OPPORTUNITIES TO IMPROVE FAA'S PROCESS FOR PLACING AND TRAINING AIR TRAFFIC CONTROLLERS IN LIGHT OF PENDING RETIREMENTS

Federal Aviation Administration

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Office of the Secretary
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Memorandum

Subject: <u>ACTION</u>: Report on Opportunities To Improve FAA's Process for Placing and Training Air Traffic Controllers in Light of Pending Retirements AV-2004-060	Date: June 2, 2004
From: Alexis Stefani *[signature]* Principal Assistant Inspector General for Audit and Evaluations	Reply to Attn. of: JA-10: X60500

To: Federal Aviation Administrator

This report presents the results of our audit of the Federal Aviation Administration's (FAA) air traffic controller placement and training process. The objectives of our audit were to: (1) determine if FAA has identified future hiring requirements for controllers and if FAA's existing sources for filling these vacancies will be sufficient to meet projected requirements; (2) determine if FAA's on-the-job training process for controllers is effective at developing fully certified controllers in a timely and cost-effective manner; and (3) evaluate FAA's management of and controls over the Air Traffic Instructional Services contract.

Our audit focused on the training process for air traffic controllers from the point of hiring through the certification process at the facility level. The information analyzed was from fiscal years (FYs) 2002 and 2003. The methodology used in this audit can be found in Exhibit A.

We conducted the audit between April 2003 and January 2004. During the audit we visited and gathered data from nine en route Centers, six terminal radar approach control (TRACON) facilities, and three air traffic control towers. We also visited four regional headquarters, the FAA Academy, the Air Traffic Control System Command Center, three College Training Initiative schools, and the Minneapolis Community & Technical College Air Traffic Control Training Program. The locations we visited are listed in Exhibit B.

RESULTS IN BRIEF

Attrition in FAA's air traffic controller workforce is expected to rise sharply in upcoming years as controllers hired after the 1981 Professional Air Traffic Controllers Organization controllers' strike become eligible for retirement. FAA currently estimates that nearly 7,100 controllers could leave the Agency over the next 9 years (FYs 2004-2012). In contrast, FAA has only experienced total attrition of about 2,100 controllers over the past 8 years (FYs 1996 to 2003).

Figure 1. FAA Air Traffic Controller Attrition Compared to Retirement Eligibility*
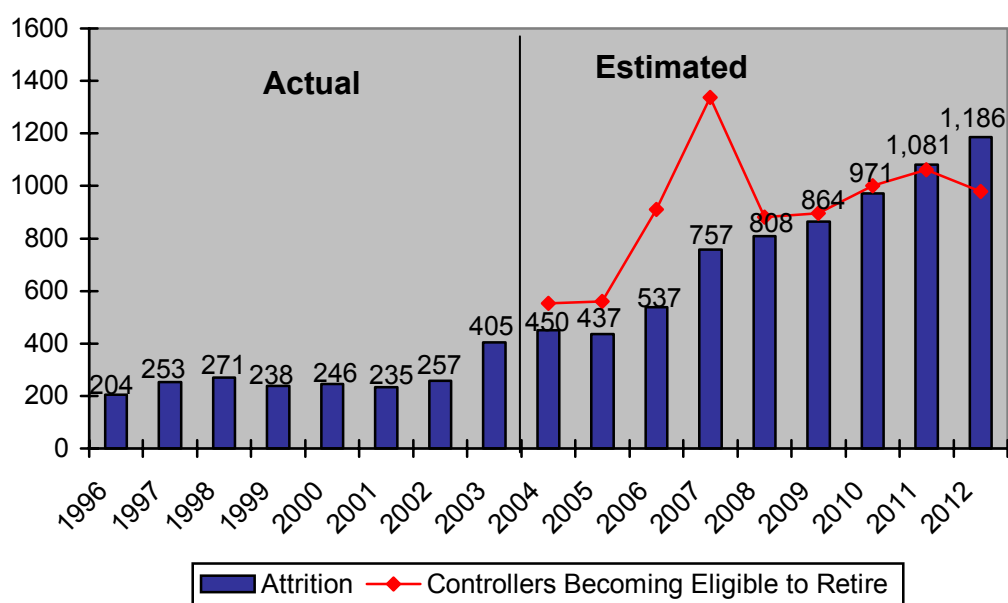
* Attrition data are as of May 2004. The number of controllers becoming eligible includes only those controllers reaching retirement eligibility in that year and does not include prior years. Retirement eligibility estimates are as of December 31, 2003.

Whether FAA will need to replace all 7,100 controllers on a one-for-one basis depends on many factors including future air traffic levels, new technologies, and long-term FAA initiatives such as redesigning the national airspace. However, it is clear that as a result of the anticipated increases in attrition, FAA will begin hiring and training controllers at levels not experienced since the early 1980s.

A substantial challenge for FAA will be to hire and train new controllers within a tightly constrained operating budget. FAA recently made significant progress in this area by renegotiating several pay rules with the National Air Traffic Controllers Association (NATCA) that previously allowed some newly hired controllers to earn base salaries in excess of $79,000 while in training. The renegotiated rules now allow FAA to set newly hired controllers' salaries at levels

more commensurate with an entry-level position (from $25,000 to $52,000) and should help FAA avoid higher costs as it begins hiring and training greater numbers of new controllers.

An important point worth noting is that new controllers will generally have lower base salaries than the retiring controllers they replace. Over time, this could help reduce FAA's average base salary and, in turn, help reduce FAA's operating cost growth. However, if FAA does not place new controllers where and when they are needed, the potential reductions in base salaries will be offset by lower productivity from placing too many or too few controllers at individual facilities.

In light of the expected surge in retirements, we found FAA has several opportunities to better prepare for increased hiring and training requirements.

- ***FAA Needs To Develop Attrition Estimates by Location***. FAA has national estimates of expected attrition within the controller workforce that are based on attrition rates for the previous 3 years. According to FAA managers, they used data from the previous 3 years because current data more accurately reflect potential future retirement trends. FAA plans to reassess its attrition estimates each year as it accumulates further data on retirement trends. We considered this methodology to provide a reasonable estimate of future retirements at the national level. However, those estimates do not take into account where vacancies will occur.

