return envelope is misplaced, the return address is :

Tom Hubbs
U.S. General Accounting Office
434 Walnut Street, 11th Floor
Philadelphia, PA 19106

Thank you for your help.

➤NOTE - Unless otherwise indicated, all responses are expressed as percentages rounded to nearest whole number.

1. According to FAA records you are employed either as a full performance level (FPL) or developmental level controller certified on at least one radar position. Is this correct? (CHECK ONE.) 1 (5)

TOTAL : 3981 CASES

1. [85] Correct - I am a FPL (6)
2. [15] Correct - I am a developmental certified on at least one radar position
3. [__] Incorrect - I am (SPECIFY)

_____

_____

➤If you checked 3 please STOP HERE. Return the questionnaire in the envelope provided.

WORKLOAD

2. Consider the complexity of the sectors you work and your capabilities as a controller. While working radar during typical daily peak periods, do you believe you are typically required to handle more traffic than you should be handling, less traffic than you should be handling, or an appropriate amount of traffic? (CHECK ONE.) (7)

1. [15] Much more than I should be handling
2. [55] Somewhat more than I should be handling
3. [28] Appropriate level of traffic
4. [2] Somewhat less than I should be handling ➤SKIP TO QUESTION 4 IF YOU CHECKED 3, 4, OR 5.
5. [1] Much less than I should be handling

*3. In your opinion, how much, if any, does each of the following factors represent a reason for your being required to handle more traffic than you feel you should during daily peak periods? (CHECK ONE FOR EACH.)

	1. Major reason	2. Somewhat of a reason	3. Not a reason
1. Sector configuration (complexity)	34	48	18
2. Shortage of radar controllers	50	35	15
3. Shortage of non-radar controllers	10	22	68
4. Shortage of other staff qualified to assist radar controllers	11	27	62
5. Inadequate flow control procedures	38	47	15
6. Airline schedules	52	36	12
7. Other (SPECIFY.)	71	19	10

4. Do you believe you have sufficient say in determining the volume and complexity of traffic you are expected to handle? (CHECK ONE FOR EACH.)

(15-16)

	1. Definitely yes	2. Probably yes	3. Uncertain	4. Probably no	5. Definitely no
1. Volume	6	20	9	31	33
2. Complexity	4	13	9	35	40

*Responses to question 3 are based on 70% of respondents answering 1 or 2 to question 2.

5. Have any of the sectors you work been reconfigured (procedural and/or boundary changes) during the past 18 months? (CHECK ONE.)

(17)

1. [75] Yes
2. [25] No ---> SKIP TO 8 IF YOU CHECKED 2.

**6. Did reconfiguration of the sector(s) you work increase, decrease, or have no effect on your workload? (CHECK ONE.)

(18)

1. [36] Increased workload
2. [21] No effect on workload
3. [15] Decreased workload
4. [28] Increased some and decreased some - more than one sector affected

**7. How satisfied or dissatisfied are you with the amount of say you had in the reconfiguration(s) that took place during the past 18 months? (CHECK ONE.)

(19)

1. [2] Very satisfied
2. [19] Generally satisfied
3. [30] Neither satisfied nor dissatisfied
4. [27] Generally dissatisfied
5. [21] Very dissatisfied

8. Do you feel any of the sectors you currently work should be reconfigured? (CHECK ONE.)

(20)

1. [40] Definitely yes
2. [31] Probably yes
3. [10] Uncertain
4. [17] Probably no
5. [3] Definitely no

SKIP TO 10 IF YOU CHECKED 3, 4, OR 5.

**Responses to questions 6 and 7 are based on 75% of respondents answering 1 to question 5.

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9. Why do you feel the sector(s) should
** be reconfigured? (CHECK ALL THAT APPLY.)

1868 (21-25)

1. [__] Sector(s) handling too much traffic
1725
2. [__] Sector(s) too complex
245
3. [__] Sector(s) handling too little traffic
1397
4. [__] Improve service to users
516
5. [__] Other (SPECIFY.) _____

ABOVE RESPONSES REFER TO THE NUMBER OF TIMES REASONS WERE SELECTED, RATHER THAN PERCENTAGES.

**Responses to question 9 are based on 71% of respondents answering 1 or 2 to question 8.

10. While working daily peak traffic periods, how often, if ever, are you taking each of the following actions? (CHECK ONE FOR EACH.)

(26-33)

	1. Very often	2. Often	3. Occasionally	4. Seldom, if ever
1. Early hand-offs and communication transfers	26	36	30	9
2. Provide another aircraft with instructions without waiting for first aircraft to acknowledge receipt of its instructions	7	15	38	40
3. Drop track before target leaves area of jurisdiction	5	9	21	66
4. Use inefficient vector patterns	2	8	34	55
5. Decline to provide weather advisories	6	13	34	48
6. Decline to provide traffic advisories	10	22	42	26
7. Decline user requests for services (direct routes, altitude changes etc.)	17	30	39	14
8. Other(s) SPECIFY.	50	30	12	9

42

11. How much of your time in a typical day and evening shift do you actually spend on each of the following? (ENTER TOTAL HOURS YOU SPEND ON EACH TO THE NEAREST HALF HOUR. IF NONE ENTER 0. EACH TOTAL SHOULD EQUAL 8.)

RESPONSES ARE IN HOURS, NOT PERCENTS.

	DAY	EVENING	
Working radar position	4.09	4.10	(34-37)
Training or getting training on radar position	1.22	1.14	(38-41)
Working non-radar position	1.02	1.00	(42-45)
Breaks, lunch	1.45	1.67	(46-49)
Other	0.23	0.25	(50-53)
TOTAL HOURS	8	8	

12. How much of your time in a typical day and evening shift do you feel you should be required to spend on each of the following? (ENTER TOTAL HOURS YOU SHOULD SPEND ON EACH TO THE NEAREST HALF HOUR. IF NONE ENTER 0. EACH TOTAL SHOULD EQUAL 8.)

RESPONSES ARE IN HOURS, NOT PERCENTS.

	DAY	EVENING	
Working radar position	3.68	3.68	(54-57)
Training or getting training on radar position	1.20	1.18	(58-61)
Working non-radar position	1.28	1.27	(62-65)
Breaks, lunch	1.60	1.62	(66-69)
Other	0.24	0.25	(70-73)
TOTAL HOURS	8	8	

13. Do you normally work a radar or non-radar position during daily peak periods? (CHECK ONE.) (74)

1. [95] Radar
2. [5] Non-radar

14. During typical daily peak periods how long are you required to work on position continuously without a break? (CHECK ONE.) (75)

1. [4] Less than 1 hour
2. [14] 1 hour to 1 1/2 hours
3. [37] Over 1 1/2 but less than 2 hours
4. [36] 2 hours to 2 1/2 hours
5. [10] Over 2 1/2 nours but less than 3 hours
6. [3] 3 hours to 3 1/2 hours
7. [4] Over 3 1/2 hours but less than 4 hours
8. [4] 4 hours or more

15. Do you believe the amount of time you are typically required to continuously work a position without a break during peak periods is too long, too short, or appropriate? (CHECK ONE.) (76)

1. [16] Much too long
2. [46] Somewhat too long
3. [37] Appropriate
4. [1] Somewhat too short
5. [4] Much too short

DUP (1-4)
2 (5)

16. Do you feel your first line supervisor(s) is/are currently spending too much, too little, or an appropriate amount of time working traffic? (CHECK ONE.)

(6)

1. [5] Much too much
2. [9] Somewhat too much
3. [32] Appropriate amount
4. [27] Somewhat too little
5. [28] Much too little

17. How many hours a week do you believe a first line supervisor should spend working traffic? (CHECK ONE.)

(7)

1. [4] None
2. [12] 1 to 4 hours
3. [28] 5 to 8 hours
4. [27] 9 to 12 hours
5. [17] 13 to 16 hours
6. [13] Over 16 hours

STAFFING

18. In your opinion, is the current number of staff available for each of the following types of position higher than needed, lower than needed, or at the appropriate level? If you work at an enroute center answer for your area of specialization; if you work at a terminal answer for your schedule. (CHECK ONE FOR EACH.)

(8-12)

	1. Much higher than needed	2. Somewhat higher than needed	3. Appropriate number	4. Somewhat lower than needed	5. Much lower than needed
1. First line supervisors	20	21	52	7	1
2. FPLs	41	1	7	44	47
3. Data system specialists	4	10	70	14	3
4. Air traffic assistants	5	8	42	35	11
5. Other(s) SPECIFY	45	17	3	15	21

19. The number of developmental controllers currently getting on-the-job training could have an impact on the number of full performance controllers you have in the future as well as the ability to provide quality training now. In your opinion, do you currently have too many, too few, or an appropriate number of developmental controllers to meet future controller needs and to provide quality on-the-job training now to developmentals? Again, if you work at an en-route center answer for your area of specialization; if you work at a terminal answer for your schedule. (CHECK ONE FOR EACH.)

(13-14)

	1. Much too many	2. Somewhat too many	3. Appropriate number	4. Somewhat too few	5. Much too few
1. Ability to meet future controller staff needs	1	4	30	44	22
2. Ability to provide quality training to developmentals now	6	15	28	34	18

20. To what extent, if at all, do staff shortages limit you personally in each of the following areas? (CHECK ONE FOR EACH.)

(15-23)

	1. Very great extent	2. Great extent	3. Moderate extent	4. Some extent	5. Little, no extent
1. Your ability to schedule annual leave	32	22	20	17	9
2. Your ability to take scheduled annual leave	12	12	20	23	33
3. Your ability to take needed spot annual leave	50	22	14	10	4
4. Your ability to take needed sick leave	8	11	15	21	46
5. Your ability to refuse scheduled overtime	24	18	15	18	25
6. Your ability to get upgrade training	18	14	14	14	41
7. Your ability to get or provide job briefings	9	10	18	21	41
8. Your ability to take needed personal breaks	14	17	23	29	17
9. Other (SPECIFY)	77	15	6	0	3

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OVERTIME

21. About how many hours of overtime, on the average, have you worked during each pay period since January 1, 1985? (ENTER NUMBER OF HOURS TO THE NEAREST HOUR. IF NONE, ENTER 0.)

Average Hours Overtime Per Pay Period 4.8 HOURS (24-25)

--> IF NONE SKIP TO 23.

22. What portion of the overtime hours you * worked since January 1, 1985 was scheduled (i.e., your overtime was part of the work schedule and you knew it in advance)? (CHECK ONE.) (26)

1. [33] All
2. [35] Most
3. [13] About half
4. [5] Some
5. [14] Little or none

23. Are you generally working more, less, or about as much overtime as you would want to work? (CHECK ONE.) (27)

1. [16] Much more than I want
2. [19] Somewhat more than I want
3. [43] About as much as I want
4. [16] Somewhat less than I want
5. [7] Much less than I want

*Responses to question 22 are based on 72% respondents answering greater than 0 to question 21.

