
Office of Inspector General

Audit Report

FAA CONTINUES TO FACE CHALLENGES IN ENSURING ENOUGH FULLY TRAINED CONTROLLERS AT CRITICAL FACILITIES

Federal Aviation Administration

Report Number: AV-2016-014

Date Issued: January 11, 2016





Memorandum

U.S. Department of
Transportation

Office of the Secretary
of Transportation
Office of Inspector General

Subject: **ACTION:** FAA Continues To Face Challenges
in Ensuring Enough Fully Trained Controllers at
Critical Facilities
Federal Aviation Administration
Report Number AV-2016-014

Date: January 11, 2016

From: Matthew E. Hampton 
Assistant Inspector General
for Aviation Audits

Reply to
Attn. of: JA-10

To: Federal Aviation Administrator

The Federal Aviation Administration (FAA) employs more than 13,800 air traffic controllers and is planning to hire over 6,300 more in the next 5 years to keep pace with expected attrition. Ensuring adequate staffing and training for controllers is essential to maintain the efficiency of the National Airspace System (NAS), especially at the Nation's most critical facilities—i.e., facilities that are the busiest, most complex, and critical to NAS operations based on the number of airlines and flights serving them, such as New York, Chicago, or Atlanta.

In 2012, we conducted a review of controller staffing and training at FAA's most critical facilities¹ and reported that enhanced oversight of staffing and training is needed to maintain continuity of air traffic operations at these facilities. We also reported that these facilities were facing a potential shortage of certified professional controllers (CPCs), as they had higher rates of controller retirement eligibility, controllers in training, and training attrition than the national average.

In the Consolidated Appropriations Act of 2014, Congress directed our office to conduct a follow-up review of FAA's most critical facilities, with a focus on analyzing current and projected controller staffing levels at these facilities and how they compare to FAA's staffing ranges and future staffing plans. Accordingly, our audit objectives were to determine (1) whether controller staffing

¹ *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. OIG reports are available on our Web site at <http://www.oig.dot.gov/>.

levels at FAA's most critical facilities are consistent with FAA's plans, and (2) how training needs and pending retirements impact controller resources.

RESULTS IN BRIEF

FAA's controller staffing levels at its critical facilities are generally consistent with the Agency's Controller Workforce Plan (CWP), but there are unresolved issues about the validity of the plan. For example, industry experts and FAA facility managers have raised concerns about how to account for the contribution of trainees to overall staffing resources. As of October 2014, when excluding controllers-in-training, 13 of the 23 critical facilities had CPC levels below the facility's planned staffing range, including 6 of 8 large Terminal Radar and Approach Control (TRACON) facilities. Meanwhile, some en route facilities had more controllers than the CWP required. This was due in part to significant weaknesses with the process that FAA uses to determine the staffing ranges in its plans. For example, a recent National Academy of Sciences study concluded that the design and execution of FAA's en route staffing model included unrealistic assumptions about controller workload. FAA also lacks accurate and complete data on optimal controller scheduling practices and fatigue—factors that limit FAA's ability to accurately predict how many controllers it needs at critical locations. Moreover, air traffic managers often disagree with FAA's Office of Labor Analysis, who developed the Agency's CWP, about the number of controllers needed to ensure an operationally efficient facility. As a result, there is still considerable debate and uncertainty regarding how many controllers FAA actually needs for its most critical facilities.

FAA has not yet established an effective process for balancing training requirements with pending retirements when managing its controller resources at its critical facilities. According to FAA, the Agency uses historical data to anticipate the controller retirement pattern at each critical facility and then hire, place, and train enough new controllers to account for those expected losses. However, predicted losses can be difficult to anticipate at the facility level, largely because FAA's historical retirement data and nationwide trends may not apply to an individual critical facility's workforce. Accounting for wide variations in facility-specific staffing plans requires regular direct communication and collaborative planning between the air traffic managers and other senior FAA officials. Yet, only a few of the air traffic managers we interviewed said they were consulted by Headquarters over hiring, staffing, and training decisions. In addition, FAA has not established a fully effective process for determining how many controllers to train to replace retiring controllers because the outcomes of FAA's current training times and process vary from location to location and are largely based on the proficiency of the new trainees. For example, a Certified

Professional Controller-In-Training² (CPC-IT) completed training in 6.3 years, whereas another CPC-IT with a similar background completed the training in less than 1 year at the same facility. Moreover, FAA recently revised its metrics for evaluating controller training. As a result, it is difficult to determine whether training times and outcomes have improved or degraded over the past 3 years.

We are making recommendations to improve FAA's ability to ensure adequate staffing at its most critical facilities.

BACKGROUND

Although all air traffic facilities are important to the operation of the NAS, we focused our review on the staffing and training resources for 23 critical facilities (see exhibit B). These facilities were selected based on airspace complexity, number of operations, and air carriers serving that location. FAA concurred at the beginning of this review that the facilities on our list were critical, but this list is not all inclusive and we acknowledge that other facilities may also be important for supporting the NAS.

