Office of Inspector General

Audit Report

FAA IS MAKING PROGRESS BUT IMPROVEMENTS IN ITS AIR TRAFFIC CONTROLLER FACILITY TRAINING ARE STILL NEEDED

Federal Aviation Administration

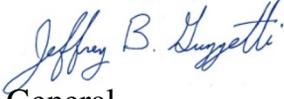*Report Number: AV-2013-121*
Date Issued: August 27, 2013

Memorandum

U.S. Department of Transportation
Office of the Secretary
of Transportation
Office of Inspector General

Subject: <u>ACTION</u>: FAA Is Making Progress but Improvements in Its Air Traffic Controller Facility Training Are Still Needed Federal Aviation Administration Report Number AV-2013-121

Date: August 27, 2013

From: Jeffrey B. Guzzetti
Assistant Inspector General
 for Aviation Audits

Reply to Attn. of: JA-10

To: Federal Aviation Administrator

The Federal Aviation Administration (FAA) plans to hire and train more than 11,700 new air traffic controllers through fiscal year 2021 to offset expected retirements of those hired after the 1981 controller strike. This presents significant challenges for the Agency as new controllers can require more than 3 years of training to become fully certified to work in one of FAA's more than 300 air traffic facilities. We have been reviewing FAA's controller training program for nearly 10 years (see exhibit C for a list of all related Office of Inspector General (OIG) reports). Our work has found that the program is extremely decentralized for a national program of this size and that the efficiency and quality of training varies extensively by facility location.

Accordingly, we initiated this audit to assess the status of FAA's progress in advancing this important program. Specifically, our objectives were to (1) identify FAA's progress in improving the facility training program for air traffic controllers and (2) assess challenges that FAA faces in achieving controller training goals. We conducted this audit in accordance with generally accepted Government auditing standards. Exhibit A details our scope and methodology.

RESULTS IN BRIEF

Over the last few years, FAA has begun improving its controller training program. For example, in May 2011 FAA created an Independent Review Panel (IRP) of industry and academic professionals to evaluate how the Agency hires, assigns, and trains new controllers. In September 2011, the panel made

49 recommendations, many addressing our previous recommendations, that could significantly improve the controller hiring and training processes. FAA consolidated the IRP recommendations into 20 projects covering a broad range of categories, including FAA Academy training, facility training, professional standards, organizational structure, and the selection process for controllers. To date, FAA has focused primarily on developing initiatives to address the weaknesses in its facility training program that the IRP identified, such as the need to upgrade training laboratories. However, almost 2 years after issuance of the IRP report, FAA has yet to implement any of the IRP recommendations or establish completion timeframes.

FAA faces significant challenges in enhancing its training program, particularly its goal to reduce training times. The average training time for new controllers rose by 41 percent, from 1.9 years in fiscal year 2009 to an average of 2.68 years in fiscal year 2012. First, FAA is not effectively managing training resources through its Air Traffic Controller Optimum Training Solutions (ATCOTS) contract. FAA awarded ATCOTS in 2008 to provide controller training support, reduce total training time and costs, and develop training innovations.[1] However, recent ATCOTS cost overruns reduced training support by 62 percent at all 22 en route centers with little advance notice to facilities. In addition, management turnover in FAA's Office of Technical Training has impeded communication between headquarters and the field, exacerbating problems from the decentralized management of the national training program. Finally, FAA faces a potential shortage of certified professional controllers (CPC) needed to operate its busiest, most complex air traffic control facilities and conduct on-the-job training (OJT). As we recommended in 2008, FAA encouraged more experienced FAA controllers to transfer to such facilities. This resulted in some overall improvement in CPC staffing at those locations since 2009.

We are making a series of recommendations to assist FAA in improving its facility training efforts.

BACKGROUND

Newly hired controllers must complete a demanding training program that includes learning the basic concepts of air traffic control at the FAA Academy, followed by extensive facility training at their assigned location. Facility training is conducted in stages and consists of a combination of classroom, simulation, and OJT. After controllers complete classroom and simulation training (if applicable),[2] they begin OJT, which is conducted exclusively by CPCs, who teach and observe

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[1] The $859 million ATCOTS contract consists of a 5-year base period, worth $437 million, and two option periods (a 3-year period and a 2-year period), worth $422 million.
[2] Most controllers train with simulators, but some controllers at non-radar tower facilities do not use simulators for training.

new controllers individually as they control live air traffic at various assigned control positions.[3] FAA's goal is to have controllers at en route facilities complete training in less than 3 years,[4] and to have controllers at terminal facilities complete training in less than 2 years.[5]

New controllers achieve certification on each position as they move through facility training. After they have certified on all positions within their assigned area, they are commissioned as a CPC at that facility. Training new controllers to the CPC level is important for two reasons: (1) only CPCs are qualified to control traffic at all positions of their assigned area, and (2) only CPCs certified for at least 6 months[6] (at their assigned locations) can become OJT instructors for other new controllers.