24. Which of the following statements best describes your current situation regarding scheduled overtime? (CHECK ONE.) (28)

1. [22] Overtime is generally not available
2. [19] I can work overtime or turn it down if I want
3. [31] I am expected to work overtime
4. [17] Overtime is required
5. [10] Other (SPECIFY.)

_____

_____

25. To what extent, if at all, does the amount of overtime you currently work positively or negatively affect your overall ability to perform your air traffic control duties? (CHECK ONE.) (29)

1. [2] Significant positive effect
2. [4] Some positive effect
3. [47] Little or no effect
4. [22] Some negative effect
5. [9] Significant negative effect
6. [16] Not applicable - do not work overtime

AUTOMATED OPERATIONAL ERROR DETECTION PROGRAM

26. Do you work at an enroute center? (CHECK ONE.) (30)

1. [68] Yes
2. [32] No --> SKIP TO 34

Questions 27-34 deal with the automated operational error detection program that has been implemented in enroute centers.

27. How much positive or negative impact, if * any, does the automated operational error detection program have in each of the following areas at your facility? (CHECK ONE FOR EACH.)

(31-38)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Identifying operational errors	32	31	7	15	15
2. Helping management identify system problems (e.g. airspace configuration)	5	23	53	6	13
3. Ensuring adequate separation of aircraft	19	38	23	10	10
4. Efficient controller performance	4	16	13	33	34
5. Controller morale	1	1	2	27	69
6. ATC system capacity	1	2	20	37	40
7. Pilot/controller relationships	1	2	23	44	32
8. Other (SPECIFY.)	8	4	6	9	74

28. Have you personally had an operational * error detected by the automated operational error detection program? (CHECK ONE.)

(39)

1. [32] Yes
2. [68] No

*Responses to questions 27, 28, and 29 are based on 68% of respondents answering 1 to question 26.

29. Were you a radar controller before the * automated operational error detection program was implemented at your facility? (CHECK ONE.) (40)

1. [81] Yes
2. [19] No -->SKIP TO 31 IF YOU CHECKED 2.

30. Has the automated operational error ** detection program increased, decreased, or had no impact on the amount of separation you typically maintain? (CHECK ONE.)

(41)

1. [33] Greatly increased separation I typically maintain
2. [52] Somewhat increased separation I typically maintain
3. [15] Has had no impact on separation I typically maintain
4. [4] Somewhat decreased separation I typically maintain
5. [-0-] Greatly decreased separation I typically maintain

31. Overall, how satisfied or dissatisfied ** are you with the approach management uses to confirm whether or not an event detected by the automated operational error detection program is an actual operational error on the part of the controller? (CHECK ONE.)

(42)

1. [2] Very satisfied
2. [21] Generally satisfied
3. [21] Neither satisfied nor dissatisfied
4. [25] Generally dissatisfied
5. [26] Very dissatisfied
6. [4] No basis to judge

**Responses to questions 30, 31, 32 and 33 are based on 55% of respondents answering 1 to question 26 and 1 to question 29.

47

32. Overall, how satisfied or dissatisfied
** are you with the way a confirmed operational error on the part of the controller is handled by management? (CHECK ONE.)

(43)

1. [2] Very satisfied
2. [15] Generally satisfied
3. [22] Neither satisfied nor dissatisfied
4. [27] Generally dissatisfied
5. [25] Very dissatisfied
6. [9] No basis to judge

33. Do you feel supervisors who are responsible
** for confirmed operational errors are dealt with more leniantly, more harshly, or about the same as non-supervisory controllers who are responsible for confirmed operational errors? (CHECK ONE.)

(44)

1. [27] Supervisors are dealt with much more leniently
2. [22] Supervisors are dealt with somewhat more leniently
3. [30] About the same
4. [1] Supervisors are dealt with somewhat more harshly
5. [4] Supervisors are dealt with much more harshly
6. [21] No basis to judge

---> IF YOU WORK AT AN ENROUTE CENTER SKIP TO QUESTION 35.

**See note on previous page.

34. In your opinion, how much positive or
* negative impact has the automated operational error detection program at the enroute centers had on the following aspects of terminal operations? (CHECK ONE FOR EACH.)

(45-47)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Efficient use of airspace	3	4	23	37	33
2. Safety	3	17	67	9	4
3. Terminal operational errors	1	6	60	23	10

TRAINING

35. In your opinion, how adequate or inadequate is the training developmental controllers get before beginning on-the-job training? (CHECK ONE.)

(48)

1. [1] Much more than adequate
2. [4] Somewhat more than adequate
3. [40] Generally adequate
4. [36] Somewhat less than adequate
5. [19] Much less than adequate

*Responses to question 34 are based on 32% of respondents answering 2 to question 26.

36. How do you rate the quality of the on-the-job training developmental controllers currently receive at your facility in each of the following areas? (CHECK ONE FOR EACH.)

(49-59)

	1. Excellent	2. Good	3. Adequate	4. Less than adequate	5. Poor
1. Using back-up systems	1	9	33	39	19
2. Controlling traffic in bad weather	2	13	30	41	14
3. Emergency procedures	1	8	36	39	15
4. Handling heavy traffic	8	22	33	26	11
5. Holding patterns	2	9	35	34	20
6. Operational characteristics of types of aircraft	4	15	39	27	15
7. Direct routings (expediting traffic)	5	22	44	20	9
8. Control techniques	6	26	37	22	9
9. Phraseology	9	32	41	13	5
10. Flow control procedures	3	16	42	26	13
11. Other (SPECIFY.)	3	4	3	23	67

37. Do you believe developmental controllers are provided with sufficient training involving live traffic before being certified on a position? (CHECK ONE.)

(60)

1. [18] Definitely yes
2. [40] Probably yes
3. [11] Uncertain
4. [21] Probably not
5. [9] Definitely not

38. Were you an FPL before the PATCO strike? (CHECK ONE.)

(61)

1. [56] Yes
2. [44] No --> SKIP TO 40

*39. Do you believe developmental controllers today are better, worse, or about the same as developmental controllers were in each of the following areas before the PATCO strike? (CHECK ONE FOR EACH.)

(62-65)

	1. Much better	2. Somewhat better	3. About the same	4. Somewhat worse	5. Much worse
1. Overall skill level when arriving on floor for on-the-job training	2	10	38	32	18
2. Aptitude or ability to learn controller duties	4	14	51	22	8
3. Work attitude	11	26	37	17	9
4. Other (SPECIFY.)	11	3	3	22	61

*Responses to question 39 are based on 56% of respondents answering 1 to question 38.

49

SYSTEM SAFETY

40. How would you rate the overall safety of the ATC system today? (CHECK ONE.)
(66)

1. [16] Excellent
2. [35] Good
3. [31] Adequate
4. [15] Poor
5. [2] Very poor
6. [<1] No basis to judge

41. In your opinion, how much positive or negative impact, if any, does each of the following factors have on maintaining ATC system safety? (CHECK ONE FOR EACH.)

(67-75)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Skill level of developmental controllers	17	22	16	37	8
2. Number of developmental controllers available	5	20	34	34	8
3. Number of FPL controllers available	21	14	7	37	22
4. Amount of traffic workload	12	7	12	43	26
5. Amount of overtime being worked	4	7	38	40	12
6. Hardware reliability	14	18	26	30	12
7. Software reliability	13	19	28	30	10
8. Controller morale	12	11	11	41	26
9. Other (SPECIFY)	9	2	2	26	62

42. How much familiarity, if any, do you have with FAA plans for future automation and consolidation of ATC facilities? (CHECK ONE FOR EACH.)

(76-77)

	1. Great	2. Moderate	3. Some	4. Little or none
1. Automation plans	3	18	46	33
2. Consolidation plans	3	17	41	40

43. Overall, how satisfied or dissatisfied are you with the amount of information FAA has provided you about future plans for automation and consolidation? (CHECK ONE FOR EACH.)
(78-79)

	1. Very satisfied	2. Generally satisfied	3. Neither satisfied nor dissatisfied	4. Generally dissatisfied	5. Very dissatisfied
1. Automation plans	2	16	36	31	15
2. Consolidation plans	1	13	33	33	20

RETIREMENT DUP (1-4) 3 (5)

44. Are you now or will you be eligible to retire within the next 2 years? (CHECK ONE.)
(6)

1. [15] Yes
2. [85] No ---> SKIP TO 49.

45. Do you plan to retire within the next 2 * years? (CHECK ONE.) (7)

1. [42] Definitely yes
2. [42] Probably yes
3. [14] Probably not ┐ SKIP TO 49 IF YOU
4. [3] Definitely not ┘ CHECKED 3 or 4.

46. If you were given the following options ** would you consider working after retirement in the ATC system? (CHECK ONE FOR EACH.)

(8-13)

	1. Definitely yes	2. Probably yes	3. Uncertain	4. Probably no	5. Definitely no
1. Part time - less than 8 hrs per day	11	21	16	17	35
2. Part time - less than 5 days per week	38	30	10	8	14
3. Fixed work schedule (e.g. day shift only)	24	27	13	15	21
4. Split shifts (e.g., 4 hrs. on 4 hrs. off)	1	3	9	20	67
5. No loss to pension benefits	57	18	11	4	10
6. Other (SPECIFY)	61	21	-0-	-0-	18

47. Have you made arrangements to work part ** time in an ATC facility at your facility after retirement? (CHECK ONE.) (14)

1. [15] Yes
2. [85] No.

*Responses to question 45 are based on 15% of respondents answering 1 to question 44.

48. How much of a reason, if any, is each of ** the following for your planned retirement? (CHECK ONE FOR EACH.)

(15-21)

	1. Major reason	2. Somewhat of a reason	3. Not a reason
1. Personal health	9	22	69
2. Health of family member	2	5	93
3. Proposed changes to retirement system	49	37	14
4. Work- related burnout	33	35	32
5. Dissatisfaction with FAA	42	36	22
6. Career change	7	18	74
7. Other (SPECIFY)	87	8	5

BACKGROUND QUESTIONS

49. What is your age?

Age 36.7 YEARS (22-23)

50. What is your grade?

GS- _____ (24-25)

GS-11 = 8%
GS-12 = 8%
GS-13 = 26%
GS-14 = 58%

51. How many years of experience do you have with FAA ? (ENTER NUMBER OF YEARS TO THE NEAREST YEAR.)

Years experience with FAA 11.2 YEARS (26-27)

52. How many years experience controlling traffic do you have with FAA? (ENTER NUMBER OF YEARS TO NEAREST YEAR.)

Years experience controlling traffic with the FAA 10.3 YEARS (28-29)

**Responses to questions 46, 47, and 48 are based on 13% of respondents answering 1 to question 44 and 1 or 2 question 45.