  While most locations we visited had estimates of attrition over the next 2 years, we found different information was used to develop those estimates. For example, one facility only projected mandatory retirements, another projected attrition for transfers but not retirements, and another provided estimates on all types of attrition (i.e., retirements, transfers, hardships, resignations, and removals). Because of these differences in the way estimates were made, wide variances in projected attrition rates occurred from facility to facility. To illustrate, the Chicago Center projected 115 controllers would leave in the next 2 years because all attrition was considered in their estimates, whereas the Jacksonville Center projected 10 retirements because only mandatory retirements were included in their estimate.

  The need for consistent Agency-wide data to uniformly identify where and when retirements will occur underscores the need for FAA to have a fully functional cost accounting system with a labor distribution system. FAA plans to implement a labor distribution system called CRU-X for the Air Traffic Organization. CRU-X is designed to capture data such as the mandatory retirement date and retirement eligibility date for all controllers

by location. This information could be used at the national level to accurately identify when and where vacancies will occur. CRU-X could also provide information on the time controllers spend controlling aircraft and conducting other duties, which could assist managers in utilizing their workforce more productively.

However, CRU-X's deployment has been on hold for almost 2 years pending FAA and NATCA negotiations over its implementation. FAA and NATCA need to complete actions to resolve their differences regarding CRU-X and implement the system as quickly as possible so the Agency and union have objective data to determine how many controllers are needed and where. In the interim, FAA needs to develop policies, procedures, and systems to uniformly estimate controller attrition by location and adjust national estimates as needed.

- ***FAA Needs To Assess Newly Hired Controllers' Abilities Before They Are Placed***. FAA air traffic facilities are categorized into multiple levels (5-12)—the higher the level, the greater the demand on a controller's judgment, skill, and decision-making ability. However, FAA places new controllers without assessing if they have the knowledge, skills, and abilities to certify at their assigned facility. Currently, FAA places newly hired controllers based only on where and when vacancies occur, and many of those vacancies occur at some of FAA's busiest and most complex facilities.

  FAA has developed the Air Traffic Selection and Training (AT-SAT) test to assess an applicant's potential to be a successful air traffic controller before the controller is hired. FAA started administering the AT-SAT test to all applicants who are new to the air traffic controller profession in January 2004. However, FAA currently has no plans to use these scores in determining the facility level at which a newly hired controller should be placed.

  Given the expected increases in attrition, FAA needs to develop a process for identifying a new controller's potential to certify at a facility and use this information when determining where the new controller should be placed. In developing a process, FAA should consider validating whether AT-SAT could be used for that purpose or identify other factors, such as performance at the FAA Academy or previous experience, that could be an indicator of a controller's skills and abilities. A better selection and screening process could help in reducing the number of training failures and thereby avoid the time and costs FAA incurs in training new controllers to replace those who are unable to certify.

- • ***FAA Needs To Determine Ways to Reduce the Time and Costs Associated with On-The-Job Training While Achieving Results***. On-the-job Training (OJT) is the longest portion of new controllers' training. At the locations we visited, the overall time required for newly hired controllers to become certified averaged 3.1 years, but in some cases it took as long as 7 years. However, we found that FAA provides minimal oversight of this portion of training at the national level. For example, FAA does not have national statistics on key performance measurements for OJT such as the time it takes controllers to certify, delays in the OJT process, where and when training failures occur, and the total cost to provide OJT.

  Because FAA could not provide national statistics on the OJT process, we collected various data at the 17 facilities we visited. The compiled data from the 17 facilities showed wide variances in the OJT statistics that could be key indicators of whether the process is being managed in a timely and cost-effective manner. (Table 4 on page 16 contains the statistics we compiled at all 17 locations). However, since FAA does not capture any national statistics, these variances are not investigated to identify reasons for the differences or to determine if actions are needed to improve the OJT process. For example:

  - – During FYs 2002 and 2003, New York Center had 15 training failures, while the Washington Center had only 4 training failures. At the time we visited, both these facilities had around 70 trainees.

  - – At the New York Center, trainees took an average of 3.8 years to certify. In comparison, at the Minneapolis Center, trainees took an average of 1.3 years.

  - – New controllers at the New York and Cleveland Centers trained on live traffic about the same number of hours (an average of 696 and 677 hours a year, respectively). However, we found that trainees at the New York Center took, on average, more than a year longer to certify (3.8 years compared to 2.7 years), even though both Centers provided the same average amount of time training on live traffic.

  We were unable to determine the specific reasons for the variances among the data collected. However, we found many factors affect OJT, including the hiring source, level of the facility, local training policies, and operational needs of the facility. For example:

  - – Hiring Source. The Minneapolis Center primarily obtains replacements for controllers from other FAA facilities, while the New York Center's

primary sources of new controllers are former Department of Defense controllers and new graduates from College Training Initiative schools.[1]

- – Level of Facility. The facility level may also affect the time it takes to certify. For example, the New York Center is a level 12 facility, whereas the Minneapolis Center is a level 11. At the New York Center, trainees took an average of 3.8 years to certify compared to an average of 1.3 years to certify at the Minneapolis Center.

- – Local Policies. We also found that facility policies may affect training. For instance, OJT may be delayed because of facility policies requiring a certain number of students in a training class. At the Oakland Center, a trainee completed one phase of OJT but had to wait 6 months before starting the next phase because the facility requires a minimum of four students to start a class. In contrast, the Cleveland Center had no gaps in training because at that facility, classes are started even if only one new controller is ready for the next phase of training.

- – Operational Needs. Once new controllers have certified on a sector, they can independently work that sector for the facility. However, new controllers cannot become fully certified until they certify on all sectors within their assigned areas (usually between five and seven sectors). Some facility managers stated that this extends the length of controller training because time working operationally does not count toward OJT. At hard-to-staff facilities, new controllers certified on a particular sector may be used operationally on that sector repeatedly to alleviate short-term staffing shortages. This may be one reason why it takes longer to train at the New York Center than the Cleveland Center, even though both provide almost the same number of hours training on live traffic.