FAA has also contracted some controller facility training support through the ATCOTS contract, which it awarded in 2008. FAA's long-term goals for ATCOTS are to reduce training costs, reduce training time, improve training quality and consistency, leverage best practices and innovation, and develop flexible training. However, our 2010 review[7] of ATCOTS determined that FAA was not achieving ATCOTS program goals. We are currently performing a separate follow up audit of the ATCOTS contract.[8]

FAA DEVELOPED IMPORTANT INITIATIVES TO IMPROVE FACILITY TRAINING BUT HAS NOT YET IMPLEMENTED THEM

In response to the IRP's 49 recommendations, FAA organized 20 projects to improve the controller training program. However, almost 2 years after issuance of the IRP report, none of the projects have been implemented and timeframes for doing so are unknown. Further, FAA has not established a way to track the impact of its planned initiatives on controller training outcomes, such as completion rates and certification times.

These 20 planned projects address issue areas related to facility training, such as screening and hiring, facility placement, OJT instructor improvements, simulation and technology improvements, and curriculum redesign. Many of the IRP's

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[3] Air traffic controllers work in teams, with each control position responsible for a specific set of duties, such as managing takeoffs at an airport.

[4] Controllers at en route facilities control high altitude traffic as aircraft travel designated routes between airports. En route facilities are among the busiest and most complex facilities, so training time targets are normally higher than terminal facilities.

[5] Controllers at terminal facilities maintain the flow of air traffic in and around airports. Terminal facilities vary in complexity and comprise a wide range of air traffic facilities.

[6] FAA has a change pending to increase the requirement to be an OJTI from 6 months as a CPC to 1 year.

[7] *FAA's Air Traffic Controller Optimum Training Solution Program: Sound Contract Management Practices Are Needed to Achieve Program Outcomes* (OIG Report No. AV-2010-126), September 30, 2010. OIG reports are available on our Web site at http:///www.oig.dot.gov/.

[8] *Follow-Up on FAA's ATCOTS Contract Challenges* (OIG Audit Announcement No. 12Z3002Z000), February 7, 2012.

recommendations echoed the results of our previous work on controller training, which was cited frequently in the IRP report.[9] (See exhibit D for a list of related open OIG recommendations and the corresponding IRP recommendations). If effectively implemented, FAA's initiatives have the potential to improve controller training as follows:

- **Screening and Hiring**—Previous studies by MITRE, OIG, and the IRP determined that FAA did not adequately assess the aptitude of controller candidates prior to assigning them to the busiest and most complex facilities. FAA's ongoing projects to address these issues include improving the hiring, selection, and interview processes, and expanding pre-hire testing with the Air Traffic Selection and Training test (AT-SAT).[10] However, these projects have not been completed and no implementation date has been set.

- **Placement in Air Traffic Facilities**—Prior to basic training at the FAA Academy, controller candidates are assigned to an air traffic facility based on the candidate's location and facility type preference (en route or terminal) and FAA's staffing needs. To reduce training attrition for newly hired controllers at the busiest and most complex facilities, we recommended in 2010[11] that FAA study restructuring the placement process to include performance at the FAA Academy. FAA agreed to complete a study and assigned the IRP with the task of evaluating the placement process. The IRP also recommended using a candidate's performance at the FAA Academy to aid in a placement decision. However, almost 2 years after the IRP recommendation, FAA has not established an implementation date.

- **On-The-Job Training Instructor Improvements**—In a 2011 FAA report,[12] 43 percent of surveyed OJT instructors stated that their initial training did not address the skills and techniques required to be an effective instructor. However, other than a 3-day introductory course for OJT instructors, and an online refresher course that has not been updated since 1998, there is no formal program or resource to assist OJT instructors in improving their teaching skills. FAA has developed a new training program for OJT instructors but has not offered any of the newly developed courses yet due to lack of funding.

- **Simulation and Technology Improvements**—Through use of different simulation capabilities, FAA hopes to reduce training times and realize cost savings. FAA is currently developing a plan that describes the strategy for use of simulator technology (in addition to the high-fidelity Tower Simulation

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[9] DOT OIG reports were cited 12 times in the IRP report.

[10] AT-SAT is a streamlined screening tool intended to identify candidates with the best controller aptitudes.

[11] *Review of Screening, Placement and Initial Training of Newly Hired Air Traffic Controllers* (OIG Report No. AV-2010-049), April 1, 2010.

[12] FAA, "On the Job Training Instructor Refresher Training, Data Analysis Report," Washington, DC.

Systems already in place) during facility training and at the FAA Academy. The scope of the plan will include simulation technology, speech recognition, and centralized support functions. To date, FAA has not completed or established an implementation date.

- **Curriculum Architecture and Course Redesign**—FAA is currently redesigning the entire training curriculum for air traffic controllers in an effort to significantly improve training outcomes. Internal FAA studies have indicated that the current air traffic curriculum focuses on learning air traffic principles and rules, instead of the ability to perform the services of an air traffic controller. However, course redesign efforts have been underway since 2008, and progress has been slowed by contractual issues, reorganization of technical training, and staff turnover. It is currently unclear when the potential benefits of changes to curriculum architecture and course redesign will be realized. (See table 1 for a summary of FAA's efforts and progress with redesigning its controller training.)