51

53. If you are a developmental controller how many more radar positions must you be certified on before you become a FPL? (CHECK ONE.) (30)

1. [2] One
2. [4] Two
3. [4] Three
4. [3] Four
5. [3] Five
6. [3] Other (SPECIFY) _____
7. [81] Not applicable - I am not developmental controller

54. Do you currently work full-time or part-time? (CHECK ONE.) (31)

1. [98] Full-time
2. [2] Part-time

55. Do you typically rotate shifts or are you working a steady shift? (CHECK ONE.) (32)

1. [95] Rotate shifts
2. [3] Steady day
3. [1] Steady evening
4. [<1] Steady mid
5. [2] Other (SPECIFY)

56. Are you currently working as a retired annuitant? (CHECK ONE.) (33)

1. [2] Yes
2. [98] No

57. If you have any comments about any of the issues dealt with above or related matters please write them below. (34)

1,558 of the 3,290 respondents provided comments.

SECTION 3

METHODOLOGY AND RESULTS OF AIR TRAFFIC CONTROL SUPERVISOR SURVEY

Between May 2, 1985, and July 26, 1985, GAO conducted a mail survey of first line supervisors working at 74 FAA facilities. The questionnaire was designed to obtain information about their opinions and experiences concerning the

--workload of radar controllers under their supervision,

--adequacy of staffing levels,

--amount of overtime worked,

--FAA implementation of the Automated Operational Error Detection Program,

--training of developmental controllers,

--extent to which various factors impact on maintaining system safety, and

--issues such as planned retirement and part-time employment.

PRETEST

Draft questionnaires were pretested with a total of 13 controllers and first line supervisors. Pretests were conducted at the Indianapolis Terminal, Indianapolis Center, Cleveland Center, and Philadelphia Terminal. During a pretest session an individual respondent completed the questionnaire in the presence of two GAO observers. GAO observers timed the respondent and observed reactions to questions and question flow. GAO observers then debriefed the respondent to identify any technical errors, ambiguities, potential bias, or other problems.

Questionnaire deficiencies identified during pretesting were corrected.

EXPERT REVIEW

A draft of the questionnaire was provided to the FSF, NTSB, and FAA for review and comment.

Relevant modifications based on comments received from FSF and NTSB were made to the questionnaire. FAA provided no substantive comments.

53

METHODOLOGY

To establish the universe of first line supervisors we used an FAA computer file of all controllers (GS-2152 series) employed at the 74 facilities as of February 28, 1985. Criteria developed in consultation with FAA was used to identify those controllers qualified to be first line supervisors. This procedure identified a total of 446 supervisors at the 54 terminal facilities and a total of 704 supervisors at the 20 centers. All supervisors at the 54 terminal facilities were surveyed. Random samples of supervisors were selected from each center. The number of supervisors sampled at each center was large enough to yield a sampling error of no more than 8 percent at the 95-percent confidence level for each center. This approach resulted in questionnaires being mailed to 606 supervisors at the 20 centers.

In order to ensure that the supervisors receiving questionnaires were, in fact, first line supervisors, a screening question was included in the questionnaire. Responses to this question were used to make adjustments to our original sample and universe. As a result, individuals indicating they were not first line supervisors were deleted from our analyses. The following tables show the original universe and sample sizes, the number of respondents who reported they were not first line supervisors, and the adjusted universe and sample sizes for the supervisor survey.

Table 3.1 Original Universe and Sample Sizes

Type of facility	Universe	Sample
Terminal	446	446
Center	704	606
Total	1,150	1,052

Table 3.2 Number of respondents Not First Line Supervisors

Type of facility	Sampled	Respondents	Not first line supervisor
Terminal	446	361	14
Center	606	495	33
Total	1,052	856	

Table 3.3 Adjusted Universe and Sample Sizes

Type of facility	Adjusted universe	Adjusted sample
Terminal	429	347
Center	659	462
Total	1,088	809

[a]Adjustments to universe of terminal facilities were based on the percentage of respondents from terminals who reported not being first line supervisors. Adjustments to universe of centers were based on the weighted percentage of respondents who reported they were not first line supervisors.

Questionnaires were mailed to supervisors' home addresses. A follow-up notice encouraging participation in the survey was sent to each facility for public display. In addition, a personal follow-up reminder with another copy of the questionnaire was mailed to individual nonrespondents.

Of the 1,052 supervisors originally mailed questionnaires, 856 responded for a response rate of 81 percent. Overall, the results of the Air Traffic Supervisor Survey are projectable to 886 or 81 percent of the 1,088 first line supervisors at these 74 facilities as of February 28, 1985.

Appropriate weights were assigned to sampled cases prior to performing analyses of survey results.

SURVEY RESULTS

A copy of the supervisor questionnaire, annotated to show overall responses to each item, follows. The results reported represent responses in aggregate for 74 facilities. These overall results are subject to sampling errors of no more than 1.5 percent at the 95-percent confidence level.

U.S. GENERAL ACCOUNTING OFFICE
AIR TRAFFIC CONTROL SUPERVISOR SURVEY

INTRODUCTION

The U.S. General Accounting Office (GAO) is reviewing FAA's management of its air traffic control (ATC) workforce. This review is focusing on controller workload, staffing, overtime, training and other important areas. We are making every attempt to use existing information in our review but we have found it impossible to provide the Congress with quality information about these areas without first learning how those engaged in the day-to-day control of air traffic feel about them.

Your cooperation is vital to the success of our review. The more of you who respond, the more significant the information we collect will be. Your quick response will save us the time and expense of costly follow-up mailings.

Your responses to this survey will be held in complete confidence. All questionnaires will be under the control of GAO and our report will contain only summary information. The number on the questionnaire is for follow-up purposes only.

If you have any questions concerning this survey please call Tom Hubbs of GAO's Philadelphia Regional Office on FTS 597-4330 or collect on (215) 597-4330.

In the event the return envelope is misplaced, the return address is :

Tom Hubbs
U.S. General Accounting Office
434 Walnut Street, 11th Floor
Philadelphia, PA 19106

Thank you for your help.

►NOTE - Unless otherwise indicated all responses are expressed as percentages rounded to nearest whole number.

1. According to FAA records you are a first line supervisor. Is this correct? (CHECK ONE.) TOTAL: 886 CASES (1 (5) (6)

1. [109] Correct
2. [-0-] Incorrect - I am (SPECIFY)

_____

_____

►If you checked 2 please STOP HERE. Return the questionnaire in the envelope provided. If you checked 1 please complete the questionnaire.

WORKLOAD

2. Consider the complexity of the sectors and the capabilities of controllers under your supervision as a first line supervisor. During typical daily peak periods how many radar controllers under your supervision, if any, are handling more traffic than you feel they should? (ENTER NUMBER. IF NONE, ENTER 0 AND SKIP TO QUESTION 4.) (7-8)

Number of radar controllers handling too much traffic 2024

►IF NONE SKIP TO 4.

3. For those controllers you were referring to in question 2, how much, if any, does each of the following factors represent a reason for their handling more traffic than they should? (CHECK ONE FOR EACH.)

(9-16)

	1. Major reason	2. Somewhat of a reason	3. Not a reason
1. Sector configuration (complexity)	40	42	18
2. Controller capability	28	48	24
3. Shortage of radar controllers	45	33	22
4. Shortage of non-radar controllers	6	18	76
5. Shortage of other staff qualified to assist radar controllers	10	22	69
6. Inadequate flow control procedures	23	49	28
7. Airline schedules	49	34	16
8. Other (SPECIFY.)	70	11	20

*Responses to question 3 are based on 73% of respondents answering greater than 0 to question 2.

4. Do you believe you have sufficient say in determining the volume and complexity of traffic the radar controllers you supervise are expected to handle? (CHECK ONE FOR EACH.)

(17-18)

	1. Definitely yes	2. Probably yes	3. Uncertain	4. Probably no	5. Definitely no
1. Volume	25	32	5	23	15
2. Complexity	15	25	7	33	21

5. Have any of the sectors in your area of responsibility been reconfigured (procedural and/or boundary changes) during the past 18 months? (CHECK ONE.)

(19)

1. [67] Yes
2. [33] No ---> SKIP TO 8 IF YOU CHECKED 2.

6. Did reconfiguration of your sector(s) ** increase, decrease, or have no effect on the workload of the radar controllers you supervise? (CHECK ONE.)

(20)

1. [32] Increased workload
2. [16] No effect on workload
3. [23] Decreased workload
4. [28] Increased some and decreased some - more than one sector affected

**Responses to questions 6 and 7 are based on 67% of respondents answering 1 to question 5.

7. How satisfied or dissatisfied are you * with the amount of say you had in the reconfiguration(s) that took place during the past 18 months? (CHECK ONE.) (21)

1. [14] Very satisfied
2. [30] Generally satisfied
3. [17] Neither satisfied nor dissatisfied
4. [25] Generally dissatisfied
5. [14] Very dissatisfied

8. Do you feel any of your current sectors should be reconfigured? (CHECK ONE.) (22)

1. [42] Definitely yes
2. [28] Probably yes
3. [4] Uncertain
4. [21] Probably no
5. [6] Definitely no

→ SKIP TO 10 IF YOU CHECKED 3, 4, OR 5.

9. Why do you feel your sector(s) should be reconfigured? (CHECK ALL THAT APPLY.) (23-27)

1. [457] Sector(s) handling too much traffic
2. [414] Sector(s) too complex
3. [41] Sector(s) handling too little traffic
4. [310] Improve service to users
5. [97] Other (SPECIFY.) _____

RESPONSES TO QUESTION 9 REFER TO THE NUMBER OF TIMES REASONS WERE SELECTED, RATHER THAN PERCENTAGES.

*See note previous page.

10. During daily peak traffic periods, how often, if ever, are radar controllers under your supervision taking each of the following actions? (CHECK ONE FOR EACH.)

(28-35)

	1. Very often	2. Often	3. Occasionally	4. Seldom, if ever
1. Early hand-offs and communication transfers	18	36	36	10
2. Provide another aircraft with instructions without waiting for first aircraft to acknowledge receipt of its instructions	5	17	45	34
3. Drop track before target leaves area of jurisdiction	2	8	29	61
4. Use inefficient vector patterns	3	12	53	32
5. Decline to provide weather advisories	3	8	33	57
6. Decline to provide traffic advisories	6	17	41	36
7. Decline user requests for services (direct routes, altitude changes etc.)	11	23	45	20
8. Other(s) SPECIFY.	38	27	17	17

11. In your opinion, how much time should an FPL be required to spend on each of the following during a typical day and evening shift? (ENTER NUMBER OF HOURS TO NEAREST HALF HOUR. EACH TOTAL SHOULD EQUAL 8.)