The wide variances in data we reviewed and the multiple factors affecting the OJT process underscore the need for FAA to evaluate, manage, and improve the overall OJT process. Unless FAA accumulates site-specific statistics on a national level, FAA has no means to assess the overall OJT process, determine whether training resources can be more efficiently and effectively used, and identify the most efficient and best practices. Those actions will be key to reducing the time and costs required for new controllers to become fully certified. To prepare for hiring and training new controllers over the next 8 years, it is imperative for FAA to determine better ways for reducing the time and costs associated with the OJT process while still achieving results. FAA needs to explore ways to reduce the time

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[1] At the 17 facilities we visited, statistics showed that transfer controllers usually certify quicker at a new facility than external new hires.

and costs of providing OJT training, such as an improved placement process, better prepared candidates through increased educational requirements, and/or enhanced simulation training at large facilities.

To do this, however, FAA first needs the basic data to effectively manage the program. Accordingly, FAA will need to compile national statistics and establish a baseline to better manage the OJT process and include these in developing a tracking system for training.

FAA will also need to improve controls over its Air Traffic Instructional Services contract. Although this contract supports OJT at over 50 locations, we found that FAA requires no documentation to support hours billed by contract employees. We also found that the contract will cost FAA $122 million over a 5-year period (if all of the contract options are exercised); however, FAA has not had an independent incurred cost audit of the contract as required by FAA's Acquisition Management System. FAA has recently taken action to address this issue and has included the Air Traffic Instructional Services contract in a list of 183 requested audits currently being coordinated with the Defense Contract Audit Agency.

Recommendations

Our recommendations focus on improving FAA policies and procedures to help ensure that newly hired controllers go through the best and most cost-effective selection and training process.

To ensure that FAA will have sufficient numbers of controllers available when and where they are needed, we are recommending FAA:

- Establish a system to uniformly estimate controller attrition by location and adjust national attrition and hiring estimates as needed, and
- Develop an assessment process for identifying a new controller's potential to certify at a certain facility level and use this information in placing newly hired controllers.

To prepare for hiring and training new controllers over the next 8 years, FAA needs to determine better ways for reducing the time and costs associated with the OJT process while still achieving results. To do this, however, FAA first needs the basic data to effectively manage the program and then needs to explore ways to reduce the time and costs of providing OJT, such as enhanced simulation training at large facilities. Accordingly, we are recommending FAA:

- Compile national statistics and establish a baseline to better manage the time and costs associated with the controller OJT process and include these in developing a tracking system for training.

In addition, to ensure that the hours and services billed by the contractor for providing classroom and simulation portions of OJT were worked and training services were provided, we recommend FAA:

- Require the Air Traffic Instructional Services contractor to maintain and provide supporting documentation for hours worked and services provided.

Management Comments and OIG Response

A draft of this report was provided to FAA on April 23, 2004. On June 1, 2004, FAA provided written comments and concurred with all the findings and recommendations. The actions planned are responsive to our recommendations and when fully implemented should result in a better placement and training process for new air traffic controllers. However, FAA needs to provide target dates for completing actions to establish a system that will uniformly estimate controller attrition by location and to develop an assessment process for placing newly hired controllers. The complete text of FAA's comments is attached as an appendix to this report.

BACKGROUND

Attrition in FAA's air traffic controller workforce is expected to rise sharply in upcoming years as controllers hired after the 1981 Professional Air Traffic Controllers Organization controllers' strike become eligible for retirement. FAA currently estimates that nearly 7,100 controllers could leave the Agency over the next 9 years (FYs 2004-2012). In contrast, FAA has only experienced total attrition of about 2,100 controllers over the past 8 years (FYs 1996-2003).

FAA hires new controllers from multiple sources. These include controllers from the Department of Defense (DOD), controllers from FAA's Contract Tower Program, graduates of College Training Initiative (CTI) schools, graduates of the Minneapolis Community & Technical College Air Traffic Control Training Program (MARC), controller reinstatements, and off-the-street applicants. Once hired, new controllers undergo an extensive training process. Training to become a certified professional controller (CPC) usually consists of training at both the FAA Academy and OJT at their assigned facility. As shown in Table 1, almost half of all new hires attend the Academy, regardless of their prior experience as a controller.

Table 1. Number of New Hires Attending the FAA Academy

FY	Number of New Hires	Number Attending FAA Academy
2000	421	205
2001	359	156
2002	581	282
2003	753	355

The time it takes to train new hires at the FAA Academy varies but can take up to 16 weeks depending on the hiring source. Once newly hired controllers complete Academy training, they are sent to a facility to begin the OJT process. In general, during OJT trainees receive classroom and simulation training at their assigned facility (primarily through contract instructors) before training on live traffic with a certified controller who is designated as an on-the-job training instructor (OJTI). The OJTIs teach the trainees through a combination of instruction, demonstration, and practical application. Once trainees are assigned to an air traffic control facility, they are considered "developmental" controllers, or developmentals, until they have certified as an air traffic controller (proven they can control air traffic in all sectors of their assigned area). Transferring CPCs are considered CPCs-in-training until they have certified on the air space of the new facility.

FINDING AND RECOMMENDATIONS

We found that FAA has national estimates of expected attrition within the controller workforce but those estimates do not take into account where vacancies will occur. We also found that FAA does not have a screening process for determining if newly hired controllers have the knowledge, skills, and abilities necessary to certify at the level of facility in which they are placed. Additionally, FAA needs to improve its overall oversight and management of the OJT process. Even though OJT is the longest portion of controller training, we found FAA does not have national statistics that are critical to effectively manage the process, such as the time it takes a controller to certify, data on training delays and failures, or costs associated with OJT. At the 17 facilities we visited, we found wide variances in key factors that could be used to determine whether the process is being managed in a timely and cost-effective manner. Finally, FAA needs to improve controls over the Air Traffic Instructional Services contract to ensure that hours and services billed were valid, allowable, and allocable.