Table 1. Current Course Redesign Efforts and Progress

Course	Location	In Development	Completed
Air Traffic Basics	FAA Academy	No	No
Initial Tower Cab Training[13]	FAA Academy	No	No
Terminal Radar Approach Control Courses	FAA Academy	Yes	No
En Route Stages 2–4	Field Facilities	Yes	No
Terminal Stages 2–7	Field Facilities	No	No

Source: 2012 MITRE Report and FAA

- **Local Air Traffic Facility Initiatives**—In addition to the IRP recommendations, we identified initiatives that were developed independently at air traffic facilities. Recently, some facilities have taken steps to improve their facility training by developing training practices unique to their location. For example, at one facility, managers incorporated technology advancements into their training program by using tablet computers and providing students with user-friendly methods of accessing current and complete training information. Another facility's staff recorded student performance in a simulation lab and replayed the student's responses to various scenarios to identify areas for improvement. However, FAA does not have a mechanism to

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[13] Air traffic controllers working in tower cabs manage traffic within a few miles of the airport. They instruct pilots during taxiing, takeoff, and landing, and grant clearance for the aircraft to fly.

evaluate whether any of these initiatives could be implemented nationally as best practices.

FAA's Controller Workforce plan, first issued in 2004, is a congressionally directed annual plan detailing FAA's strategy for hiring new controllers to replace those expected to leave over the next 10 years. The 2004 Plan also outlined various initiatives for decreasing controller training times and costs. In our 2008 report[14] on facility training, we found that while the annual Controller Workforce Plan presented a comprehensive list of initiatives for training new controllers, each subsequent update provided fewer details concerning the status of the training initiatives. However, the most recent annual report does not mention any new training initiatives or any details of progress made on previous training initiatives.

FAA FACES SIGNIFICANT CHALLENGES TO ENHANCE ITS FACILITY TRAINING PROGRAM

FAA continues to face multiple challenges to enhancing its controller training program and achieving its stated goals. These include addressing the increase in training times, managing training resources through the ATCOTS contract, maintaining consistent leadership of the nationwide program, measuring the impact of simulators and other training initiatives, and improving staffing composition at complex facilities through controller placement and screening programs. Addressing these challenges will be critical to achieve the full potential of FAA's current and future controller training efforts.

Training Times Continue To Increase

Although FAA has implemented training initiatives to reduce the time required to certify new controllers, such as the increased use of high fidelity simulators, the average overall time to train a controller has increased 41 percent, from 1.9 years in fiscal year 2009 to 2.68 years in fiscal year 2012. Air traffic and training managers attribute the increased training times to several factors, such as poorly prepared new hires, airspace redesign, new technology training, increased proficiency and refresher training for CPCs, and decreased contractor support resources. As these various factors illustrate, FAA still faces numerous challenges in meeting its goals for reducing controller training times. Table 2 details the average time to certify controllers that have become CPCs since 2009.[15]

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[14] *Review of the Air Traffic Controller Facility Training Program* (OIG Report No. AV-2008-055), June 5, 2008.
[15] FAA calculates this average time based on the number of controllers who certify each fiscal year, as published in the 2012 Controller Workforce Plan. We validated the methodology and tested the accuracy of the underlying data, and concluded that these published times are accurate.

Table 2. Average Time to CPC for Newly Hired Controllers

Facility	FY 2009	FY 2010	FY 2011	FY 2012
Overall	1.9	2.21	2.51	2.68
En Route	2.43	2.66	2.89	3.07
Terminal	1.54	1.95	2.28	2.42

Source: FAA Office of Labor Analysis

FAA's goal is to have en route facility controllers complete training in less than 3 years, and to have terminal controllers complete training in less than 2 years. These times include training at the FAA Academy, classroom, simulation lab, and OJT at the air traffic facility.

Uncertain ATCOTS Training Resources Have Hindered Training Efforts at Some Facilities

FAA has contracted some controller facility training support through the ATCOTS contract, which it awarded in September 2008. However, since its implementation in fiscal year 2009, ATCOTS has not had a measurable positive impact on facility training. In addition to overall facility training times increasing nationwide, training costs increased by $46 million over the first 2 years of ATCOTS. Moreover, despite ATCOTS' goals to leverage best practices and innovation to improve training, we found no significant innovations. Training initiatives have been mostly FAA-driven, with little or no input from the contractor—in part because cost overruns and other contract issues have limited the program's progress.[16]

In July 2012, facing cost overruns and other contractual issues, FAA reduced its use of ATCOTS contract resources by 62 percent at all 22 en route centers. Facility managers were not given any advanced notice of this reduction, and the staff at these facilities expressed a concern that FAA headquarters did not consider their suggestions of what resources to cut to mitigate training challenges. This sudden and significant decrease in contract training support at some of the busiest and most complex locations hinders FAA's efforts to achieve its controller training goals. For example, managers at the Memphis Center are expecting to begin training their entire workforce on the En Route Automation Modernization program (ERAM). Given the recent reduction in ATCOTS resources, the Memphis Center managers are preparing to supplement training by using certified controllers already assigned air traffic control positions. As a result of moving experienced controllers from day-to-day operations, facility managers expect an

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[16] These issues, such as undefined requirements and cost overruns, will be discussed in detail in our separate, ongoing audit of the ATCOTS contract. See OIG Audit Announcement No. 12Z3002Z000, *Follow-Up on FAA's ATCOTS Contract Challenges,* February 7, 2012.

increase in overtime and an increase in certification times as more time and resources will be focused on ERAM training. FAA managers we interviewed at Memphis, Chicago, Jacksonville, Washington, Oakland, and Atlanta en route centers believed that the uncertainty with the ATCOTS contract support makes managing the training program difficult. Further, some facilities are undergoing major transformations and implementing new technologies and procedures, potentially affecting the training times of controllers.