RESPONSES ARE IN HOURS, NOT PERCENTS

	DAY	EVENING	
Working radar position	3.14	3.16	(36-39)
Providing training on radar position	1.85	1.81	(40-43)
Working non-radar position	1.22	1.22	(44-47)
Breaks, lunch	1.41	1.41	(48-51)
Other	0.38	0.40	(52-55)
TOTAL HOURS	8	8	

12. In your opinion, how much time should a radar certified developmental controller be required to spend on each of the following during a typical day and evening shift? (ENTER NUMBER OF HOURS TO NEAREST HALF HOUR. EACH TOTAL SHOULD EQUAL 8.)

RESPONSES ARE IN HOURS, NOT PERCENTS

	DAY	EVENING	
Working radar position	2.38	2.40	(56-59)
Receiving training on radar position	2.68	2.62	(60-63)
Working non-radar position	1.16	1.18	(64-67)
Breaks, lunch	1.36	1.36	(68-71)
Other	0.43	0.44	(72-75)
TOTAL HOURS	8	8	

13. During daily peak traffic periods, do you believe radar certified developmental and FPL controllers under your supervision are typically required to spend too much, too little, or about the right amount of time continuously on radar positions between breaks? (CHECK ONE FOR EACH.)

(76-77)

	1. Much too much	2. Somewhat too much	3. Appropriate amount	4. Somewhat too little	5. Much too little
1. FPLs	11	33	53	4	<1
2. Developmentals	5	27	59	8	1

14. Approximately what percentage of your duty time do you typically spend working traffic per pay period? (ENTER PERCENT. IF NONE, ENTER 0.) (78-79)

Percent of time working traffic 36 %

15. Do you feel you spend too much, too little, or an appropriate amount of time working traffic? (CHECK ONE.) (80)

1. [14] Much too much
2. [32] Somewhat too much
3. [31] Appropriate amount
4. [18] Somewhat too little
5. [6] Much too little

DUP (1-4)
2 (5)

16. How much, if at all, does the time you spend working traffic hinder or facilitate your ability to perform each of the following supervisory duties? (CHECK ONE FOR EACH.)

(6-11)

	1. Greatly facilitates	2. Somewhat facilitates	3. Neither facilitates nor hinders	4. Somewhat hinders	5. Greatly hinders
1. Maintain and update routine records	3	5	32	38	22
2. Handle personnal actions (i.e., grievances, awards, etc.)	3	4	27	36	30
3. Participate in managerial briefings	3	5	43	32	19
4. Provide training	9	15	35	28	13
5. Coordinate airspace and other procedural or operational matters	5	9	37	30	19
6. Other (SPECIFY)	16	3	11	12	58

STAFFING

17. In your opinion, is the current number of staff available for each of the following types of position higher than needed, lower than needed, or at the appropriate level? If you work at an enroute center answer for your area of specialization; if you work at a terminal answer for your schedule. (CHECK ONE FOR EACH.)

(12-16)

	1. Much higher than needed	2. Somewhat higher than needed	3. Appropriate number	4. Somewhat lower than needed	5. Much lower than needed
1. First line supervisors	3	8	68	17	4
2. FPLs	1	2	12	49	37
3. Data system specialists	4	11	60	20	5
4. Air traffic assistants	5	7	41	34	13
5. Other(s) SPECIFY	30	13	3	21	34

18. The number of developmental controllers currently getting on-the-job training could have an impact on the number of full performance level controllers you have in the future as well as the ability to provide quality training now. In your opinion, do you currently have too many, too few, or an appropriate number of developmental controllers to meet future controller needs and to provide quality on the job training to them now? Again if you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule. (CHECK ONE FOR EACH.)

(17-18)

	1. Much too many	2. Somewhat too many	3. Appropriate number	4. Somewhat too few	5. Much too few
1. Ability to meet future controller staff needs	1	4	32	42	21
2. Ability to provide quality training to developmentals now	6	17	31	30	16

19. To what extent, if at all, do staff shortages limit you personally in each of the following areas? (CHECK ONE FOR EACH.)

(19-27)

	1. Very great extent	2. Great extent	3. Moderate extent	4. Some extent	5. Little, no extent
1. Your ability to schedule annual leave	19	22	23	19	18
2. Your ability to take scheduled annual leave	12	17	20	25	26
3. Your ability to take needed spot annual leave	30	23	18	19	10
4. Your ability to take needed sick leave	8	11	16	16	50
5. Your ability to refuse scheduled overtime	16	15	14	18	37
6. Your ability to get upgrade training	17	18	16	18	32
7. Your ability to get or provide job briefings	14	19	24	23	21
8. Your ability to take needed personal breaks	15	16	21	24	24
9. Other (SPECIFY)	63	21	10	-0-	6

OVERTIME

20. About how many hours of overtime on the average have you worked during each pay period since January 1, 1985? (ENTER NUMBER OF HOURS TO THE NEAREST HOUR. IF NONE, ENTER 0.)

(28-29)

Average Hours
Overtime Per Pay Period 3.8 HOURS

--> IF NONE SKIP TO 22.

21. What portion of the overtime hours you * worked since January 1, 1985 was scheduled (i.e. your overtime was part of the work schedule and you knew it in advance)? (CHECK ONE.)

(30)

1. [40] All
2. [32] Most
3. [12] About half
4. [6] Some
5. [10] Little or none

22. Are you generally working more, less, or about as much overtime as you would want to work? (CHECK ONE.)

(31)

1. [14] Much more than I want
2. [16] Somewhat more than I want
3. [55] About as much as I want
4. [10] Somewhat less than I want
5. [5] Much less than I want

*Responses to question 21 are based on 61% of respondents answering greater than 0 to question 20.

23. Which of the following statements best describes your current situation regarding scheduled overtime? (CHECK ONE.)

(32)

1. [32] Overtime is generally not available
2. [15] I can work overtime or turn it down if I want
3. [28] I am expected to work overtime
4. [15] Overtime is required
5. [11] Other (SPECIFY.)

24. To what extent, if at all, does the amount of overtime you currently work positively or negatively affect your overall ability to perform your air traffic control duties? (CHECK ONE.)

(33)

1. [2] Significant positive effect
2. [6] Some positive effect
3. [48] Little or no effect
4. [15] Some negative effect
5. [5] Significant negative effect
6. [24] Not applicable - do not work overtime

AUTOMATED OPERATIONAL ERROR DETECTION PROGRAM

25. Do you work at an enroute center? (CHECK ONE.)

(34)

1. [61] Yes
2. [39] No --> SKIP TO 32

Questions 26-32 deal with the automated operational error detection program that has been implemented in enroute centers.

26. * Based on your experience, how much positive or negative impact, if any, does the automated operational error detection program have in each of the following areas? (CHECK ONE FOR EACH.)

(35-42)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Identifying operational errors	44	28	2	12	14
2. Helping management identify system problems (e.g. airspace configuration)	12	34	41	4	10
3. Ensuring adequate separation of aircraft	27	44	18	6	5
4. Efficiency of controller performance	9	32	14	29	16
5. Controller morale	2	3	4	44	48
6. ATC system capacity	2	6	24	41	27
7. Pilot/controller relationships	1	4	30	45	21
8. Other (SPECIFY.)	11	10	-0-	15	63

27. * Have you personally had an operational error detected by the automated operational error detection program? (CHECK ONE.)

(43)

1. [16] Yes
2. [84] No

28. * Has the automated operational error detection program increased, decreased, or had no impact on the amount of separation you typically maintain when you work traffic? (CHECK ONE.)

(44)

1. [25] Greatly increased separation I typically maintain
2. [60] Somewhat increased separation I typically maintain
3. [15] Has had no impact on separation I typically maintain
4. [-0-] Somewhat decreased separation I typically maintain
5. [-0-] Greatly decreased separation I typically maintain

29. * Overall, how satisfied or dissatisfied are you with the approach management uses to confirm whether or not an event detected by the automated operational error detection program is an actual operational error on the part of the controller? (CHECK ONE.)

(45)

1. [13] Very satisfied
2. [46] Generally satisfied
3. [13] Neither satisfied nor dissatisfied
4. [17] Generally dissatisfied
5. [10] Very dissatisfied
6. [1] No basis to judge

*Responses to questions 26, 27, 28, 29, 30, and 31 are based on 61% of respondents answering 1 to question 25.

30. Overall, how satisfied or dissatisfied * are you with the way a confirmed operational error on the part of the controller is handled by management? (CHECK ONE.)

(46)

1. [8] Very satisfied
2. [47] Generally satisfied
3. [12] Neither satisfied nor dissatisfied
4. [20] Generally dissatisfied
5. [13] Very dissatisfied
6. [1] No basis to judge

31. Do you feel supervisors who are responsible for confirmed operational errors are dealt with more leniently, more harshly, or about the same as non-supervisory controllers who are responsible for confirmed operational errors? (CHECK ONE.)

(47)

1. [1] Supervisors are dealt with much more leniently
2. [4] Supervisors are dealt with somewhat more leniently
3. [73] About the same
4. [10] Supervisors are dealt with somewhat more harshly
5. [3] Supervisors are dealt with much more harshly
6. [9] No basis to judge

---➤IF YOU WORK AT AN ENROUTE CENTER SKIP TO QUESTION 33.

*See note on previous page.

32. In your opinion, how much positive or ** negative impact has the automated operational error detection program at the enroute centers had on the following aspects of terminal operations? (CHECK ONE FOR EACH.)

(48-50)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Efficient use of airspace	3	5	32	34	26
2. Safety	3	20	63	10	5
3. Terminal operational errors	<1	9	65	20	6

TRAINING

33. In your opinion, how adequate or inadequate is the training developmental controllers get before beginning on-the-job training? (CHECK ONE.)

(51)

1. [3] Much more than adequate
2. [8] Somewhat more than adequate
3. [44] Generally adequate
4. [31] Somewhat less than adequate
5. [17] Much less than adequate

**Responses to question 32 are based on 39% of respondents answering 2 to question 25.

34. How do you rate the quality of the on-the-job training developmental controllers currently receive at your facility in each of the following areas? (CHECK ONE FOR EACH.)

(52-62)

	1. Excellent	2. Good	3. Adequate	4. Less than adequate	5. Poor
1. Using back-up systems	2	15	39	33	11
2. Controlling traffic in bad weather	5	25	35	29	6
3. Emergency procedures	2	13	43	34	8
4. Handling heavy traffic	15	31	30	18	5
5. Holding patterns	2	11	41	34	12
6. Operational characteristics of types of aircraft	7	20	39	26	9
7. Direct routings (expediting traffic)	9	29	44	15	3
8. Control techniques	12	35	35	16	3
9. Phraseology	11	37	38	11	3
10. Flow control procedures	4	19	42	27	8
11. Other (SPECIFY.)	2	5	8	17	68

35. Do you believe developmental controllers are provided with sufficient training involving live traffic before being certified on a position? (CHECK ONE.)