FAA Has National Estimates of Expected Attrition Within the Controller Workforce, but Those Figures Do Not Take Into Account Where Vacancies Will Occur

FAA estimates controller attrition resulting from retirements based on a controller's years of service and age. In determining eligibility for retirement purposes, FAA has identified controllers who will reach initial eligibility under special retirement provisions (age 50 with 20 years of active service as a controller or any age with 25 years of active service), as well as those controllers who are subject to mandatory retirement at age 56 (Table 2).[1]

Table 2. Retirement Eligibility Requirements for Controllers

Type of Retirement	Controller Age	Years of Service
Special	50	20
Special	Any Age	25
Mandatory	56	20

FAA estimates that 25.5 percent of controllers eligible to retire will leave in the first year of eligibility, 8.5 percent in the second year, and 5.5 percent in the third

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[1] Some controllers appointed by the Department of Transportation before May 16, 1972, and controllers appointed by DOD before September 12, 1980, are exempt from mandatory retirement at age 56. In addition, some controllers who have not reached retirement eligibility by age 56 may continue as air traffic controllers until they become eligible for retirement. At the direction of Congress, FAA drafted a rule establishing requirements for requesting an exemption to the mandatory age 56 retirement rule up to age 61. As of May 2004, FAA had not issued a final rule regarding this exception policy.

year. FAA identified these percentages by reviewing retirement data from the previous 3 years. According to FAA managers, they used data from the previous 3 years because current data more accurately reflect potential future retirement trends. FAA plans to reassess its attrition estimates each year as it accumulates further data on retirement trends. We considered this methodology to provide a reasonable estimate of future retirements at the national level. However, FAA's national estimates for controller attrition do not identify where vacancies will occur. As shown in Table 3, most facilities we visited had estimates for attrition over the next 2 years. However, the 17 facilities included different information in developing their estimates.

Table 3. Facility Attrition Projections at 17 Locations Visited (FYs 2004 and 2005)

Facility	Projected Attrition	Data Used for Projections
Atlanta Center	87	All controllers eligible to retire
Chicago Center	115	All controllers eligible to retire and all other categories of attrition (i.e., transfers, worker's compensation)
Cleveland Center	49	Detailed information on all categories of attrition
Jacksonville Center	10	Mandatory retirements
Los Angeles Center	32	Mandatory retirements and projected transfers
Minneapolis Center	27	Estimated attrition based on previous years
New York Center	29	Detailed information on all categories of attrition
Oakland Center	41	All controllers eligible to retire
Washington Center	65	Estimated attrition based on previous years
Atlanta TRACON	8	Retirements and estimated training failures
Chicago TRACON	34	Estimated attrition based on previous years
Minneapolis TRACON	4	Mandatory retirements
New York TRACON	16	Mandatory retirements and projected transfers
Southern California TRACON	106	Confirmed retirements for FY 2004 and eligible retirements through FY 2005
LaGuardia Tower	8	Estimated attrition based on previous years
Los Angeles Tower	5	FY 2004 projected losses, no estimates are available for FY 2005
Minneapolis Tower	4	Mandatory retirements

One facility projected only mandatory retirements, another projected attrition for transfers but not retirements, and another provided estimates on all types of attrition (i.e., retirements, transfers, hardships, resignations, and removals). Because of these differences in the way estimates were made, wide variances in projected attrition rates occurred from facility to facility. For example, the Chicago Center projected 115 controllers would retire in the next 2 years because

all attrition was considered in the estimates whereas the Jacksonville Center projected only 10 retirements because only mandatory retirements were included in their estimates.

The need for consistent Agency-wide data to uniformly identify where and when retirements will occur underscores the need for FAA to have a fully functional cost accounting system with a labor distribution system. FAA is planning on implementing a labor distribution system called CRU-X for the Air Traffic Organization. CRU-X is designed to capture data such as the mandatory retirement date and retirement eligibility date for all controllers by location. This information could be used at the national level to accurately identify when and where vacancies will occur. CRU-X could also provide information on the time controllers spend controlling aircraft and conducting other duties that could assist managers in utilizing their workforce more productively. However, CRU-X has not been deployed because in September 2002 FAA entered into an agreement with the controllers' union that eliminated many of the system's functions.

Specifically, the agreement eliminated (1) requirements for employees to sign in and out of the system when arriving or leaving work, and (2) tracking time spent by employees performing collateral duties. In our June 3, 2003 assessment of FAA's cost accounting system, we cited the lack of those fundamental procedures as a serious internal control weakness. In February 2004, FAA provided NATCA with substantive changes planned for the system and in March 2004 opened formal discussions with the union. However, FAA and NATCA have not reached an agreement on implementation of the system. In the interim, FAA needs to develop policies, procedures, and systems to uniformly estimate controller attrition by location and adjust national estimates accordingly.

With Proper Planning, FAA Should Have Adequate Sources for Hiring New Controllers

FAA hires new controllers from multiple sources. These include controllers from the Department of Defense, controllers from FAA's Contract Tower Program, graduates of the CTI schools, graduates of the MARC program, controller reinstatements, and off-the-street applicants. FAA should have sufficient sources of new controllers as attrition increases if FAA identifies in advance how vacancies will be filled and coordinates with its various hiring sources. For example, FAA can increase its pool of candidates by requesting additional graduates from the MARC and CTI schools or by additional off-the-street hiring. Representatives from the MARC school indicated they are capable of increasing the number of graduates produced each year from 96 students to 150 students depending on funding provided by Congress.[2]

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[2] The MARC school normally receives some funding from Congress to support its operations.

Likewise, representatives from CTI schools said they have the capability to increase their number of graduates. However, schools are reluctant to increase class sizes until FAA assures them that their graduates will be hired. Usually, candidates from the MARC and CTI schools must be under the age of 31 to be hired by FAA.

FAA can also increase the number of recruits through off-the-street hiring. In the past, FAA used off-the-street hiring at facilities that had difficulty in hiring and retaining controllers. These facilities are usually located in major metropolitan areas (e.g., New York) where the cost of living is much higher than other areas and hiring locally promotes retention. FAA has only limited recent experience using this source; however, if needed, FAA has the flexibility to significantly increase its hiring pool by hiring off-the-street candidates.