FAA assigns staffing ranges for facilities through its CWP, an annual report to Congress on the state of the controller workforce developed by FAA's Office of Labor Analysis. The staffing ranges are determined using two different models: one for en route air traffic control centers,³ and one for TRACONs⁴ and Towers.⁵ The CWP is FAA's primary plan to ensure FAA employs enough air traffic controllers to maintain continuity of operations.

FAA'S CONTROLLER STAFFING LEVELS ARE GENERALLY CONSISTENT WITH AGENCY PLANS, BUT THE VALIDITY OF THESE PLANS IS QUESTIONABLE

FAA's controller staffing levels at many of its most critical facilities are in line with the Agency's CWP; however, concerns exist about the validity of the staffing plan. Some facilities appear overstaffed, while others have fewer controllers than the plan states they need. This is partially because FAA's CWP contains weaknesses in how it determines the number of controllers needed, particularly for en route centers.

² Certified Professional Controllers-In-Training 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.

³ En-route centers guide airplanes flying at high altitudes through large sections of airspace.

⁴ TRACONs guide aircraft as they approach or leave airspace near a primary airport.

⁵ Each major airport maintains a control tower which houses air traffic controllers who monitor all aircraft taxiing, taking off, and landing at that airport.

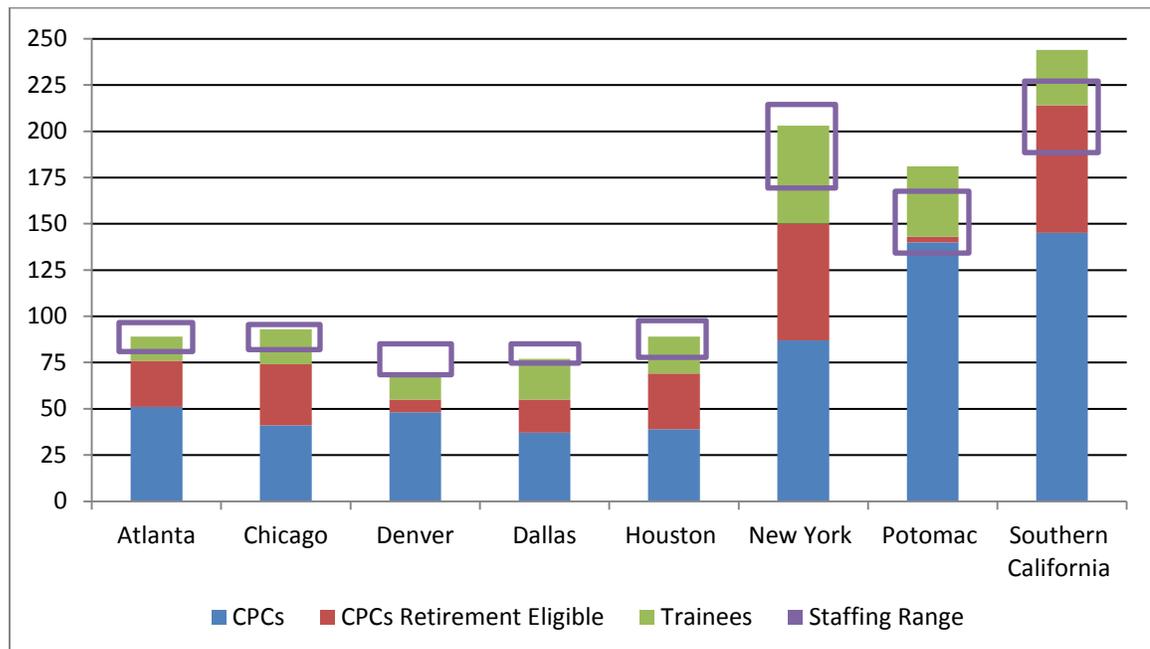
Excluding Trainees From Staffing Numbers Creates Large Discrepancies Between FAA's Plan and Actual Staffing Levels

FAA has created a staffing plan using the CWP for its critical facilities based on its projected gains and losses at each critical facility through fiscal year 2017. This projection includes expected retirements, net non-retirement losses such as training attrition, and planned new hires. The CWP contains staffing ranges for the number of controllers needed at each facility, historical and projected retirement patterns at the national level, and a description of the hiring and training processes.

Generally, staffing levels are consistent with Agency plans (see figure 1). However, the Agency's staffing counts include controller trainees, and significant disagreement exists over how to account for the contribution of trainees to actual facility operations. Some managers agreed that trainees contribute, while others indicated that the training resources and on-the-job training requirements for trainees limit their contribution as a staffing resource. According to the Office of Labor Analysis and the National Academy of Sciences, partially qualified trainees working individually contribute about 13 percent of all time-on-position.