(63)

1. [41] Definitely yes
2. [36] Probably yes
3. [3] Uncertain
4. [14] Probably not
5. [4] Definitely not

36. Were you an FPL before the PATCO strike? (CHECK ONE.)

(64)

1. [77] Yes
2. [23] No --> SKIP TO 38

37. Do you believe developmental controllers today are better, worse, or about the same as developmental controllers were in each of the following areas before the PATCO strike? (CHECK ONE FOR EACH.)

(65-68)

	1. Much better	2. Somewhat better	3. About the same	4. Somewhat worse	5. Much worse	6. No basis to judge
1. Overall skill level when arriving on floor for on the job training	6	18	40	24	12	<1
2. Aptitude or ability to learn controller duties	11	26	45	15	3	-0-
3. Work attitude	36	35	19	7	3	-0-
4. Other (SPECIFY.)	25	3	8	12	53	-0-

SYSTEM SAFETY

38. How would you rate the overall safety of the ATC system today? (CHECK ONE.)

(69)

1. [24] Excellent
2. [42] Good
3. [27] Adequate
4. [7] Poor
5. [<1] Very poor
6. [<1] No basis to judge

39. In your opinion, how much positive or negative impact, if any, is each of the following factors having on maintaining ATC system safety? (CHECK ONE FOR EACH.)

(70-78)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Skill level of developmental controllers	6	23	18	47	5
2. Number of developmental controllers available	2	16	30	47	6
3. Number of FPL controllers available	7	12	10	50	22
4. Amount of traffic workload	4	6	13	54	24
5. Amount of over-time being worked	1	6	49	35	10
6. Hardware reliability	10	22	39	23	7
7. Software reliability	9	23	42	22	4
8. Controller morale	6	23	18	41	11
9. Other (SPECIFY)	10	4	2	27	57

40. How much familiarity, if any, do you have with FAA plans for future automation and consolidation of ATC facilities? (CHECK ONE FOR EACH.)

(79-80)

	1. Great	2. Moderate	3. Some	4. Little or none
1. Automation plans	7	27	42	25
2. Consolidation plans	6	25	39	29

DUP (1-4)
3 (5)

41. Overall, how satisfied or dissatisfied are you with the amount of information FAA has provided you about future plans for automation and consolidation? (CHECK ONE FOR EACH.)

(6-7)

	1. Very satisfied	2. Generally satisfied	3. Neither satisfied nor dissatisfied	4. Generally dissatisfied	5. Very dissatisfied
1. Automation plans	4	30	30	25	11
2. Consolidation plans	3	26	29	27	15

RETIREMENT

42. Are you now or will you be eligible to retire within the next 2 years? (CHECK ONE.)

(8)

1. [50] Yes
2. [50] No ---> SKIP TO 47.

43. Do you plan to retire within the next 2 * years? (CHECK ONE.) (9)

1. [38] Definitely yes
2. [43] Probably yes
3. [16] Probably not] SKIP TO 47 IF YOU
4. [3] Definitely not] CHECKED 3 or 4.

44. If you were given the following options ** would you consider working after retirement in the ATC system? (CHECK ONE FOR EACH.)

(10-15)

	1. Definitely yes	2. Probably yes	3. Uncertain	4. Probably no	5. Definitely no
1. Part time - less than 8 hrs per day	8	19	17	23	32
2. Part time - less than 5 days per week	25	42	15	5	14
3. Fixed work schedule (e.g. day shift only)	16	35	21	10	18
4. Split shifts (e.g. 4 hrs. on 4 hrs. off)	4	3	9	13	72
5. No loss to pension benefits	56	22	10	2	10
6. Other (SPECIFY)	74	21	-0-	-0-	5

45. Are you planning to work part time in an ** ATC capacity at your facility after retirement? (CHECK ONE.) (16)

1. [20] Yes
2. [78] No

3 2 UNCERTAIN

*Responses to question 43 are based on 50% of respondents answering 1 to question 42.

46. How much of a reason, if any, is each of ** the following for your planned retirement? (CHECK ONE FOR EACH.)

(17-23)

	1. Major reason	2. Somewhat of a reason	3. Not a reason
1. Personal health	6	22	72
2. Health of family member	1	3	96
3. Proposed changes to retirement system	53	36	11
4. Work-related burnout	15	41	43
5. Dissatisfaction with FAA	30	36	34
6. Career change	7	21	72
7. Other (SPECIFY)	100	-0-	-0-

BACKGROUND QUESTIONS

47. What is your age?
Age 46.3 YEARS (24-25)

48. What is your grade?
GS-14 = 32%
GS-15 = 68%
GS- _____ (26-27)

49. How many years of experience do you have with FAA? (ENTER NUMBER OF YEARS TO THE NEAREST YEAR.)
Years FAA experience 21.9 YEARS (28-29)

50. How many years experience controlling traffic do you have with FAA? (ENTER NUMBER OF YEARS TO NEAREST YEAR.)
Years experience controlling traffic with the FAA 19.8 YEARS (30-31)

**Responses to questions 44, 45, and 46 are based on 40% of respondents answering 1 to question 42 and 1 or 2 to question 43.

51. How many years experience do you have as a first line supervisor? (ENTER NUMBER TO THE NEAREST YEAR.)

Years experience as first line supervisor 7.5 YEARS (32-33)

52. Do you currently work full-time or part-time? (CHECK ONE.) (34)

1. [100] Full-time
2. [1] Part-time

53. Do you typically rotate shifts or are you working a steady shift? (CHECK ONE.) (35)

1. [97] Rotate shifts
2. [1] Steady day
3. [1] Steady evening
4. [0] Steady mid
5. [1] Other (SPECIFY)

_____

54. Are you currently working as a retired annuitant? (CHECK ONE.) (36)

1. [1] Yes
2. [100] No

55. If you have any comments about any of the issues dealt with above or related matters please write them below. (37)

442 of the 856 respondents provided comments.

SECTION 4

METHODOLOGY AND RESULTS OF AIR TRAFFIC CONTROL FACILITY MANAGER SURVEY

Between May 13, 1985, and July 26, 1985, GAO conducted a mail survey of facility managers of 74 FAA facilities. The questionnaire was designed to obtain information about the opinions of facility managers regarding the same issues addressed in the work force and first line supervisor surveys. Like those two surveys, the facility manager survey addressed the following:

-- workload of radar controllers,

-- adequacy of staffing levels,

-- amount of overtime worked,

-- FAA implementation of the Automated Operational Error Detection Program,

-- training of developmental controllers,

-- the extent to which various factors impact on maintaining system safety, and

-- issues such as part-time employment.

PRETEST

Draft questionnaires were pretested with four facility managers. Pretests were conducted at the Washington Center, Oakland Center, Oakland TRACON,[2] and Newark Terminal. During a pretest session an individual respondent completed the questionnaire in the presence of two GAO observers. GAO observers timed the respondent and observed reactions to questions and question flow. GAO observers then debriefed the respondent to identify any technical errors, ambiguities, potential bias, or other problems.

Questionnaire deficiencies identified during pretesting were corrected.

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[2]TRACON = Terminal Radar Approach Control Facility

EXPERT REVIEW

A draft of the questionnaire was provided to FSF and FAA for review and comment.

Relevant modifications based on comments received from FSF were made to the questionnaire. FAA provided no substantive comments.

METHODOLOGY

To conduct this survey GAO developed a list of the facility managers at the 74 facilities. A questionnaire was mailed to each manager. Follow-up contacts by mail and telephone were made to encourage participation.

Sixty-nine, or 93 percent, of the facility managers returned completed questionnaires.

SURVEY RESULTS

A copy of the facility manager questionnaire, annotated to show aggregate responses to each item, follows.

U.S. GENERAL ACCOUNTING OFFICE
AIR TRAFFIC CONTROL FACILITY MANAGER SURVEY

TOTAL: 69 CASES

INTRODUCTION

The U.S. General Accounting Office (GAO) is reviewing FAA's management of its air traffic control (ATC) workforce. This review is focusing on controller workload, staffing, overtime, training and other important areas. We are making every attempt to use existing information in our review, but we have found it impossible to provide the Congress with quality information about these areas without first learning how those engaged in the day-to-day control of air traffic feel about them.

Your cooperation is vital to the success of our review. The more of you who respond, the more significant the information we collect will be. Your quick response will save us the time and expense of costly follow-up mailings.

Your responses to this survey will be held in complete confidence. All questionnaires will be under the control of GAO and our report will contain only summary information. The number on the questionnaire is for follow-up purposes only.

If you have any questions concerning this survey please call Tom Hubbs of GAO's Philadelphia Regional Office on FTS 597-4330 or collect on (215) 597-4330.

In the event the return envelope is misplaced, the return address is :

Tom Hubbs
U.S. General Accounting Office
434 Walnut Street, 11th Floor
Philadelphia, PA 19106

Thank you for your help.

NOTE - Unless otherwise indicated, responses are the actual number of facility managers responding.

WORKLOAD

1. In your opinion, during typical daily peak periods approximately what percentage of your facility's radar controllers, if any, are handling more traffic than they feel they should? (ENTER PERCENT; IF NONE, ENTER 0.)

1 (3)

Percent of radar controllers who feel they are handling too much traffic *16 % (4-6)

2. Considering the complexity of the sectors and the capabilities of controllers at your facility, do you feel any of your radar controllers are currently handling more traffic than they should during typical daily peak periods? (CHECK ONE.)

(7)

1. [5] Definitely yes
2. [20] Probably yes
3. [3] Uncertain
4. [19] Probably no
5. [22] Definitely no

SKIP TO 5 IF 3,4, OR 5 CHECKED.

3. In your opinion, approximately what percentage of your radar controllers are handling more traffic than you feel they should during typical daily peak periods? (ENTER PERCENT.)

Percent of radar controllers handling too much traffic *4 % (8-10)

*Estimate of percent of all controllers based on aggregate of all responses provided.

4. For those controllers you were referring to in question 3, how much, if any, does each of the following factors represent a reason for their handling more traffic than they should? (CHECK ONE FOR EACH.)

(11-18)

	1. Major reason	2. Somewhat of a reason	3. Not a reason
1. Sector configuration (complexity)	5	13	5
2. Controller capability	10	11	3
3. Shortage of radar controllers	5	6	12
4. Shortage of non-radar controllers	–	1	22
5. Shortage of other staff qualified to assist radar controllers	–	6	17
6. Inadequate flow control procedures	2	15	6
7. Airline schedules	9	5	10
8. Other (SPECIFY.)	7	2	1

5. Do you believe controllers at your facility have too much, too little or an appropriate amount of say in determining the volume and complexity of traffic they are expected to handle? (CHECK ONE FOR EACH.)