Once FAA hires new controllers, their salaries are determined by pay rules negotiated as part of the 1998 collective bargaining agreement between FAA and NATCA. The new Air Traffic Control (ATC) pay system eliminated the Federal pay scales and reclassified each air traffic facility into one of eight ATC levels with corresponding pay bands. Under this pay system, controllers' salaries are determined by the rating of the facility. The higher the rating, the higher the controller's salary and the greater the demand on the controller's judgment, skill, and decision-making ability.

Under flexibilities of personnel reform, FAA and NATCA developed a series of pay rules for the air traffic pay system. We found as a result of those rules some newly hired controllers were brought on board at salaries nearly equal to the base salary of CPCs. In December 2003, FAA successfully negotiated changes to these pay rules with NATCA as part of an extension to the existing collective bargaining agreement.

The renegotiated rules should allow FAA to set newly hired controllers' salaries at levels that are commensurate with an entry-level position and should result in FAA avoiding higher costs to train new controllers in the future. However, it is important to note that these renegotiated rules will only apply to future new hires. Consequently, FAA continues to incur increased training costs because some recently hired controllers were brought on board at much higher salaries (as much as $79,000), which they will continue to earn during training.

Newly Hired Controllers Are Placed Without Assessing if They Can Complete the OJT Process and Certify at Their Assigned Facility

Although FAA air traffic facilities are categorized into multiple levels, FAA places new controllers without assessing if they have the knowledge, skills, and abilities to certify at their assigned facility. Currently, FAA places newly hired controllers based only on where and when vacancies occur, and many of those vacancies occur at some of FAA's busiest and most complex facilities.

At the 17 facilities we visited, we found multiple instances where a developmental controller spent years in training without being able to certify, only to be transferred to a less complex area or a lower-level facility where OJT started again. For example, after training for almost 7 years at the Chicago Center and not certifying, a developmental was moved to another area[3] within the same facility where the OJT process started again.

In the 1980s, the FAA Academy was primarily used as a screening program to identify candidates who did not have the necessary skills to be successful as a controller. As a result, approximately 50 percent of new hires failed to pass initial training at the Academy. In the 1990s, the Academy transitioned from screening new hires to teaching skill sets and currently passes around 95 percent of students.

This change in direction from a screening process to a training program was the basis for FAA developing the AT-SAT test. The AT-SAT test is designed to assess an applicant's potential to be a successful air traffic controller before hiring. FAA started administering the AT-SAT test to all applicants who are new to the air traffic controller profession in January 2004; however, FAA has no plans to use these scores in determining the facility level at which a newly hired controller should be placed.

Given the expected increases in attrition, FAA needs to develop a process for identifying a developmental's potential to certify at a facility and use this information when determining where a new controller should be placed. In developing a process, FAA should consider validating whether AT-SAT could be used for that purpose or identify other factors such as performance at the FAA Academy or previous experience that could be an indicator of a controller's skills and abilities. A better selection and screening process could help in reducing the number of training failures and thereby avoid the time and costs FAA incurs in training new controllers to replace those that are unable to certify.

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[3] FAA en route center's air space is divided into areas or segments of airspace that are further divided into sectors or smaller segments of airspace. A group of sectors make up an area. Centers have responsibility for several areas.

FAA Needs To Keep National Statistics for Evaluating, Managing, and Improving the OJT Process as Hiring Increases

We found that the OJT process for controllers is very decentralized, and FAA provides minimal oversight of this portion of training at the national level. For example, even though OJT is the longest portion of the controller training process, FAA does not have national statistics on key performance measurements such as:

- The time it takes controllers to certify,
- Delays in the OJT process,
- Where and when training failures occur, and
- The total cost to provide OJT.

National statistics on the training process were kept after the 1981 strike, but FAA stopped collecting the data in the mid-1990s as hiring declined significantly. At the facility level, FAA has a program called TRAX that captures some training data, such as course information and training hours. However, these data are not compiled nationally, and the system has limited reporting capabilities. As a result of this lack of data, we could not determine if FAA's Agency-wide OJT process for controllers is effective at developing CPCs in a timely and cost-effective manner.

Because FAA could not provide national statistics on the OJT process, we collected data at the 17 facilities we visited so we could assess the OJT process. We requested information on training failures, length of OJT, actual hours training with an OJTI, number of certified air traffic controllers, number of developmentals, and actual and projected attrition. However, to obtain the data, some facilities had to manually extract the information from individual training files as the data were not tracked on a regular basis.

The compiled data from the 17 facilities we visited showed wide variances in the OJT statistics that could be key indicators of whether the process is being managed in a timely and cost-effective manner (see Table 4).

Table 4. Training Statistics Provided by 17 Facilities
(FYs 2002 and 2003)

Facility	Facility Level	Training Failures	Number of Newly Certified Controllers	Average Years to Certify as a Controller*	Average Hours Training on Live Traffic*
Atlanta Center	12	11	36	2.1	666
Chicago Center	12	5	28	3.5	905
Cleveland Center	12	2	26	2.7	677
Jacksonville Center	11	1	28	1.5	402
Los Angeles Center	11	20	26	2.5	847
Minneapolis Center	11	1	22	1.3	434
New York Center	12	15	31	3.8	696
Oakland Center	11	6	14	3.4	655
Washington Center	12	4	12	2.0	492
Atlanta TRACON	12	18	3	Excluded because of recent consolidation	Excluded because of recent consolidation
Chicago TRACON	12	14	3	1.8	462
Minneapolis TRACON	11	1	12	1.7	721
New York TRACON	12	35	16	1.7	Average data not available. Data available by individual.
Southern California TRACON	12	3	8	1.0	299
LaGuardia Tower	10	0	2	1.8	291
Los Angeles Tower	12	1	8	1.3	425
Minneapolis Tower	11	1	5	.6	316

*Statistics are for CPCs that certified during FYs 2002 and 2003 and do not include data from training failures or developmentals who have not certified.