When excluding controllers in training, more than half of the critical facilities appeared understaffed. Specifically, 13 of the 23 critical facilities (57 percent) had fewer CPCs than the staffing range minimum, including 6 of 8 large TRACONS (see figure 1).

Figure 1. Staffing Distribution at Large TRACON Facilities as of October 2014

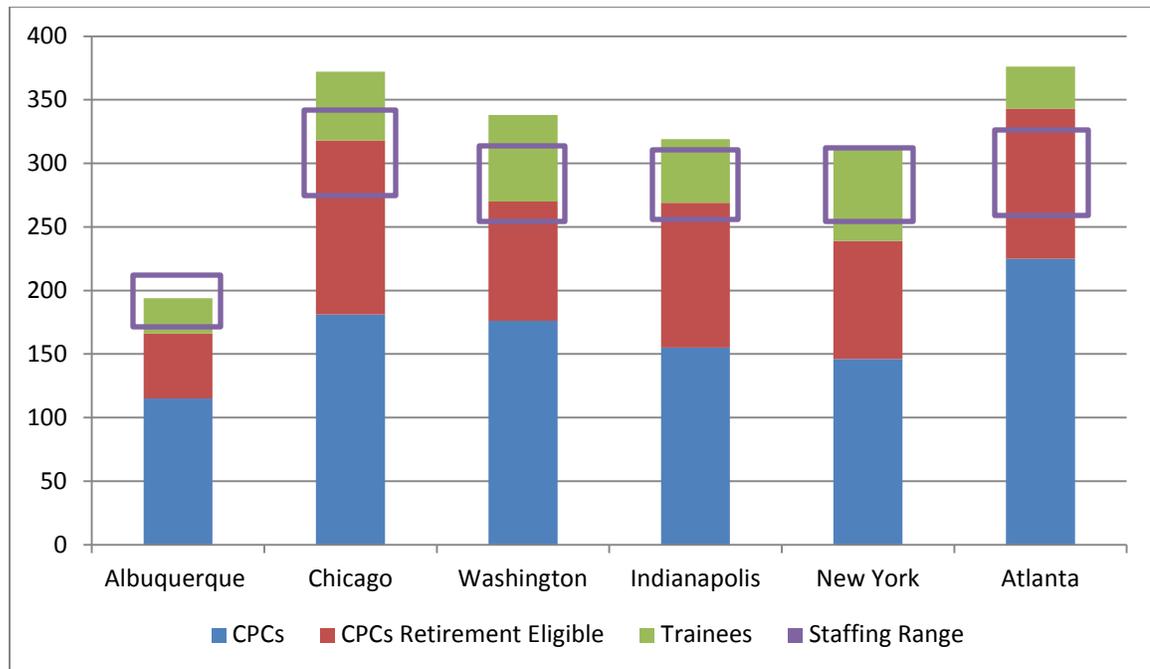


Source: OIG analysis of FAA data.

For example, New York TRACON had 150 CPCs and the bottom of the staffing range was 173 controllers. Also, Chicago O'Hare Airport had 48 CPCs when the bottom of the staffing range was 53 controllers, and was expecting to open a third tower in 2015 that would require additional controllers. According to the air traffic managers, these differences are due to poor execution of the staffing plan by FAA headquarters and failure to consult directly with the air traffic facility staff.

Additionally, some air traffic facilities have had more controllers on board than the staffing ranges in the CWP. For example, in October 2014 Atlanta Center had 343 CPCs and 33 trainees while the top of the staffing range was 325 controllers (see figure 2). These staffing imbalances indicate that improvement within the staffing process may be possible.

Figure 2. Staffing at Critical En Route Facilities as of October 2014



Source: OIG analysis of FAA data.

FAA's Staffing Model for En Route Facilities Contains Significant Weaknesses and Discrepancies

The discrepancies between current facility staffing levels and FAA's plans are due in part to weaknesses in the method FAA uses to develop these models and ranges. FAA's staffing models are based on, but not limited to the (1) output of mathematical models used to relate controller workload to air traffic activity, (2) past productivity of the facility, and (3) productivity of similar facilities. In June 2014, a National Academy of Sciences committee issued a study of FAA's

air traffic controller staffing model. The study questioned the validity of the mathematical model used to determine the staffing standards and the resulting staffing ranges at en route centers. The committee stated that FAA should create a simpler model based on observing controllers performing on-the-job tasks.

FAA's current en route staffing model was originally designed by MITRE to measure the aircraft capacity or "throughput" of an en route sector, and then adapted to model controller workload. However, the model is based on certain assumptions rather than real-world data. For example, controller tasks are modeled as though they occur sequentially and independently, although the tasks themselves often occur concurrently and are dependent on each other. Controllers often issue weather advisories while concurrently separating aircraft, and the ability to separate aircraft can depend on issuing timely weather advisories. However, the en route model assumes that these tasks are completely separate and are not related.