FAA Has Not Maintained Consistent Leadership in Its Air Traffic Controller Technical Training Office

FAA's controller training program has experienced multiple reorganizations and leadership changes. Since 2009, there have been three major reorganizations within the program office. The first two of these reorganizations were due to staff turnover as well as concerns about a lack of centralized guidance for the program. Most recently, in January 2012, FAA reorganized its controller training program office by combining the Office of Technical Training with the Office of Safety. Through this reorganization, FAA hopes to improve training by incorporating recent safety analysis into current training.

FAA's frequent leadership changes have negatively impacted its ability to communicate effectively with the field. During our site visits, we found that communication between FAA Headquarters and the managers at the facilities was poor. The facility staff we interviewed did not know who to contact with questions about training resources and stated that training guidance from FAA headquarters has been constantly changing. According to the training managers we interviewed, monthly training teleconferences were ended and the annual training conference was cancelled. Overall, FAA's facility training program continues to be decentralized and training outcomes vary substantially between facilities.

FAA Lacks Mechanisms To Track New or Existing Training Initiatives and Measure the Impact of Simulators

FAA does not have an effective method to track innovations or contributions from ATCOTS or other training initiatives, including the IRP recommendations. While FAA currently has at least six different systems for tracking controller training data, none of these systems contain the entire training record for controllers (see table 3). As a result of these numerous systems and incomplete records, it is difficult to isolate training efforts and measure their impact on controller training progress.

Table 3. FAA Controller Training Data Systems

FAA System	Description
National Training Database (NTD)	FAA's primary tool for national oversight of the controller training program. Tracks the progress of developmental controllers at air traffic facilities, including training attrition data
Training and Proficiency Record (TRAX)	Tracks training requirements and maintains employee training records
Quota Management and Resource Tool (QMART)	Tracks training requirements and human resource and hiring data
Comprehensive Electronic Data Analysis and Reporting (CEDAR)	Comprehensive data reporting, collection, and analysis tool that tracks training requirements, Mandatory Briefing Items (MBI), and Quality Assurance Reviews (QAR)
Electronic Learning Management System (eLMS)	FAA's training and learning management system that tracks training data and allows employees to take online training and review their records
Federal Personnel Payroll System (FPPS)	Official payroll system of the FAA, which is used to calculate certification times and training attrition rates

Source: OIG analysis

FAA staff believes that simulators have a positive impact on training outcomes, and that they are an invaluable resource for providing the best training available. However, since FAA does not have a system in place to measure and track the use of training innovations, the measurable impact of simulator training remains uncertain, especially given the rise in overall training times. In recent years, FAA has increased use of air traffic control training simulators both at its Academy and individual air traffic facilities. These simulators are used to train new hires and retrain the existing workforce on new procedures. In addition, simulators are used to provide refresher and proficiency training for certified controllers.

While there are many factors that likely contribute to the rise of training times, isolating the impact of simulators from that of other factors contributing to training times is difficult, especially without a mechanism for tracking training innovations.

FAA's Placement of Experienced FAA Controllers at Complex Facilities May Improve Training Outcomes

Ensuring an effective staffing composition—or ratio between fully certified and controllers-in-training—has been a key challenge for FAA's controller training program, especially at its most critical air traffic facilities. As we recommended in

2008[17] and 2012,[18] FAA encouraged experienced FAA controllers[19]—i.e., those controllers already fully certified at a lower-level facility—to move to busier and more complex facilities. Since fiscal year 2009, the number of experienced controllers in training at all facilities has increased by almost 90 percent, as shown in figure 1.