We found that the number of training failures, average time to certify, and average hours training on live traffic varied significantly at the 17 facilities. However, since FAA does not capture any national statistics, these variances are not investigated to identify reasons for the differences or to determine if actions are needed to improve the OJT process. For example,

- *Training Failures*. During FYs 2002 and 2003, New York Center had 15 training failures while the Washington Center had only 4 training failures. At the time we visited, both these facilities had around 70 developmentals. We also found that the number of training failures may be understated. At some facilities visited, we found developmentals who could not certify in one area were moved to another area where training started again. However, those individuals were not counted as training

failures. FAA officials at those facilities told us that they only consider it a training failure when a developmental is moved to another facility.

- *Time to Certify*. At the New York Center, developmentals took an average of 3.8 years to certify. In comparison, at the Minneapolis Center, developmentals took an average of 1.3 years.

- *Hours Training on Live Traffic*. Developmentals at the New York and Cleveland Centers (both level 12 facilities) trained on live traffic about the same number of hours (an average of 696 and 677 hours a year, respectively). However, we found that developmentals at the New York Center took, on average, more than a year longer to certify (3.8 years compared to 2.7 years), even though both Centers are level 12 facilities, and both provide the same average amount of time training on live traffic.

We were unable to determine the specific reasons for the variances among the data collected. However, we found many factors affect OJT, including the hiring source, level of the facility, local training policies, and operational needs of the facility, as discussed below.

- *Hiring Source*. The Minneapolis Center primarily obtains replacements for controllers from other FAA facilities, while the New York Center's primary sources of new controllers are former DOD controllers and CTI and MARC graduates. At the 17 facilities we visited, statistics showed that transfer controllers usually certify quicker at a new facility than external new hires (see table 5).

Table 5. Training Statistics by Source for All 17 Facilities (FYs 2002 and 2003)

Source	Number of New CPCs	Average Number of Years to Certify
Reinstatements	22	3.9
Minneapolis Community & Technical College Air Traffic Control Training Program graduates	46	3.3
Department of Defense controllers	35	3
Collegiate Training Initiative graduates/FAA Rosters	34	2.5
Transfers from other facilities	140	1.6

- ***Level of Facility***. We also found that the facility level may affect the time it takes to certify. For example, the New York Center is a level 12 facility, whereas the Minneapolis Center is a level 11. At the New York Center, developmentals took an average of 3.8 years to certify compared to an average of 1.3 years to certify at the Minneapolis Center.

- ***Local Policies***. Facility policies may also affect training. For instance, we found cases where developmental training is disrupted by prime time leave periods and operational needs of the facility. Prime time leave periods are negotiated with the union at the facility level so that bargaining unit employees can take up to 2 consecutive weeks of leave. At the New York Center, for instance, classroom training stops completely during the summer, and contract instructors are furloughed. In contrast, at other facilities we visited, OJT was a continual process and was not stopped during prime time leave periods.

  We also found that OJT may be delayed because of facility policies requiring a certain number of students in a training class. For example, a developmental at the Oakland Center completed one phase of OJT and had to wait 6 months before starting the next phase. According to the facility training manager, the delay occurred because a minimum of four students is required before the next phase of classes could begin. In contrast, the Cleveland Center has no gaps in training. The training manager stated that a class will be started even if only one developmental is ready for the next phase of training.

- ***Operational Needs***. Once developmentals have certified on a sector, they can independently work that sector for the facility. However, developmentals do not become CPCs until they certify on all sectors within their assigned areas, usually between five and seven sectors. Some facility managers stated that this extends the length of controller training because time expended working operationally does not count toward OJT. At hard-to-staff facilities, developmentals certified on a particular sector may be used operationally on that sector repeatedly to alleviate short-term staffing shortages. This may be one reason why it takes longer to train at the New York Center than the Cleveland Center, even though both provide almost the same number of hours training on live traffic.

The wide variances in data we reviewed and the multiple factors affecting the OJT process underscore the need for FAA to evaluate, manage, and improve the overall OJT process. Unless FAA accumulates site-specific statistics on a national level, FAA has no means to assess the overall OJT process, determine whether training resources can be more efficiently and effectively used, and identify the most

efficient and best practices. To prepare for hiring and training new controllers over the next 8 years, FAA will need to compile national statistics and establish a baseline to better manage the OJT process and include these in developing a tracking system for training.

Better Controls Are Needed for the Air Traffic Instructional Services Contract To Ensure That Hours and Services Billed Are Valid

In January 2001, FAA signed the Air Traffic Instructional Services (ATIS) contract with Washington Consulting Group, which provides classroom training, administrative support, and training-related services at 53 locations. (Exhibit C lists the locations.)

The contract is an indefinite delivery/indefinite quantity contract or a contract that allows FAA to procure an undetermined amount of services at a set price up to a specific dollar ceiling. If FAA chooses to exercise all of the contract options, the contract will cost $122 million over a 5-year period. As of December 2003, FAA has expended approximately $51.8 million.

According to air traffic control managers, the ATIS contract is an effective means of providing classroom and simulation training to developmentals. This is because contract trainers are usually experienced, retired air traffic controllers from that location. In addition, using contract trainers to provide the classroom portion of OJT frees controllers to provide OJT on live air traffic. FAA managers support the use of the contract, but we found that FAA could improve its financial administration of the contract.

The contractor bills FAA (at a negotiated rate) based on the number of hours contract employees perform services at the 53 facilities. The contractor's site supervisor submits a monthly activity report of hours worked to the FAA facility training manager for certification. The report contains a rollup of hours worked by category (e.g., trainer, administrative) but does not identify classes taught by the contract trainers, dates and times the classes were taught, or attendees. Once certified by the FAA training manager, this activity report is forwarded to the contracting officer's technical representative in Oklahoma City for verification and payment. This billing process relies on the local FAA training manager to provide effective oversight that the hours billed by the contractor were worked and the training services were provided.