Furthermore, MITRE based several critical parameters within the model on input from subject matter experts, but never validated these parameters with real-world data. For example, en route sectors or segments of airspace can be staffed by one to three controllers at any given time. The MITRE analysts were not able to model the tasks of the second or third controller, so they used a data fitting process to infer the task load of the second controller from the workload of the first. These tasks include receiving flight-plan information and helping plan and organize the flow of traffic within a sector. However, the actual task load of the second or third controller was never validated with operational studies that could have provided real data to support the model. These weaknesses undermine the credibility of the en route staffing model, even in cases where the model appears to have performed adequately.

To its credit, FAA's staffing model for terminal air traffic facilities appears to be more accurate. FAA updated the staffing model for tower facilities in 2008 and the staffing model for TRACON facilities in 2009. The National Academy of Sciences found that the staffing models for tower and TRACON facilities provided a good initial estimate of staffing needs. In addition, the terminal air traffic managers we interviewed generally agreed that the staffing ranges for their facilities were reasonable, but often pointed out that their current staffing levels were below the lower end of FAA's range.

FAA's Staffing Practices Lack Accurate Scheduling and Performance Data, Limiting Their Effectiveness

FAA's staffing models are further hindered by data limitations. For example, FAA uses data from its Labor Distribution System for controllers (Cru-X/ART) in part to help create its staffing model, as it records the amount of time controllers spend

on position. Identifying how much time controllers actually spend on position and how much time they perform other duties, such as recurrent training, administrative tasks, and participation in workgroups can help FAA determine how many controllers it needs to schedule and staff. However, in a 2014 report,⁶ we found data control and entry weaknesses may limit the effectiveness and reliability of Cru-X/ART data, and certain codes used to track specific collateral duties were too broad to be useful. Our current review also found similar data control and entry weaknesses, and FAA does not appear any closer to establishing better internal controls that accurately capture controller duties and workload. Ultimately, this information is essential to developing safe and efficient controller work schedules.

FAA has also not yet determined the exact number of controllers needed at a given time to maintain efficiency without compromising safety. Assessing the impact of controller staffing levels on safety is complicated in part because FAA can limit the number of air traffic control operations an air traffic facility manages to ensure safe operations. For example, if an air traffic manager does not believe there is enough staff to safely accommodate the current level of traffic, controllers can delay flights and keep pilots on the ground until there is enough capacity to safely manage the traffic. However, NAS efficiency is lost using this process.

Ultimately, the National Academy of Sciences was unable to determine whether FAA's current controller staffing model is the most effective because such a determination requires safety and performance metrics that are not defined, and there are no conclusive methods for relating safety to controller staffing. We were also unable to determine which controller staffing model was most effective because of data collection limitations, including unreliable data on time-on-position, controller training outcomes, and controller fatigue.

Significant Disagreement Exists Between Headquarters Staff and Air Traffic Managers on Staffing Practices

Air traffic managers told us they did not understand or fully accept FAA's CWP staffing plans and ranges, which are developed by FAA's Office of Labor Analysis. Examples of criticisms included not accounting for high training attrition, unusually long training times, and new technology deployment. As a result, the Air Traffic Organization is currently in the process of determining its own controller staffing requirements at each facility. Ultimately, staffing decisions are driven by the work schedule, which determines the number of controllers that are allowed to take leave on a daily basis and how many are expected to be working operational positions during each shift.

⁶ *FAA Lacks the Metrics and Data Needed To Accurately Measure the Outcomes of Its Controller Productivity Initiatives* (OIG Report No. AV-2014-062), July 9, 2014.

For example, Headquarters and managers at Atlanta Center have not agreed on the number of controllers needed at the facility. According to the managers at Atlanta Center, 328 operational CPCs are required to fill the watch schedule as currently structured. Although Atlanta Center had 343 CPCs at the time of our visit, 32 were unavailable due to temporary medical disqualifications, participation in technical workgroups, and workers compensation claims. Filling the schedule with the remaining 311 CPCs requires overtime and using position-qualified trainees to staff operational positions by themselves.

In contrast, the FAA Office of Resource Optimization analyzed the current Atlanta Center controller work schedule structure using the Operational Planning and Scheduling (OPAS) tool, a system that aims to optimize scheduling practices through a commercially available scheduling program used by other countries, including Australia, Canada, and Germany. The office concluded that by eliminating Alternative Work Schedules⁷ and reducing the number of available scheduled leave slots to their contractually obligated minimum, Atlanta Center could fill the entire schedule with 296 available CPCs.

Moreover, although OPAS provides a potentially useful method of optimizing controller schedules, FAA does not currently consider the results from the tool when determining facility staffing ranges in the CWP. This leaves FAA with multiple methods for assessing staffing needs, large discrepancies between each method, and continued disagreement with facilities regarding staffing (see table 1). As a result, it remains unclear exactly how many controllers are needed to maintain operations at each facility.