Figure 1. Experienced FAA Controllers in Training Since Fiscal Year 2009
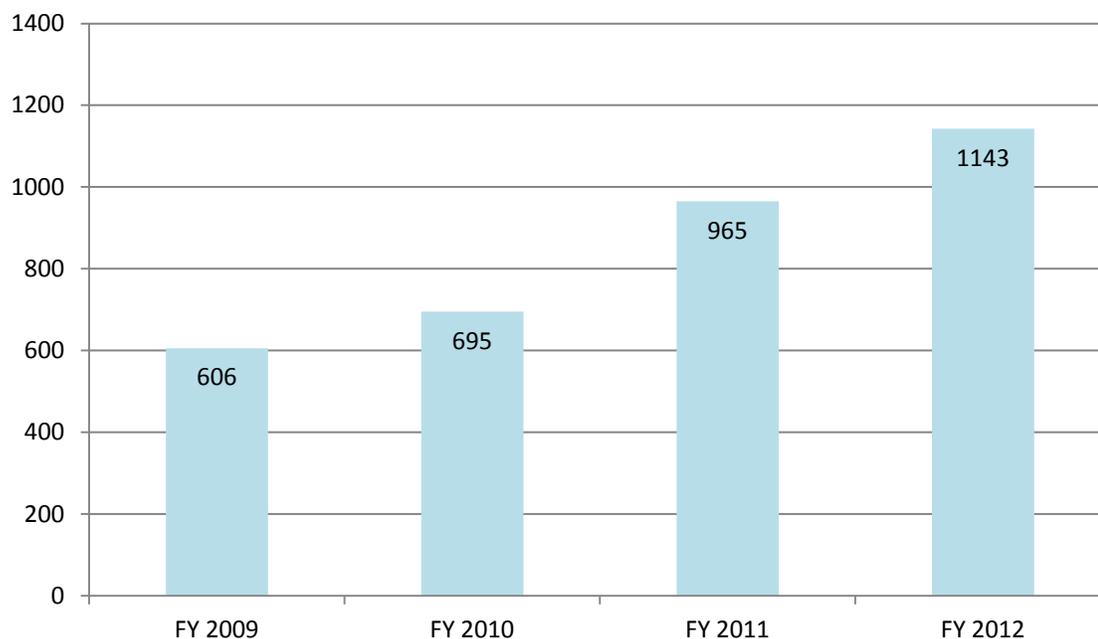
Source: OIG analysis of FAA data

Encouraging experienced controllers to transfer and train at the busiest and most complex locations will likely improve overall staffing composition at facilities. Experienced controllers complete training at their new location in significantly less time and are less likely to fail training, especially at terminal facilities.[20]

To further improve training outcomes and address the challenge of staffing composition, FAA has also implemented a new screening program—the Operational Assessment Program (OAP)—for selecting experienced controllers for some of FAA's most critical facilities. In May 2011, FAA implemented the OAP at the Chicago, Atlanta, and Southern California Terminal Radar Approach

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[17] *Review of the Air Traffic Controller Facility Training Program* (OIG Report No. AV-2008-055), June 5, 2008.
[18] *Enhanced Oversight of Staffing and Training at FAA's Critical Facilities Is Needed To Maintain Continuity of Operations* (OIG Report No. AV-2012-039), January 12, 2012.
[19] Experienced FAA controllers are Certified Professional Controllers-In-Training who have already completed facility training at one location. They transfer to more complex facilities and must learn the airspace and procedures at the new facility before they can control live traffic unassisted.
[20] We selected a stratified sample of 20 of 306 air traffic facilities based on type, complexity, and the number of trainees.

Control (TRACON) facilities. This program allows FAA to evaluate the skill sets of experienced controllers from less complex but comparable facilities (ATC level 9 or above)[21] who want to transfer to more complex (ATC Level 10 or above) facilities. The Program includes a basic skills test that evaluates applicants on five cognitive skills—communication, working speed, planning, prioritizing, and aircraft speed control. After passing the skills test, applicants receive a package of materials to review, and then spend a week in the classroom learning the new airspace, local procedures, and basic radar techniques, before handling airspace scenarios on a simulator. It takes 8 to 9 weeks of classroom and simulation training for an applicant to complete the Program. Following completion, the applicant begins OJT at the new facility. The goal of the Program is for each transfer to become certified at their new facility in 15 to 18 months.

Since May 2011, five controllers at Chicago TRACON have become partially certified and nine others are in facility training. Preliminary results suggest that controllers selected through the OAP are progressing through their training faster than those not selected through the OAP. However, the Program is still in its early stages, and facility managers we interviewed stated that the Program's impact on training times and certification rates may not be known until later this year.[22]

CONCLUSION

Training new air traffic controllers to replace the large numbers of retiring controllers remains a key priority in maintaining the safety and efficiency of the NAS—especially given the challenges this new workforce faces as it transitions to the next generation of air traffic management technology. FAA recognized the importance of this effort and has taken actions that have the potential to improve its controller training program. However, FAA needs to track the progress of implementing its initiatives, as well as put in place more efficient mechanisms for assessing the impact of these initiatives on training times, completion rates, and costs. Further steps are also needed to ensure that facilities have the training support resources they need.

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[21] FAA air traffic facilities are categorized into multiple levels (4 through 12); the higher the level, the greater the demand on a controller's judgment, skills, and decision-making abilities.
[22] The Atlanta and Southern California TRACONs have just selected their first class of experienced controllers through the Program.

RECOMMENDATIONS

To improve FAA's controller training program and track the effectiveness of its new training initiatives, we recommend that FAA:

1. Reestablish a training initiatives section into the annual Controller Workforce Plan that introduces new initiatives and tracks the implementation of initiatives that are in progress.

2. Develop and implement a formal policy to identify and disseminate locally developed training initiatives for use as best practices nationwide.

3. Develop a policy that establishes how and when any national training initiatives would be measured for effectiveness.

4. Organize FAA controller training data into a single source that allows for detailed analysis of all training records for each controller.

5. Evaluate the Operational Assessment Program to determine if it can be used to improve staffing composition at all critical air traffic facilities.

AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

We provided FAA with our draft report on June 18, 2013, and received its formal response on August 1, 2013. FAA's response is included in its entirety as an appendix to this report. In its response, FAA concurred with recommendations 2, 3, and 4 and provided reasonable timeframes for completing the appropriate planned actions. We consider these recommendations resolved but open pending completion of the planned actions. FAA partially concurred with recommendations 1 and 5, as detailed below.