However, FAA requires no documentation to support the hours billed by the contract employees. In most cases, we found FAA training managers obtained virtually no documentation about when classes were provided, who provided the instruction, or what services were performed. For example:

- At the Los Angeles Center, one manager stated that schedules of contract training classes were routinely destroyed.

- At the Washington Center, we found that schedules were not retained because, according to the training manager, they were never required to be maintained.

The lack of documentation leaves FAA vulnerable to pay for services that may not have been provided as billed. For example, a training manager at one location had certified hours on the monthly activity report even though the total hours billed had been erroneously doubled. Fortunately, this report was corrected when reviewed by the contracting officer's technical representative in Oklahoma City before payment.

Because this contract is for services provided, it is not unreasonable, in our opinion, to require contract employees to submit documentation to support the hours billed and services provided. We also found that FAA has not had an independent incurred cost audit of the contract even though FAA's Acquisition Management System requires FAA to obtain annual audits of any cost reimbursement contract that has a total value exceeding $100 million. FAA has recently taken action to address this issue and has included the ATIS contract in a list of 183 requested audits currently being coordinated with the Defense Contract Audit Agency.

RECOMMENDATIONS

We recommend that FAA:

1. Establish a system to uniformly estimate controller attrition by location and adjust national attrition and hiring estimates accordingly.

2. Develop an assessment process for identifying a new controller's potential to certify at a certain facility level and use this information in placing newly hired controllers.

3. Compile national statistics and establish a baseline to better manage the time and costs associated with the controller OJT process and include these in developing a tracking system for training.

4. Require the ATIS contractor to maintain and provide supporting documentation for hours worked and services provided.

MANAGEMENT COMMENTS AND OIG RESPONSE

A draft of this report was provided to FAA on April 23, 2004. On June 1, 2004, FAA provided written comments and concurred with all the findings and recommendations.

Recommendation 1. Concur. FAA is examining ways to refine its current process for estimating controller attrition to provide attrition estimates by location. In case a refinement of the current process is not feasible or sufficiently accurate, FAA is also researching other alternatives.

Recommendation 2. Concur. FAA is evaluating data gathered from AT-SAT scores to determine if this information can be used to improve the controller placement process to allow the Agency to better match high-aptitude scores with high-level facilities.

Recommendation 3. Concur. FAA is coordinating a study to establish national baseline statistics and is concurrently developing an ongoing tracking system that will be implemented at the completion of the national baseline study. The estimated completion date for the national baseline study is December 2004.

Recommendation 4. Concur. FAA plans to amend FAA Order 3120.4J, Air Traffic Technical Training, to require FAA facilities to maintain a written log containing at a minimum: (1) start and end dates for classes conducted, (2) type of class, (3) contractor and FAA instructor names, and (4) number of students. The amendment to the order will be completed by December 2004.

The complete text of FAA's comments is attached as an appendix to this report.

The actions taken and planned by FAA are reasonable and address the intent of our recommendations. However, FAA needs to provide target dates for completing recommendations 1 and 2.

ACTION REQUIRED

In accordance with Department of Transportation Order 8000.1C, we request that within 30 days you provide milestones for completing intended actions for recommendations 1 and 2.

We appreciate the courtesies and cooperation of FAA representatives during this audit. If you have questions concerning this report, please call me at (202) 366-1992 or David A. Dobbs, Assistant Inspector General for Aviation Audits, at (202) 366-0500.

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EXHIBIT A. AUDIT METHODOLOGY

The audit was conducted in accordance with <u>Government Auditing Standards</u> prescribed by the Comptroller General of the United States and included such tests as we considered necessary to provide reasonable assurance of detecting abuse or illegal acts. The following methodology was used in conducting this review.

To determine whether FAA has identified future hiring requirements for controllers, we interviewed FAA personnel at both Headquarters and regional offices. We obtained and evaluated for FYs 2004 and 2005 projections of estimated attrition at each of the facilities we visited. We reviewed a 1997 study conducted by The National Academy of Sciences that examined FAA's staffing standards. We also evaluated the methodology used by Headquarters in projecting attrition for the controller workforce.

To determine if FAA's existing sources for filling projected vacancies will be sufficient to meet projected requirements, we interviewed FAA personnel at Headquarters to identify the sources of new controllers and the number of applicants on current rosters. We also interviewed representatives from MARC and CTI schools to ascertain if schools can increase the size of their classes. We obtained background information on the AT-SAT and interviewed FAA personnel to identify plans for its implementation.

To determine if FAA's OJT process for controllers is effective at developing CPCs in a timely and cost-effective manner, we interviewed FAA personnel at FAA Headquarters, regional headquarters, and facilities. We obtained training data from facilities showing the number of training failures, number of new controllers certified in FYs 2002 and 2003, average time to certify by hiring source, number of developmentals, average training hours by hiring source, number of certified air traffic controllers, and number of new hires in FYs 2002 and 2003.

To determine if FAA's management of and controls over the ATIS contract were effective, we interviewed FAA personnel responsible for administering the contract and facility representatives. We also interviewed contractor personnel at facilities to ascertain how training assignments are made and how contractor personnel are utilized. We examined personnel files for contractors to determine if they were qualified. We also reviewed monthly activity reports and available documentation used to support hours billed.

EXHIBIT B. ACTIVITIES VISITED OR CONTACTED

Eastern Region:
- Eastern Regional Headquarters
- New York Center
- Washington Center
- LaGuardia Tower
- New York TRACON
- Potomac TRACON

Great Lakes Region:
- Great Lakes Regional Headquarters
- Minneapolis Center
- Chicago Center
- Cleveland Center
- Minneapolis/St. Paul International Airport Tower / TRACON
- Chicago TRACON

Southern Region:
- Southern Regional Headquarters
- Atlanta Center
- Jacksonville Center
- Atlanta TRACON

Western Pacific Region:
- Western Pacific Regional Headquarters
- Los Angeles Center
- Oakland Center
- Los Angeles Tower
- Southern California TRACON

Other FAA Facilities:
- Mike Monroney Aeronautical Center—FAA Academy
- Air Traffic Control System Command Center

Schools:
- Community College of Beaver County, Pennsylvania
- Embry Riddle Aeronautical University
- Minneapolis Community & Technical College Air Traffic Control Training Program
- University of North Dakota

Exhibit B. Activities Visited or Contacted

EXHIBIT C. MAJOR CONTRIBUTORS TO THIS REPORT

THE FOLLOWING INDIVIDUALS CONTRIBUTED TO THIS REPORT.