Table 1. Staffing Discrepancies at Atlanta Center as of September 2014

	Number of Controllers Required
Operational Controllers at Atlanta Center	311 ⁸
FAA Headquarters: Bottom of CWP Staffing Range	266
FAA Headquarters: OPAS	296
Atlanta Center Facility Managers' Determination	328

Source: OIG analysis

⁷ An agency may implement for its employees an alternative work schedule (AWS) instead of traditional fixed work schedules (e.g., 8 hours per day, 40 hours per week), provided an AWS would not have an adverse impact on the facility.

⁸ Atlanta Center had 343 CPCs at the time of our visit; however, 32 were unavailable due to temporary medical disqualifications, participation in technical workgroups, and workers compensation claims, leaving 311 CPCs available for controlling air traffic.

FAA LACKS AN EFFECTIVE PROCESS FOR BALANCING TRAINING REQUIREMENTS WITH PENDING RETIREMENTS

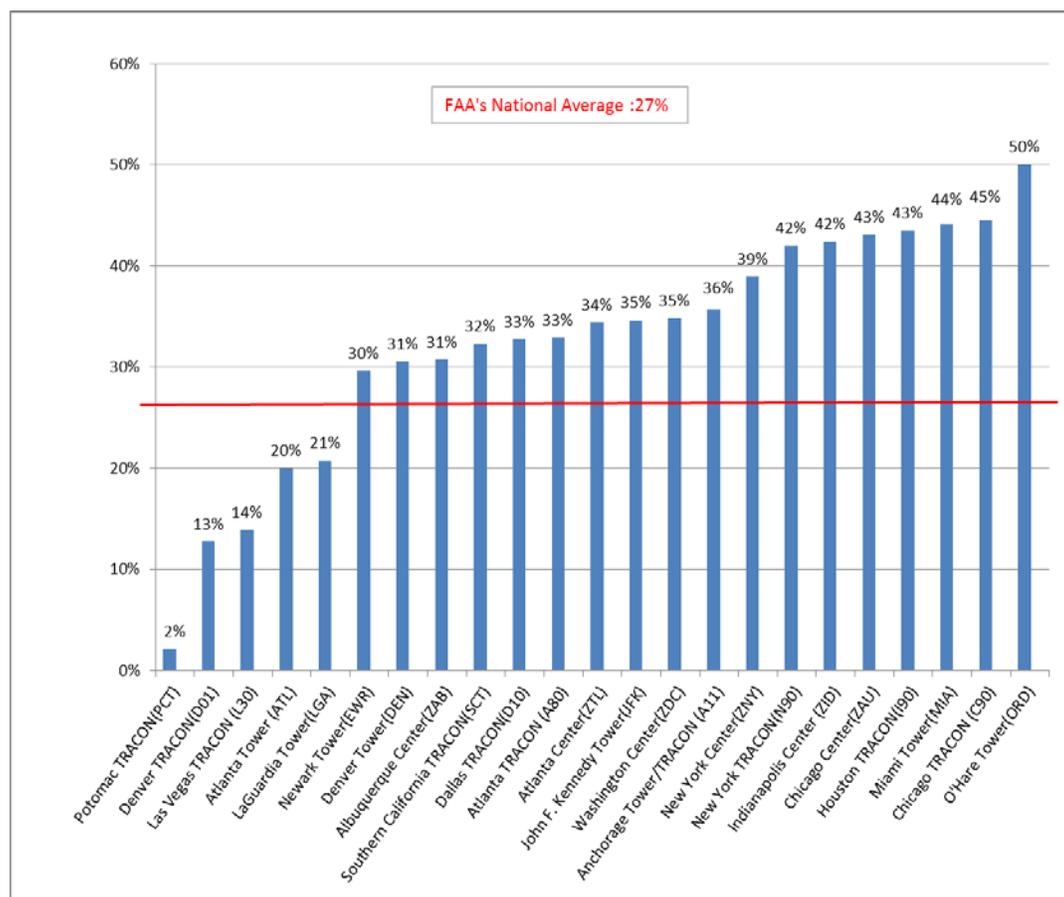
FAA faces significant challenges in managing its controller resources due to difficulties with balancing training requirements with pending retirements. FAA relies on historical retirement data to anticipate retirements, but controllers can retire with little notice, leaving an individual critical facility facing an unexpected shortage. Moreover, training outcomes vary widely, and it can take more than 3 years to train a replacement controller for these complex facilities.

FAA Does Not Consider Facility-Specific Information When Anticipating Future Retirement Trends at Critical Facilities

One of FAA's primary staffing challenges is accurately determining how many controllers are eligible to retire and when those controllers actually choose to retire. Accurately predicting retirements is a critical element in managing controller resources, as FAA uses these predictions when determining how many new controllers and trainees to assign to a facility. If more controllers retire in a given year than FAA anticipates, facilities could be left with staffing shortages.