For recommendation 1, FAA stated that it agrees that tracking and monitoring of training initiatives is important, but does not agree that reporting the impact of these initiatives in the controller workforce plan is beneficial to stakeholders. However, FAA has agreed to track and monitor air traffic controller training initiatives and recently began publishing a semiannual report on newly hired air traffic controller times and processes. This action meets the intent of our recommendation, and we consider the recommendation closed.

For recommendation 5, FAA stated that the Operational Assessment Program (OAP) is site-specific and cannot be used at all TRACONs without significant costs and efforts. The Agency stated that it focused its OAP development efforts at only three TRACONs thus far, and recently discontinued efforts at two of them

due to the investment required and a decrease in vacant positions. FAA also stated that while it concurs with the need to evaluate the program for potential use at all critical facilities, and will provide OIG with an update in 12 months, the Agency cannot expand OAP to other facilities due to funding shortfalls and uncertainty with its fiscal year 2014 budget. However, recognizing this uncertainty, we request that the Agency provide us alternative plans for this recommendation in the absence of adequate funding to ensure the OAP will continue to be evaluated.

ACTIONS REQUIRED

FAA's planned actions for recommendations 2, 3, and 4 are responsive and we consider these recommendations resolved but open pending completion of the planned actions. We consider recommendation 1 closed, as detailed above. For recommendation 5, we request that FAA provide us alternative plans to ensure the OAP will continue to be evaluated. In accordance with Department of Transportation Order 8000.1C, we request that FAA provide this additional information within 30 days of this report.

We appreciate the courtesy and cooperation of FAA representatives during this audit. If you have any questions concerning this report, please call me at 202-366-0500 or Bob Romich, Program Director, at (202) 366-6478.

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cc: DOT Audit Liaison, M-1
     FAA Audit Liaison, AAE-100

EXHIBIT A. SCOPE AND METHODOLOGY

We conducted this audit from February 2012 to June 2013 in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Our site visits included the Federal Aviation Administration (FAA) Headquarters, the FAA Academy, and 13 Air Traffic Facilities (see exhibit B).

During the audit, we interviewed FAA officials from the Office of Technical Training and Safety (for both terminal and en route), the Office of Labor Analysis, and the ATCOTS Program Office to determine FAA's planned initiatives intended to improve the facility training program. During our site visits, we interviewed facility managers, staff managers, training managers, NATCA representatives, and Raytheon Technical Services (ATCOTS Contractor) employees to determine the impact of prior initiatives on improving training outcomes. We also collected data on certification times, staffing composition and training completion rates, and locally developed initiatives intended to improve facility training for air traffic controllers. We compared the statements of FAA officials to the data collected during the site visits.

To determine if the certification times published in the 2012 Controller Workforce Plan were accurate, we selected a stratified sample of 20 of 306 air traffic facilities based on type, complexity, and the number of trainees. This sample represented 17 percent of all trainees in the system. We collected data from FAA Headquarters for these 20 facilities that specified which controllers had completed training since the beginning of fiscal year 2009. We visited 10 of these facilities from our stratified sample, in addition to the FAA Academy and 3 additional facilities outside the sample. We validated the completion data, and then accessed FPPS (FAA Payroll System) and calculated the difference between the date an employee achieved certification and the date they started training at the facility for all facilities in the sample. We were able to successfully validate the training times published in the 2012 Controller Workforce Plan.

EXHIBIT B. FACILITIES VISITED

Atlanta Air Route Traffic Control Center (ZTL)

Chicago Air Route Traffic Control Center* (ZAU)

Jacksonville Air Route Traffic Control Center* (ZTL)

Memphis Air Route Traffic Control Center* (ZME)

Oakland Air Route Traffic Control Center* (ZOA)

Washington Air Route Traffic Control Center* (ZDC)

Atlanta Terminal Radar Approach Control (A80)

Chicago Terminal Radar Approach Control* (C90)

Southern California Terminal Radar Approach Control* (SCT)

Potomac Terminal Radar Approach Control* (PCT)

Atlanta Air Traffic Control Tower (ATL)

Jacksonville Air Traffic Control Tower* (JAX)

Raleigh-Durham Air Traffic Control Tower* (RDU)

* Facilities visited for data verification sample.

EXHIBIT C. PRIOR OIG AUDIT REPORTS ON AIR TRAFFIC CONTROLLER TRAINING

- *Enhanced Oversight of Staffing and Training at FAA's Critical Facilities Is Needed To Maintain Continuity of Operations* (OIG Report No. AV-2012-039), January 12, 2012

- *FAA Must Improve Its Controller Training Metrics To Help Identify Program Needs* (OIG Report Number. AV-2011-072), March 30, 2011

- *FAA's Air Traffic Controller Optimum Training Solution Program: Sound Contract Management Practices Are Needed to Achieve Program Outcomes* (OIG Report No. AV-2010-126), September 30, 2010

- *Review of Screening, Placement and Initial Training of Newly Hired Air Traffic Controllers* (OIG Report Number. AV-2010-049), April 01, 2010