(19-20)

	1. Much too much	2. Somewhat too much	3. Appropriate amount	4. Somewhat too little	5. Much too little
1. Volume	–	1	53	12	1
2. Complexity	–	2	55	9	2

6. How much sector reconfiguration (procedural and/or boundary changes) do you anticipate will take place at your facility during the next 12 months? (CHECK ONE.)

(21)

1. [9] Great deal
2. [18] Moderate amount
3. [30] Some
4. [2] None

7. In your opinion, to what extent, if at all, does each of the following factors contribute to the sector reconfigurations you anticipate taking place at your facility during the next 12 months? (CHECK ONE FOR EACH.)

(22-27)

	1. Very great extent	2. Great extent	3. Moderate extent	4. Some extent	5. Little, no extent
1. Sector(s) handling too much traffic	4	11	7	12	22
2. Sector(s) handling too little traffic	–	3	5	8	40
3. Sector(s) too complex	3	10	6	11	26
4. Improve service to system users	13	24	10	6	5
5. Response to other system changes	9	16	8	14	11
6. Other (SPECIFY)	9	2	–	1	6

8. In your opinion, how much time should an FPL currently be required to spend on each of the following during a typical day and evening shift? (ENTER NUMBER OF HOURS TO NEAREST HALF HOUR. EACH TOTAL SHOULD EQUAL 8.)

	DAY	EVENING	
	RESPONSES IN HOURS		
Working radar position	3.00	3.01	(28-31)
Providing training on radar position	1.99	1.99	(32-35)
Working non-radar position	1.26	1.26	(36-39)
Breaks, lunch	1.20	1.20	(40-43)
Other	0.56	0.55	(44-47)
TOTAL HOURS	8	8	

9. In your opinion, how much time should a radar certified developmental controller currently be required to spend on each of the following during a typical day and evening shift? (ENTER NUMBER OF HOURS TO NEAREST HALF HOUR. EACH TOTAL SHOULD EQUAL 8.)

	DAY	EVENING	
	RESPONSES IN HOURS		
Working radar position	2.28	2.37	(48-51)
Receiving training on radar position	2.59	2.59	(52-55)
Working non-radar position	1.25	1.22	(56-59)
Breaks, lunch	1.20	1.20	(60-63)
Other	0.68	0.63	(64-67)
TOTAL HOURS	8	8	

10. During daily peak traffic periods, do you believe FPL and radar certified developmental controllers at your facility are typically required to spend too much, too little, or about the right amount of time continuously on radar positions between breaks? (CHECK ONE FOR EACH.)

(68-69)

	1. Much too much	2. Somewhat too much	3. Appropriate amount	4. Somewhat too little	5. Much too little
1. FPLs	-	7	56	4	2
2. Developmentals	-	5	54	6	3

11. Do you feel your first line supervisors are currently spending too much, too little, or an appropriate amount of time working traffic? (CHECK ONE.)

(70)

1. [5] Much too much
2. [26] Somewhat too much
3. [33] About right amount
4. [5] Somewhat too little
5. [—] Much too little

12. At your facility, approximately what percentage of a typical first line supervisor's duty time during a week is spent working traffic? (ENTER PERCENT. IF NONE, ENTER 0.)

(71-73)

Percent time working traffic 31 %

13. In your opinion, how much, if at all, does the time your facility's first line supervisors spend working traffic facilitate or hinder their ability to perform each of the following supervisory duties? (CHECK ONE FOR EACH.)

DUP (1-2)
2 (3)

(4-11)

	1. Greatly facilitates	2. Somewhat facilitates	3. Neither facilitates nor hinders	4. Somewhat hinders	5. Greatly hinders
1. Maintain and update routine records	1	2	36	21	7
2. Handle personnel actions (i.e., grievances, awards, etc.)	2	2	36	22	6
3. Participate in managerial briefings	4	6	28	22	8
4. Provide training	11	17	30	8	1
5. Manage/oversee training	6	12	29	18	3
6. Coordinate airspace and other procedural or operational matters	8	12	26	21	1
7. Provide direct supervision	8	6	23	20	10
8. Other (SPECIFY)	2	—	1	—	4

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14. In your opinion, is the current number of staff available for each of the following type of position at your facility higher than needed, lower than needed, or at the appropriate level? (CHECK ONE FOR EACH.)

(12-17)

	1. Much higher than needed	2. Somewhat higher than needed	3. Appropriate number	4. Somewhat lower than needed	5. Much lower than needed
1. First line supervisors	3	6	47	11	2
2. FPLs (fully certified)	-	3	16	26	23
3. Data system specialists	-	5	29	24	5
4. Air traffic assistants	1	9	33	22	4
5. Staff specialists (training, planning and procedures, etc.)	-	2	26	29	12
6. Other(s) SPECIFY	2	2	2	6	5

15. The number of developmental controllers currently getting on-the-job training could have an impact on the number of full performance level controllers you have in the future as well as on your ability to provide quality training now. In your opinion, does your facility currently have too many, too few, or an appropriate number of developmental controllers to meet future controller needs and to provide quality on-the-job training to them now? (CHECK ONE FOR EACH.)

(18-19)

	1. Much too many	2. Somewhat too many	3. Appropriate number	4. Somewhat too few	5. Much too few
1. Ability to meet future controller staff needs	-	3	42	20	4
2. Ability to provide quality training to developmentals now	1	13	36	18	1

16. Regardless of whether or not you are currently at your authorized staffing level, do you believe your authorized staffing level for each type of position listed below is higher than you need, lower than you need, or about right? (CHECK ONE FOR EACH.)

(20-25)

	1. Much higher than needed	2. Somewhat higher than needed	3. Appropriate number	4. Somewhat lower than needed	5. Much lower than needed
1. First line supervisors	1	8	44	13	3
2. FPLs	—	5	39	20	5
3. Data system specialists	—	5	34	23	1
4. Air traffic assistants	1	8	35	18	5
5. Staff specialists (training, planning/ procedures, etc.)	—	1	32	26	9
6. Other(s) SPECIFY	—	3	1	3	8

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17. To what extent, if at all, do you believe staff shortages limit your first line supervisors, FPL controllers and developmental controllers in each of the following areas? (ANSWER FOR EACH JOB CATEGORY.)

	FIRST LINE SUPERVISORS					FPLs					DEVELOPMENTALS					
	1. Very great extent	2. Great extent	3. Moderate extent	4. Some extent	5. Little, no extent	1. Very great extent	2. Great extent	3. Moderate extent	4. Some extent	5. Little, no extent	1. Very great extent	2. Great extent	3. Moderate extent	4. Some extent	5. Little, no extent	
1. Ability to schedule annual leave	3	7	13	20	24	8	9	19	15	16	1	6	11	19	30	(26-28)
2. Ability to take scheduled annual leave	2	5	9	21	29	5	6	17	13	25	-	6	7	17	36	(29-31)
3. Ability to take needed spot annual leave	7	15	15	12	18	16	16	12	13	10	6	9	16	18	18	(32-34)
4. Ability to take needed sick leave	2	-	6	12	47	3	1	4	14	45	-	-	5	12	50	(35-37)
5. Ability to refuse scheduled overtime	3	7	8	15	32	5	10	9	15	25	1	6	9	9	38	(38-40)
6. Ability to get upgrade training	6	7	12	17	25	11	10	14	13	19	7	10	11	18	21	(41-43)
7. Ability to get or provide job briefings	3	9	8	19	28	4	10	9	21	23	3	9	11	15	29	(44-46)
8. Ability to take needed personal breaks	1	2	8	14	41	3	2	6	16	39	-	1	4	14	47	(47-49)
9. Other (SPECIFY)	1	1	2	-	-	1	1	1	-	-	-	-	2	-	1	(50-52)

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OVERTIME

18. For the 12 month period ending 3/31/85 approximately what percentage of the overtime worked at your facility was worked primarily for the following reasons? (ENTER PERCENT FOR EACH. IF NONE ENTER 0. TOTAL SHOULD EQUAL 100%. REPORT PRIMARY REASON ONLY.)

PRIMARY REASON	PERCENT
Leave coverage	33 % (53-55)
Training	21 % (56-58)
Staff shortage	29 % (59-61)
Weather or emergency	4 % (62-64)
Employee participation in management meetings (FAB, HRC, etc.)	9 % (65-67)
Other(s) (SPECIFY.)	
_____	4 % (68-70)
_____	____ % (71-73)
TOTAL OVERTIME	100%

19. In your opinion, about what percentage of FPLs at your facility are working more overtime than they desire, less overtime than they desire, or about as much overtime as they desire? (ENTER PERCENT FOR EACH CATEGORY. IF NONE, ENTER 0.)

DUP (1-2)
3 (3)

OVERTIME WORKED	PERCENT FPLs
More overtime than desired	11 % (4-6)
Less overtime than desired	24 % (7-9)
About as much overtime as desired	65 % (10-12)
ALL FPLs	100%

20. About what percentage of radar certified developmentals at your facility are, in your opinion, working more overtime than they desire, less overtime than they desire, or about as much overtime as they desire? (ENTER PERCENT FOR EACH CATEGORY. IF NONE, ENTER 0.)

OVERTIME WORKED	PERCENT DEVELOPMENTALS
More overtime than desired	4 % (13-15)
Less overtime than desired	42 % (16-18)
About as much overtime as desired	54 % (19-21)
ALL DEVELOPMENTALS	100%

21. Overall, are radar controllers at your facility working more, less, or about as much overtime as you believe they should be working? (CHECK ONE.)

(22)

1. [5] Much more than they should
2. [23] Somewhat more than they should
3. [36] About right
4. [4] Somewhat less than they should
5. [—] Much less than they should

22. Which of the following statements best describes the current scheduled overtime situation at your facility? (CHECK ONE.)

(23)

1. [12] Overtime is generally not available
2. [24] Controllers can work overtime if they want or turn it down
3. [14] Controllers are expected to work overtime
4. [10] Overtime is required
5. [7] Other (SPECIFY.)

23. In your opinion, to what extent, if at all, does the amount of overtime controllers at your facility are working positively or negatively affect their overall ATC duties? (CHECK ONE.)

(24)

1. [—] Significant positive effect
2. [6] Some positive effect
3. [48] Little or no effect
4. [15] Some negative effect
5. [—] Significant negative effect

AUTOMATED OPERATIONAL ERROR DETECTION PROGRAM

Questions 24-30 deal with the automated operational error detection program that has been implemented in enroute centers.

24. Is your facility an enroute center? (CHECK ONE.)

(25)

1. [18] Yes
2. [5] No --> IF NO, SKIP TO 29

25. How much positive or negative impact, if any, does the automated operational error detection program have in each of the following areas at your facility? (CHECK ONE FOR EACH.)