Anticipating retirements is a particular concern given the high number of controllers eligible to retire at FAA's most critical facilities. As of October 2014, FAA estimates that 35 percent of all fully certified controllers at critical facilities are eligible to retire. In contrast, only 27 percent of fully certified controllers nationwide were eligible for retirement. Most critical facilities have retirement eligibility rates well above the national average (see figure 3).

Figure 3. Percentage of Controllers Eligible to Retire at Critical Facilities as of October 2014



Source: OIG analysis of FAA data

Despite the high rates of retirement eligibility at critical facilities, FAA does not sufficiently consider facility-specific factors when anticipating future retirements. Instead, after determining how many controllers are eligible to retire, FAA relies on nationwide historical data to anticipate when they will retire. For example, in fiscal year 2013, only 13.2 percent of all controllers retired in their first year of eligibility. Nationwide trends also show that the majority of controllers usually retire before reaching the mandatory retirement age of 56.

However, at the facility level, actual retirements may not follow these national trends, since there are many factors involved in individual controller's decision regarding when to retire, including family and financial reasons. To help better predict retirements at the facility level, facility managers may have additional information on retirement trends at their facilities.

However, most managers we interviewed stated that Headquarters did not effectively coordinate with them when determining retirement projections for their

facility. For example, the facility manager at Chicago O'Hare Tower expressed concerns that his facility was only receiving 5 new controllers based on FAA's retirement projections, even though he stated 15 controllers retired the previous year. As a result, he was concerned that the facility would not have enough experienced controllers to staff the two current towers, in addition to a third scheduled to open in 2015. After we shared these concerns with FAA Headquarters, an FAA Headquarters official contacted the facility official to resolve the discrepancy.

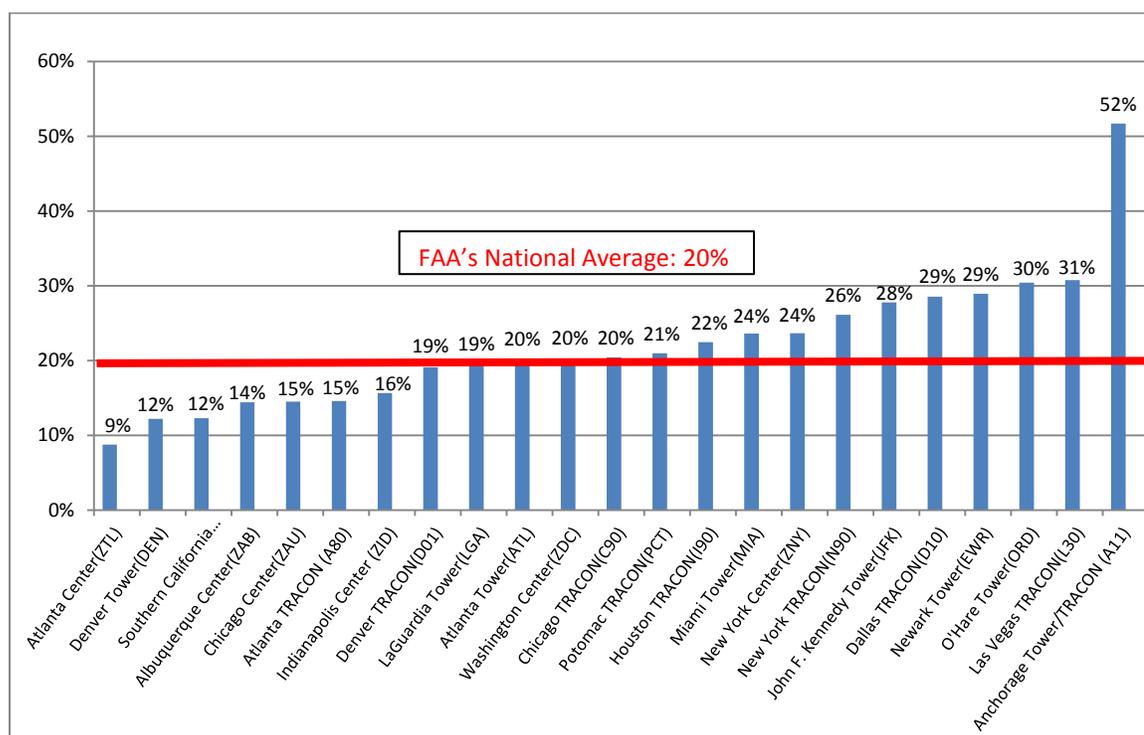
According to FAA, the Agency effectively anticipates controller retirements with 98 percent accuracy nationwide. However, given the high percentage of controllers eligible to retire at critical facilities, and the fact that eligible controllers can retire at any time with little notice, FAA remains vulnerable to staffing shortages that could impact facility operations. By not coordinating with facility managers to anticipate retirements at the facility level, FAA could be missing opportunities to prevent staffing shortages and better determine its new controller training requirements.