- *Training Failures Among Newly Hired Air Traffic Controllers* (OIG Report No. AV-2009-059), June 08, 2009

- *Controller Staffing at Key California Air Traffic Control Facilities* (OIG Report No. AV-2009-047), April 23, 2009

- *Review of the Air Traffic Controller Facility Training Program* (OIG Report No. AV-2008-055), June 05, 2008

- *FAA Has Opportunities to Reduce Academy Training Time and Costs by Increasing Educational Requirements for Newly Hired Air Traffic Controllers* (OIG Report Number. AV-2006-021), December 7, 2005

- *Opportunities to Improve FAA's Process for Placing and Training Air Traffic Controllers in Light of Pending Retirements* (OIG Report No. AV-2004-060), June 02, 2004

All OIG reports are available on our Web site at http://www.oig.dot.gov/.

Exhibit C. Prior OIG Audit Reports on Air Traffic Controller Training

EXHIBIT D. OPEN OIG AND RELATED IRP RECOMMENDATIONS

OIG Recommendation: Assign controller candidates to a facility based on their academy performance in conjunction with data currently available.

IRP Recommendations:

- Selections for air traffic controller training and selection to a facility should be a two step process.
- A selection algorithm should be developed to aid the selection process.
- Change the air traffic controller application form so the applicants can select one region, one state, or anywhere.
- Delay the track assignment until after the candidate's aptitude is assessed during initial training at the FAA Academy training and use OJTIs in this process.
- Delay the facility assignment until after the candidate's aptitude is assessed during Academy training and use field management in this process.

OIG Recommendation: Evaluate the AT-SAT and redesign it so that it results in air traffic controllers being placed at locations according to their skill set.

IRP Recommendations:

- Offer the Air Traffic Selection and Training (AT-SAT) test through existing FAA testing centers.
- Provide air traffic controller candidates the opportunity to take the AT-SAT exam once each year.
- Conduct a longitudinal study to determine the predictive value of the AT-SAT test and institutionalize the process.
- Correlate specific AT-SAT scores with candidate training performance.
- In addition to the AT-SAT, other factors should be given appropriate weight in the selection decision for air traffic controllers.

OIG Recommendation: Implement the recommendations of the 2007 Controller training and Development for En Route and Terminal.

IRP Recommendations:

- The FAA Academy should create a web-based Air Traffic Basics course. Completion of this course should be required of all candidates entering ATCS training.
- Provide Air Traffic Basics training via an online module.
- Expose Academy students to all ATCS track specialties and use contract instructors and OJTIs in this role.
- Incorporate an "advanced" course for all candidates prior to reporting to the field units and use OJTIs in this role.
- Improve the quality of Academy-based training by (a) capturing additional performance samples during training, (b) replacing the "pass/fail" grading strategy with multi-level performance measures, and (c) providing detailed Academy training records to the gaining facility manager.

Exhibit D. Open OIG and Related IRP Recommendations

EXHIBIT E. MAJOR CONTRIBUTORS TO THIS REPORT

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Exhibit E. Major Contributors to This Report
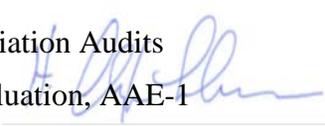
Federal Aviation Administration

Memorandum

Date: August 1, 2013

To: Jeffrey B. Guzzetti, Assistant Inspector General for Aviation Audits

From: H. Clayton Foushee, Director, Office of Audit and Evaluation, AAE-1

Subject: Federal Aviation Administration's (FAA) Response to Office of Inspector General
            (OIG) Draft Report: Air Traffic Controller Facility Training

Improving air traffic controller training remains a high priority for the FAA. As noted in the draft report, the framework for planned improvements begins with the implementation of the Independent Review Panel (IRP) recommendations. Many of those recommendations require improvements to employee screening, hiring and placement as a precursor to improving training. Implementation of these recommendations is a complex effort and must be carried out in conjunction with training program improvements. Activities designed to improve or enhance the operations of the FAA must deliver sufficient benefit in order to receive necessary resources.

Even in this challenging environment, the FAA has continued to make steady progress in completing a comprehensive assessment of the air traffic controller curriculum. Coincident with the curriculum assessment, curriculum improvements are underway for Air Traffic Basics (conversion to web-based, independent courseware), Initial Tower and Terminal Radar (instructional design revision to objective grading) and En Route Stage 2-4 (conversion of courseware to support new automation platforms and instructional design improvements). These efforts are targeted at improving training and decreasing time to certification depending upon facility complexity.

The FAA closely monitors the time for candidates to become fully qualified controllers as an internal metric, which is reviewed quarterly by the Air Traffic Organization (ATO) Chief Operating Officer. Multiple factors have contributed to the slight increase in training times. Due to increased controller hiring and retirements the past few years, the FAA has experienced a training surge at many facilities. Facilities training workload associated with developmental controller training has risen over the past several years, resulting in less time available for developmental controllers' "seat time" with on-the-job-training instructors, resulting in extended training times. Improving the quality of training through the use of "best practices" and available simulation to enhance the training curriculum has led to more training and longer qualification times. Local site training adaptations have lengthened training durations while increasing the value and quality of training.