(26-33)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Identifying operational errors	13	2	2	—	1
2. Helping management identify system problems (e.g. airspace configuration)	7	8	3	—	—
3. Ensuring adequate separation of aircraft	8	8	—	2	—
4. Efficiency of controller performance	8	4	2	4	—
5. Controller morale	2	1	1	8	6
6. ATC system capacity	2	1	12	3	—
7. Pilot/controller relationships	—	2	5	11	—
8. Other (SPECIFY.)	1	—	—	1	—

*Responses based on 18 responding to question 25.

26. Is the automated operational error detection program increasing, decreasing, or having no impact on the amount of separation your controllers are typically maintaining? (CHECK ONE.) (34)

1. [ ] Greatly increases separation they are typically maintaining
2. [15] Somewhat increases separation they are typically maintaining
3. [3] Having no impact on separation they are typically maintaining
4. [ ] Somewhat decreases separation they are typically maintaining
5. [1] Greatly decreases separation they are typically maintaining
6. [ ] No basis to judge

27. Approximately what percentage of the operational errors detected by the automated operational error detection program at your facility were operational errors on the part of your controllers? (ENTER PERCENT. IF NONE ENTER 0 AND SKIP TO 29.)

Percent controller error 93 % (35-37)

28. For those operational errors detected by the automated operational error detection program, where your facility's controllers were at fault (reported in question 27) approximately what percentage resulted in each of the following dispositions/actions? (ENTER PERCENT FOR EACH. IF NONE, ENTER 0.)

DISPOSITION/ACTION	PERCENT
Controller demoted	<1 % (38-40)
Controller received written reprimand	1 % (41-43)
Controller received oral reprimand	3 % (44-46)
Controller recertified on position	64 % (47-49)
Controller received remedial training on position	24 % (50-52)
No action was taken (minor error)	22 % (53-55)
Other(s) (SPECIFY)	
_____	7 % (56-58)
_____	___ % (59-61)
_____	___ % (62-64)

*Responses to questions 26, 27 and 28 based on 18 responding 1 to question 24.

29. In your opinion, how much postitive or negative impact has the automated operational error detection program at the enroute centers had on the following aspects of terminal operations? (CHECK ONE FOR EACH.)

(65-67)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Efficient use of air space	2	10	23	27	5
2. Safety	9	21	34	3	—
3. Other (SPECIFY)	2	—	1	3	1

30. In your opinion, how much positive or negative impact, if any, would the introduction of the automated operational error detection program into the terminal area environment have on each of the following? (CHECK ONE FOR EACH.)

(68-73)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. System safety	10	29	23	3	1
2. System capacity	3	3	4	37	19
3. Error accountability	13	31	18	3	1
4. Controller morale	3	1	4	35	23
5. Service to users	5	3	10	34	13
6. Other (SPECIFY)	—	—	—	2	2

TRAINING

31. Do you believe you have sufficient resources in each of the following areas to provide adequate training at your facility? (CHECK ONE FOR EACH.)

DUP (1-2)
4 (3)
(4-8)

	1. Definitely yes	2. Probably yes	3. Uncertain	4. Probably no	5. Definitely no
1. Number of training specialists to train developmentals upon completion of Academy training	34	11	1	12	10
2. Number of FPLs qualified to provide OJT	36	16	2	7	8
3. Number of supervisors to provide OJT	47	14	1	6	1
4. Equipment at facility for training	39	11	2	7	10
5. Other (SPECIFY.)	1	—	—	1	2

32. What were your facility provided training failure and withdrawal rates for fiscal years 1980 thru 1984? (ENTER PERCENT FOR EACH. IF YOUR RESPONSE IS BASED ON AN ESTIMATE AND NOT ACTUAL DATA PLEASE INDICATE SO BY CHECKING THE BOX.)

(9-38)

	FAILURE	Estimate	WITHDRAWAL	Estimate
FY 1980	10 %	[ ]	4 %	[ ]
FY 1981	14 %	[ ]	5 %	[ ]
FY 1982	20 %	[ ]	5 %	[ ]
FY 1983	17 %	[ ]	4 %	[ ]
FY 1984	13 %	[ ]	6 %	[ ]

33. How much of a reason, if any, is each of the following for any increases in failure rates at your facility since FY 1980? (CHECH ONE FOR EACH.)

(39-42)

	1. Major reason	2. Somewhat of a reason	3. Not a reason	4. Not applicable- no increase
1. Lack of aptitude in candidates	27	21	11	8
2. Inadequate training prior to facility provided training	5	21	30	10
3. Lack of staff to provide training involving live traffic during facility provided training phase	3	8	44	10
4. Other (SPECIFY.)	12	4	—	1

34. How do you rate the quality of the on-the-job training developmental controllers currently receive at your facility in each of the following areas? (CHECK ONE FOR EACH.)

(43-53)

	1. Excellent	2. Good	3. Adequate	4. Less than adequate	5. Poor
1. Using back-up systems	13	28	25	3	—
2. Controlling traffic in bad weather	19	35	12	3	—
3. Emergency procedures	18	30	18	2	—
4. Handling heavy traffic	33	26	9	1	—
5. Holding patterns	8	17	28	10	3
6. Operational characteristics of types of aircraft	19	29	15	6	—
7. Direct routings (expediting traffic)	26	23	20	—	—
8. Control techniques	27	30	8	4	—
9. Phraseology	22	30	13	4	—
10. Flow control procedures	16	27	17	8	1
11. Other (SPECIFY.)	3	1	—	—	—

35. Do you believe developmental controllers are provided with sufficient training involving live traffic before being certified on a position? (CHECK ONE.) (54)

1. [57] Definitely yes
2. [10] Probably yes
3. [1] Uncertain
4. [1] Probably not
5. [—] Definitely not

36. At your facility, what is the typical length of time it has been taking for a developmental controller to become fully certified (FPL)? (ENTER TIME IN MONTHS.)

Months to become FPL 23 (55-56)

37. Do you believe developmental controllers today are better, worse, or about the same as developmental controllers were in each of the following areas before the PATCO strike? (CHECK ONE FOR EACH.)

(57-60)

	1. Much better	2. Somewhat better	3. About the same	4. Somewhat worse	5. Much worse
1. Overall skill level when arriving on floor for on-the-job training	17	16	21	15	—
2. Aptitude or ability to learn controller duties	17	26	24	1	1
3. Work attitude	46	17	4	1	1
4. Other (SPECIFY.)	1	2	1	1	—

SYSTEM SAFETY

38. How would you rate the overall safety of the ATC system today? (CHECK ONE.) (61)

1. [48] Excellent
2. [19] Good
3. [2] Adequate
4. [—] Poor
5. [—] Very poor
6. [—] No basis to judge

39. In your opinion, how much positive or negative impact, if any, is each of the following factors having on maintaining ATC system safety? (CHECK ONE FOR EACH.)

DUP (1-2)
5 (3)
(4-12)

	1. Significant positive impact	2. Some positive impact	3. No impact	4. Some negative impact	5. Significant negative impact
1. Skill level of developmental controllers	8	16	29	16	—
2. Number of developmental controllers available	5	6	40	18	—
3. Number of FPL controllers available	4	9	30	24	2
4. Amount of traffic workload	3	5	28	31	2
5. Amount of overtime being worked	3	2	50	14	—
6. Hardware reliability	8	16	29	13	1
7. Software reliability	10	15	33	9	—
8. Controller morale	17	24	18	7	—
9. Other (SPECIFY)	—	—	—	2	2

STAFF COMPOSITION

40. How many individuals in each of the following categories are currently employed at your facility? (ENTER NUMBER FOR EACH. IF NONE, ENTER 0.)

Reemployed GS 2152 annuitants who are actively controlling traffic 80 (13-14)

Reemployed GS 2152 annuitants in staff staff support positions 74 (15-16)

Part-time GS 2152 employees controlling traffic 58 (17-18)

Part-time GS 2152 employees in staff support positions 18 (19-20)

41. Do you believe part-time employees can function effectively as controllers at your facility? (CHECK ONE.) (21)

1. [19] Definitely yes
2. [25] Probably yes
3. [16] Probably no
4. [8] Definitely no

42. If you checked definitely or probably no for question 41, briefly explain why. If you checked definitely or probably yes to question 41 describe what type of schedule(s) you feel part-time controllers can effectively work at your facility.

STRIKE RECOVERY

43. In your opinion was your facility ready for the lifting of all restrictions on air traffic activity in December 1983? (CHECK ONE.) (22)

1. [25] Definitely yes
2. [17] Probably yes
3. [11] Probably no
4. [8] Definitely no
5. [6] No basis to judge - was not facility manager then.

44. Since the PATCO strike, to what extent, if at all, has your facility recovered its capability to handle traffic (volume and complexity)? (CHECK ONE.) (23)

1. [30] Totally
2. [24] Great extent
3. [11] Moderate extent
4. [3] Some extent
5. [1] Little or no extent

COMMENTS

45. If you have any comments about any of the issues dealt with above or related matters please write them below. Attach additional sheet(s) if you need more space. (24)

WITH COMMENTS = 39% (27 of 69 cases)

GAO Statement on Conditions Within Air Traffic Control Work Force at Six FAA Facilities

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

FOR RELEASE ON DELIVERY
EXPECTED AT 10:00 A.M.
MONDAY, MARCH 3, 1986

STATEMENT OF

HERBERT R. McLURE, ASSOCIATE DIRECTOR

RESOURCES, COMMUNITY, AND

ECONOMIC DEVELOPMENT DIVISION

BEFORE THE

SUBCOMMITTEE ON AVIATION

OF THE

HOUSE COMMITTEE ON PUBLIC WORKS

AND TRANSPORTATION

ON

CONDITIONS WITHIN THE AIR TRAFFIC CONTROL WORK FORCE

AT SIX FAA FACILITIES

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Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to comment on conditions within the controller work force at the Federal Aviation Administration's (FAA's) six air traffic control (ATC) facilities serving northern New Jersey.[1]

Air traffic in this area has now reached record levels and is expected to continue to grow. The first major labor-saving features of FAA's planned automated ATC system, however, will not be available until at least the early 1990s. This, coupled with questions about FAA's progress in rebuilding the controller work force after the strike over 4 years ago have caused growing concern in the Congress over the safety of our national airspace system.

Because of this concern, we spent the past year collecting and analyzing information on various aspects of the working environment in the 74 busiest ATC facilities in the continental United States,[2] including five of the six ATC facilities serving northern New Jersey. While the Teterboro terminal was not included in our survey, we have collected and analyzed staffing and air traffic activity data for this facility as well. As agreed, our testimony today will cover in detail the size and

[1]The six facilities are the Teterboro and Newark, N.J., and the John F. Kennedy and LaGuardia, N.Y., airport traffic control terminals; the New York terminal radar approach control facility (New York TRACON); and the New York air route traffic control center (New York Center).