Name	Title
Daniel Raville	Program Director
Susan Bader	Project Manager
Robert Romich	Senior Analyst
Angela McCallister	Senior Auditor
Erik Phillips	Analyst
Chris Frank	Auditor
Adam Schentzel	Auditor
Kathleen Huycke	Editor

Exhibit C. Major Contributors to This Report

EXHIBIT D. AIR TRAFFIC INSTRUCTIONAL SERVICES CONTRACTOR SITES

Abilene Tower
Addison Tower
Albuquerque Tower
Dallas Fort Worth Tower
Denver Tower
Eugene Tower
Hillsboro Tower
Hobby Tower
Hooks Airport Tower
Honolulu Tower
Honolulu Control Facility
Houston Tower
Jacksonville Tower
Los Angeles Tower
Love Field Tower
Memphis Tower
Portland Tower/TRACON
Salt Lake City Tower
San Juan Tower
Savannah Tower
Seattle Tower (SEA-TAC)
Waco Tower
Atlanta TRACON
Chicago TRACON
Denver TRACON
Houston TRACON
New York TRACON

Northern California TRACON
Potomac TRACON
Southern California TRACON
Albuquerque Center
Anchorage Center
Atlanta Center
Boston Center
Chicago Center
Cleveland Center
Denver Center
Fort Worth Center
Houston Center
Indianapolis Center
Jacksonville Center
Kansas City Center
Los Angeles Center
Memphis Center
Miami Center
Minneapolis Center
New York Center
Oakland Center
Salt Lake City Center
Seattle Center
Washington Center
San Juan Central Radar Approach
Air Traffic Control System Command Center

APPENDIX. MANAGEMENT COMMENTS

**U.S. Department
of Transportation
Federal Aviation
Administration**

Memorandum

Subject: **INFORMATION:** Opportunities to Improve
FAA's Process for Placing and Training Air
Traffic Controllers in Light of Pending
Retirements

Date: JUN – 1 2004

From: Assistant Administrator for Financial Services
and Chief Financial Officer

Reply to
Attn. of:

To: Assistant Inspector General for Aviation Audits

As requested in your memorandum dated April 23, the following is the Federal
Aviation Administration's (FAA) response to each recommendation in the subject
draft report.

1. **OIG Recommendation**: Establish a system to uniformly estimate controller
   attrition by location and adjust national attrition and hiring estimates
   accordingly.

   FAA Response: Concur. Currently, the FAA estimates attrition on a national
   basis. We are examining ways to refine our processes to estimate controller
   attrition by location. A refinement could help us identify where vacancies will
   occur and result in more accurate hiring plans. We are also researching
   alternatives should the development of facility level attrition estimates not be
   feasible or of sufficient accuracy.

2. **OIG Recommendation**: Develop an assessment process for identifying a
   new controller's potential to certify at a certain facility level and use this
   information in placing newly hired controllers.

   FAA Response: Concur. As noted in the OIG's report, the FAA uses an
   8-hour computer-based examination called Air Traffic-Selection and
   Training (AT-SAT) to select air traffic controllers. AT-SAT is a cognitive test
   that was validated against actual controller performance and found to be a
   valid predictor of an individual's aptitude to become a successful air traffic
   controller. A significant part of AT-SAT administration is the ongoing
   validation of the instrument. The longitudinal validation of AT-SAT is the
   responsibility of the Civil Aeromedical Institute (CAMI). The FAA is hopeful
   that the data gathered in the longitudinal validation will help us understand
   how a newly hired controller's AT-SAT score relates to their training and
   performance as an on-the-job developmental controller. Depending on the

results, this information may allow us to improve our placement processes to better match high aptitude with high-level facilities.

3. **OIG Recommendation**: Identify and establish national baseline statistics needed to manage the controller on-the-job training (OJT) process and include these requirements in developing a tracking system for training.

   FAA Response: Concur. The FAA is coordinating a study to establish national baseline statistics in the following areas:

   - The time it takes a controller to certify;
   - Delays in the OJT process;
   - Where and when training failures occur;
   - Differences between hiring sources; and,
   - Differences between regions and facilities.

   This national baseline data will assist the FAA in determining the actual cost of OJT. This study will also provide a framework for ongoing tracking and analysis of this data. We will incorporate the continual tracking of OJT performance data into either CRU-X or another national tracking system developed and maintained by CAMI. The collection and analysis of OJT performance data also supports CAMI's requirement to conduct a longitudinal validation of AT-SAT.

   The estimated completion date for the national baseline study is December 2004. An ongoing tracking system will be developed concurrently and will be implemented at the completion of the national baseline study.

4. **OIG Recommendation**: Require the Air Traffic Instructional Services (ATIS) contractor to maintain and provide supporting documentation for hours worked and services provided.

   FAA Response: Concur. Since contract award, the FAA has utilized a web-based system to track and verify all hours tasked and billed under the ATIS contract with the Washington Consulting Group. This information is collected by facility, labor category, and task. This system is called NTRPro Online. All FAA facilities supported by the contract have access to this system and can obtain historical data for their facility.

   To further document the specific services provided under this contract, an amendment to FAA Order 3120.4J, Air Traffic Technical Training, will be made. This amendment will require that FAA facilities maintain a written log containing at a minimum: (1) start and end dates for classes

Appendix. Management Comments

conducted, (2) type of class, (3) contractor and FAA instructor names, and (4) number of students. This amendment will be made by the first quarter of fiscal year 2005.

Ramesh K. Punwani

File: 03-19
WP: OIG 03-19 Placing and Trng ATC.doc
ABU-100:ARWilliams:ARW:267-9000:05/18/2004

Appendix. Management Comments