The FAA augments federal staff with contract training staff to assist with completing the volume of developmental training. The major contribution that contract staff offers is initial training of developmental controllers (about 1/3 of total facility training), skill enhancement training, and simulator lesson development. Because the developmental surge has matured, most facilities now face a surge of on-the-job training (approximately 2/3 of the total facility training) that can only be done by certified controller instructors due to the complexity and experience required. The FAA is looking for alternative training solutions that would assist in relieving on-the-job training pressures at some facilities.

RECOMMENDATIONS AND RESPONSES

Recommendation 1: Reestablish a training initiatives section into the annual Controller Workforce Plan that introduces new initiatives and tracks the implementation of initiatives that are in progress.

FAA Response: Partially Concur. FAA agrees that improved tracking and monitoring of air traffic controller training initiatives would be beneficial and provide greater transparency and clarity to FAA's training processes and performance. However, the FAA does not concur that including this detailed information in the "Controller Workforce Plan" will enhance the utility of the report for Congress, the general public, or other key stakeholders, as the primary focus of the document is on hiring and staffing rather than training.

Recently, ATO's Safety and Technical Training group began publishing a semi-annual report (January and July) on newly hired air traffic controller training times and processes. The information in these semi-annual reports include, but are not limited to, training performance, introduction of new training initiatives, and updated status on training initiatives. These reports are available for review and were provided to the OIG previously. The FAA requests this recommendation be closed.

Recommendation 2: Develop and implement a formal policy to identify and disseminate locally developed training initiatives for use as best practices nationwide.

FAA Response: Concur. The ATO's Safety and Technical Training Office (AJI) previously reported that the analysis of training programs for technicians was expected to have a completion date in June 2013. Contract negotiations with the vendor caused the completion date to move to August 2013 without incurring any additional costs to the FAA.

The ATO's training policies for air traffic controllers and technicians are contained within governing training orders. As the ATO gathers the data required to upgrade their training strategy for the future, AJI will continue to update existing policy for controllers and technicians. These governing orders will be updated by the end of September 2013 and will include field and industry best practices such as recurrent training for air traffic controllers.

Once the job task analysis is completed, now planned for August 2013, the ATO will continue the effort to create a written strategy (policy) which will drive updates to the curriculum.

Appendix. Agency Comments

Barring worsening budgetary pressures, the ATO estimates a first version of the strategy to be available by March 31, 2014.

Recommendation 3: Develop a policy that establishes how and when any national training initiatives would be measured for effectiveness.

FAA Response: Concur. The FAA is committed to staff responsibility and accountability for written evaluation and analyses of technical training initiatives. Subject areas to be considered during these evaluations include, but are not limited to, cost/benefit analyses, impacts on developmental time to full qualification, lessons learned, and corrective action recommendations. AJI-2 expects a written policy to be completed and briefed to all affected AJI-2 personnel by October 1, 2013.

Recommendation 4: Organize FAA controller training data into a single source that allows for detailed analysis of all training records for each controller.

FAA Response: Concur. In September 2011, an Independent Review Panel (IRP) provided recommendations on improving air traffic controller selection, assignment, and training. IRP recommendation 24 identified the need for the consolidation of multiple databases currently used for the tracking, storage, and reporting of training data. The IRP's recommendation highlights the need for an integrated database for employees' data from application to separation/retirement. The implementation of this system should result in the following benefits:

- Substantial reductions in redundancy among data management and reporting systems

- Ability to leverage enterprise (e.g., agency-wide) data management and reporting systems that are centrally managed and maintained

- Increased security and reliability of the data management and reporting systems and the training data captured

This work is ongoing and the FAA will provide an update on the agency's progress to the OIG by July 31, 2014.

Recommendation 5: Evaluate the Operational Assessment Program to determine if it can be used to improve staffing composition at all critical air traffic facilities.

FAA Response: Partially Concur. The FAA is piloting the Operational Assessment Program (OAP), which screens applicants who want to transfer to the most complex Terminal Radar Approach Control (TRACON) facilities. Chicago's TRACON was the lead facility to use the program, completing assessments on candidate controllers in FY11-13. The program includes a knowledge exam and skills assessment as part of the pre-selection criteria, provides the hiring manager with additional data to consider in making the hiring decisions, and permits candidates to opt-out of the program as well. OAP is intended to screen applicants for skills to succeed at the most complex National Airspace System--critical facilities. The FAA collects training progress and certification rates of candidates selected during this pilot program.

Appendix. Agency Comments

The FAA is still evaluating this program. Southern California and Atlanta TRACONs were among the OAP pilot sites, but will not continue offering the OAP selection because of the investment required and the number of vacancies at these two facilities has decreased. The FAA invested in site-specific development and selection/training for key staff at only three OAP sites. OAP materials are site-specific and cannot be used at other TRACONs without the FAA committing to costly revisions and development necessary to offer OAP at new facilities.

Earlier in FY13, all hiring and training was suspended due to budget shortfalls. Because the FAA's budget for FY14 is presently unknown, it is difficult to speculate on the number of OAP opportunities that can be afforded. The FAA concurs with the need to evaluate the OAP, and will provide the OIG with an update by September 30, 2014.

Appendix. Agency Comments