[2]Our survey included the 20 air route traffic control centers (hereafter referred to as centers) and the 54 busiest terminal facilities in the continental United States. Although there are 448 ATC facilities operated by FAA, 63 percent of the controllers are employed and 80 percent of radar operations are controlled at these 74 facilities.

composition of the controller work force as well as controller work load and overtime for these facilities. We will also present some background information on each of these topics.

There were two principal sources for the information we collected and analyzed. One source was data on staffing, overtime, and air traffic activity from FAA's payroll, personnel, and other systems for the period from July 1981 through September 1985. The other source was an extensive questionnaire survey of some 4,500 radar qualified controllers, 1,000 first-line supervisors, and the managers of the 74 ATC facilities. Overall, 75 percent of those we surveyed responded and we have used the questionnaire results to underscore conditions apparent in FAA's data. Various appendices are also attached to our statement to illustrate the information we obtained from FAA's data systems.

MAJOR FINDINGS

Our work at the six facilities of interest has shown that:

--FAA does not have as many fully qualified, experienced controllers at some of these facilities as managers, supervisors, and controllers believe are needed and as are called for by FAA's goals, and this problem cannot be resolved in the short term. In addition FAA could lose more supervisors and controllers through retirement than it expects.

--Air traffic activity is at the point where controllers and their supervisors believe they are overworked during peak traffic periods.

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--Controllers report working at a radar position during peak periods without a break or change of position for more time than they believe they should have to and than is called for by FAA's policy.

--Overtime is likely to remain high at the New York Center and TRACON and controllers and supervisors feel the overtime being worked is negatively affecting controllers' ability to perform their duties.

In their responses to our questionnaire, supervisors confirmed that each of these conditions negatively impacts the maintenance of ATC system safety.

Before continuing, I want to point out that most of the controllers, supervisors, and managers who responded to our questionnaires rated the overall safety of the ATC system as adequate to excellent. But supervisors and controllers also identified concerns about their ability to maintain a safe system.

I will now present the specifics on each of our findings.

SIZE AND COMPOSITION OF THE CONTROLLER WORK FORCE

Today the ATC system is being operated with fewer controllers overall, and far fewer full performance level (FPL)[3] controllers than before the August 1981 strike.

At the time of the 1981 strike, FAA believed that the 16,200 controllers it had were more than it needed. Since then, FAA has

[3]A full performance level controller is one who is fully certified to operate all positions in a defined area.

set out to rebuild the work force with several thousand fewer controllers. For fiscal years 1984 and 1985, FAA said its goal for controllers was about 12,500 as part of a total work force goal of about 14,300.

As of September 30, 1985, FAA had about 12,500 controllers. The smaller work force, however, has impacted staffing at certain facilities much more than others. For example, FAA has rebuilt the controller work force at the four airport terminals serving northern New Jersey to about their pre-strike level; yet, there are 48 percent fewer controllers at the New York Center and 38 percent fewer controllers at the New York TRACON than before the strike.

The composition of the controller work force is also far different than it was before the strike. As of July 31, 1981, FAA had 13,200 FPLs who made up over 80 percent of the work force. Only about 3,400 FPLs remained after the strike and as of September 30, 1985, there were about 8,300 FPLs comprising about 66 percent of a much smaller work force. In addition, FAA had about 4,200 developmental controllers[4] and 1,500 air traffic assistants,[5] a new position established since the strike.

At the six FAA facilities serving northern New Jersey there were 562 FPLs before the strike and as of September 30, 1985, there were 314 or 44 percent fewer. The change in the number of

[4]A developmental controller is one who is undergoing training.

[5]Air traffic assistants are not trained to and do not control air traffic. They perform less skilled tasks of mainly a clerical nature.

FPLs ranged from a 14 percent increase (2 FPLs) at the Teterboro airport terminal, a less complex nonradar facility, to a 54 percent decrease (186 FPLs) at the New York Center.

FAA's FPL staffing goal

FAA has established an FPL staffing goal of 75 percent[6] at all ATC facilities. FAA had achieved its FPL staffing goal at the New York TRACON (78 percent) and the Teterboro terminal (100 percent), and was approaching its goal at the Kennedy terminal (72 percent), as of September 30, 1985. However, only about 60 percent of the controllers were FPLs at the New York Center (59 percent) and the Newark (61 percent) and LaGuardia (62 percent) terminals. Moreover, one must remember that the percent of FPLs at the New York Center and New York TRACON are based on a much smaller work force than before the strike.

Perspectives of controllers, supervisors, and managers on staffing adequacy

We asked controllers, supervisors, and facility managers at the five ATC facilities serving northern New Jersey that were included in our survey their opinions on staffing. Ninety-four (94) percent of the controllers and 91 percent of the supervisors said they believe there are fewer FPLs than are needed. Three of the five facility managers agreed and also said that their authorized controller staffing levels are not adequate.

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[6]DOT informed the Office of Personnel Management, in a May 1985 request for a continuance of a waiver of time-in-grade requirements for controller promotions, that it was essential to have at least 75 percent of the controllers at a facility as FPLs. We, therefore, have used that as FAA's goal for FPL controller staffing.

We also asked the supervisors and managers their opinion about how much positive or negative impact several factors, including the number of FPLs available, were having on maintaining safety. Sixty-five (65) percent of the supervisors said the lack of FPLs was having a negative impact, and one of the five facility managers who answered the same question had the same opinion.

Obstacles to rebuilding the controller work force

FAA faces difficult obstacles in building towards its FPL staffing goal. First, it takes time for a controller to acquire the training and experience to qualify as an FPL. Second, training attrition has averaged about 50 percent. And third, many of the experienced FPLs and supervisors have retired or are approaching retirement. These add up to a long term controller staffing problem.

Before the strike, it took an average of 4 to 5 years to quality as an FPL. Since the strike, the Office of Personnel Management has waived time-in-grade requirements so that controllers can become FPLs in about half that time. Even so, in the 4 years since the strike, FAA has replaced only 57 of the 243 FPLs it lost from the New York Center and 68 of the 105 FPLs it lost at the New York TRACON.

Regarding training attrition (failures and withdrawals), only 58 percent of those hired since the strike have been able to pass the FAA Academy training requirements. And on the basis of facility managers' estimates, the facility attrition rate for those who graduate from the Academy has averaged 59 percent at the New York Center and 17 percent at the New York TRACON. The attrition rate at the terminals included in our survey has been minimal according to the facility managers.

Finally, our survey suggests many more controllers will retire in the next few years than FAA is planning for. FAA projects the number of retirements on the basis of its historical experience of 14 percent of those eligible to retire. Our survey, however, indicated that 78 percent of the 26 controllers and 83 percent of the 44 supervisors at the five facilities who are eligible to retire then or within 2 years would retire when eligible.

Certain facilities serving northern New Jersey could be especially hard hit by retirements. For example, 26 of the 44 supervisors at the New York Center are already eligible to retire, and our survey indicated that 21 of them definitely or probably will retire within the next 2 years. If replacements for the retired supervisors have to come from the ranks of the Center's FPL controllers, then the controller staffing situation at the Center will worsen.

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FAA is trying to improve FPL staffing through a special program to encourage transfers into the New York Center and six other centers where the lack of FPLs is acute. FAA received about 500 offers nationwide to participate in the program as of its cutoff date in December 1985. However, only 30 expressed an interest in transferring to the New York Center.

CONTROLLER WORK LOAD

Controller work load is affected by the number and type of aircraft they are handling at any one time, the complexity of what they have to do, and the amount of time they spend at a control position during their shift. Immediately following the strike, FAA imposed special restrictions that reduced air traffic activity by about 20 percent because of the severe shortage of controllers. As FAA hired and trained more controllers, it lifted the last of the restrictions in December 1983, with the exception of flow control[7] which has been used in some form since 1970.

Air traffic has grown substantially in the northern New Jersey area on the basis of a comparison of activity during the first 6 months in 1981 to the same 6 months in 1985. At the six facilities of interest, traffic increased by over 18 percent, including a 54 percent increase at the Newark terminal. Since the first major labor-saving features of FAA's planned automated air traffic control system will not be available until at least the early 1990s, controller work load at these facilities will likely continue to be a concern for some time.

[7]This is FAA's centrally managed national program designed to control aircraft departures and enroute flows based on weather conditions and capacity at arrival airports.

Our survey showed that 77 percent of the controllers at the five facilities who work radar believe they are required to handle more traffic during daily peak periods than they should be handling. Their supervisors said that 181 of the 473 controllers under their supervision are required to handle too much traffic. The five facility managers, on the other hand, disagreed with both the controllers and supervisors stating that only 4 (or 1 percent) of the radar controllers are required to handle more traffic than the managers feel is appropriate.

Over 90 percent of the controllers at the five facilities who believe that their work load is too high selected inadequate flow control procedures and airline schedules as the top two reasons. Over 90 percent of the supervisors who said controllers under their supervision are required to handle too much traffic also selected these reasons.

Over 70 percent of the controllers selected the shortage of radar controllers and the configuration of air traffic sectors[8] as reasons why their work load is too high, and 63 percent of their supervisors agreed. Moreover, 43 percent of the supervisors were dissatisfied with the amount of say they had configuring their sectors.

Another significant work load issue is the amount of time a controller must spend on position. FAA's policy is that controllers should not work more than 2 hours at a radar position

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[8]A sector is a designated section of airspace within which a controller has responsibility and authority for the separation of aircraft.

without a break or change of position. Sixty-nine (69) percent of the controllers at the five facilities reported working continuously for 2 hours or more at a radar position during peak periods. About two-thirds said they are working too long without a break during peak periods, and more than 55 percent of their supervisors agreed.

On average, those supervisors themselves spend almost 40 percent of their time working traffic, and over 60 percent of them believe this hinders their ability to carry out their supervisory responsibilities.

With regard to our question about the impact certain factors have on maintaining ATC system safety, over 80 percent of the supervisors believed that the amount of traffic work load is having a negative impact. We also asked controllers about two additional air traffic control services[9] which can have a bearing on safety and which they provide pilots when they have time--responding to pilots' requests for traffic advisories and weather advisories. Even though a third of the controllers said they seldom, if ever, decline requests for traffic advisories, another third said they often do. Over 40 percent said they seldom, if ever, decline weather advisory requests, but one in four said they often do.

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[9]Air traffic control additional services include various advisories that are provided to the extent possible contingent only upon the controllers capacity to fit them into the performance of higher priority duties and on the basis of the limitations of the radar, volume of traffic, radio frequency congestion, and controller work load. The controller has complete discretion in regards to providing these services.