Due to Uncertain Training Outcomes, FAA Cannot Ensure It Will Successfully Train Enough Controllers To Offset Retirements

A further challenge for FAA in managing controller resources is ensuring that enough controllers are trained to replace controllers when they leave. This is difficult because training outcomes vary widely and it can be challenging to predict whether a specific individual will successfully complete training and how long it will take. While this is a concern at facilities nationwide, training challenges are most pronounced at FAA's most critical facilities.

Although the number of controllers in training has gone down nationwide, many critical facilities still have a higher percentage of trainees than the national average. During our 2012 review of FAA's critical facilities, we found that the percentage of controllers in training at the majority of critical facilities exceeded the national average. Since 2012, FAA controller hiring has been restrained by budget cuts resulting in fewer controllers in training nationally and at FAA's critical facilities. As of October 2014, 19 percent of controllers were in training at FAA's critical facilities, compared to the national average of 20 percent. However, significant variation exists between each individual facility (see figure 4).

Figure 4. Percentage of Controllers in Training at Critical Facilities as of October 2014



Source: FAA Controller Workforce Plan and FAA's Office of Labor Analysis

Further, there is a significant variation in the time it takes to train new controllers, as training new controllers typically takes anywhere from 1 to 4 years. For example, in fiscal year 2012, the en route controllers who finished training required an average of 3.1 years to complete training, and terminal controllers averaged 2.4 years. Predicting how long it will take a controller to finish training is particularly difficult because actual training times can vary widely even between trainees with a similar background at the same facility. For example, a CPC-IT at Chicago Center took 6.4 years to complete training, while another CPC-IT with a similar background took less than 1 year.

CONCLUSION

The United States has one of the safest air traffic systems in the world, but maintaining the excellent safety record depends on having a fully staffed and well trained controller workforce. FAA has improved oversight of staffing at critical facilities, but many of these facilities still have a clear shortage of fully trained controllers. Furthermore, FAA does not have the data or an effective model in place to fully and accurately identify how many controllers FAA needs to maintain efficiency without compromising safety. Without better models and more direct

communication between Headquarters and facility managers, FAA will continue to face challenges in ensuring FAA's critical facilities are well staffed, especially as more controllers retire.

RECOMMENDATIONS

To improve FAA's ability to ensure adequate staffing at its most critical air traffic control facilities, we recommend that the Federal Aviation Administrator:

1. Develop and implement a methodology with completion dates for determining en route staffing ranges, as suggested by the National Academy of Sciences.
2. Document and use the results of Operational Planning and Scheduling tool when annually negotiating controller work schedules at each facility.

AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

We provided FAA with our draft report on November 5, 2015, and received its formal response on December 10, 2015, which is included in its entirety as an appendix. In its response, FAA fully concurred with recommendation 1 and partially concurred with recommendation 2.

For recommendation 2, FAA agreed that it should develop a method to uniformly analyze the scheduling practices at facilities. However, FAA disagrees that using the Operational Planning and Scheduling tool is necessary to address our concerns. FAA states that it has implemented another scheduling tool (Business Analysis Tool Suite) to analyze schedules at all en route centers and 10 large facilities that manage traffic in the vicinity of airports. We point out that OPAS has a proven track record, is supported by experts in the field, and has been procured and tested by FAA. However, the use of any scheduling tool meets the basic intent of our recommendation. FAA plans to complete actions for both recommendations by September 30, 2016.

ACTIONS REQUIRED

FAA has provided appropriate actions and timeframes for both recommendations, and we consider these recommendations resolved but open until the planned actions are completed.

We appreciate the courtesies 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 our work from April 2014 through November 2015 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.

To determine if staffing levels at FAA's critical facilities are within FAA's planned range and how training needs and pending retirements impact controller resources, we identified the CWP as FAA's primary plan to ensure adequate controller staffing at the critical facilities. Then we met with headquarters officials from the Office of Safety and Technical Training, Labor Analysis, and the Air Traffic Office. We collected and reviewed staffing data from the 23 facilities, including current headcount, staffing ranges, projected retirements and training attrition, and new hire projections. We reviewed and assessed the models FAA uses to develop the staffing ranges in the CWP and compared the output of these models to actual staffing levels at each critical facility. Next, we reviewed two studies from the National Academy of Sciences that assessed FAA's controller workforce modeling and execution. We visited 14 air traffic facilities, interviewed NATCA officials and air traffic managers, and compared site data with headquarters data. Finally, we sent surveys and questionnaires to the other nine air traffic facilities, and compared the results of the surveys to information collected at FAA Headquarters.

EXHIBIT B. ORGANIZATIONS VISITED OR CONTACTED

Atlanta Air Route Traffic Control Center (ZTL)

New York Air Route Traffic Control Center (ZNY)

Washington Air Route Traffic Control Center (ZDC)

Chicago Air Route Traffic Control Center (ZAU)

Albuquerque Air Route Traffic Control Center (ZAB)

Southern California Terminal Radar Approach Control (SCT)

New York Terminal Radar Approach Control (N90)

Potomac Consolidated Terminal Radar Approach Control (PCT)

Chicago Terminal Radar Approach Control (C90)

Dallas Terminal Radar Approach Control (D10)

Houston Terminal Radar Approach Control (I90)

Denver Terminal Radar Approach Control (D01)

Las Vegas Terminal Radar Approach Control (L30)

Atlanta Terminal Radar Approach Control (A80)

Atlanta Air Traffic Control Tower (ATL)

Chicago O'Hare Air Traffic Control Tower (ORD)

Denver Air Traffic Control Tower (DEN)

John F Kennedy Air Traffic Control Tower (JFK)

Newark Air Traffic Control Tower (EWR)

La Guardia Air Traffic Control Tower (LGA)

Exhibit B. Organizations Visited or Contacted

Miami Combined Air Traffic Control Tower and Terminal Radar Approach Control (MIA)

Anchorage Air Traffic Control Tower and Terminal Radar Approach Control (ANC/A11)

Indianapolis Air Route Traffic Control Center (ZID)

EXHIBIT C. STAFFING AT FAA'S CRITICAL FACILITIES AS OF OCTOBER 2014

Facility	Staffing Ranges				Percent Training	CPCs Retirement Eligible	Percent CPCs Eligible
	Min	Max	CPCs	Trainees			
Anchorage Tower/TRACON	21	25	14	15	52%	5	36%
Atlanta TRACON	79	97	76	13	15%	25	33%
Atlanta Tower	43	53	45	11	20%	9	20%
Chicago TRACON	78	94	74	19	20%	33	45%
Denver TRACON	70	85	55	13	19%	7	13%
Dallas TRACON	73	89	55	22	29%	18	33%
Denver Tower	36	44	36	5	12%	11	31%
Newark Tower	27	34	27	11	29%	8	30%
Houston TRACON	77	94	69	20	22%	30	43%
John F. Kennedy Tower	28	34	26	10	28%	9	35%
Las Vegas TRACON	42	51	36	16	31%	5	14%
LaGuardia Tower	27	33	29	7	19%	6	21%
Miami Tower	80	97	68	21	24%	30	44%
New York TRACON	173	212	150	53	26%	63	42%
O'Hare Tower	53	65	48	21	30%	24	50%
Potomac TRACON	136	166	143	38	21%	3	2%
Southern California TRACON	185	227	214	30	12%	69	32%
Albuquerque Center	168	205	166	28	14%	51	31%
Chicago Center	276	338	318	54	15%	137	43%
Washington Center	256	313	270	68	20%	94	35%
Indianapolis Center	252	309	269	50	16%	114	42%
New York Center	245	299	239	74	24%	93	39%
Atlanta Center	266	325	343	33	9%	118	34%

Source: OIG analysis of FAA data

Note: **Highlight** indicates CPC level below staffing range minimum

EXHIBIT D. MAJOR CONTRIBUTORS TO THIS REPORT

Name	Title
Robert Romich	Program Director
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Andrew Sourlis	Analyst
Audre Azuolas	Writer/Editor



Federal Aviation Administration

Memorandum

Date: December 10, 2015

To: Matthew E. Hampton, 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: "FAA Continues to Face Challenges in Ensuring Enough Fully Trained Controllers at Critical Facilities"

The FAA agrees that maintaining our excellent safety record depends on our having a fully staffed and well trained controller workforce. The Agency works transparently to define staffing targets for each of the 315 air traffic control facilities by posting the staffing prioritization tools online for both management and National Air Traffic Controllers Association (NATCA). The FAA enhanced the lines of communication between the Headquarters and the Field in the proper use of the Staffing Workbook to identify staffing needs. Additionally, the Agency worked towards centralizing the Employee Requests for Reassignment program and will implement a National Release Policy to help expedite the transfer of employees from healthy facilities to those that need the most help. Finally, the Agency has also begun the process of centrally managing many of these staffing resources and decisions at the National level to help maximize the overall staffing benefits for the greater good of the National Airspace System versus the needs of individual facilities.

The FAA has reviewed the draft report and offers the following comments in response to the OIG's draft findings and recommendations.

- The National Academy of Sciences (Academy) and the FAA recognize a difference in the definitions of "ranges, standards, and models." The 2015 Controller Workforce Plan defines staffing standards as the output of mathematical models used to relate controller workload and air traffic activity. Staffing standards are one data source used in the calculation of staffing ranges along with past productivity, peer productivity, and the Service Unit Input.
- The FAA in consultation with stakeholders, including the Academy and NATCA, concludes that a complete redesign of the MITRE on position staffing model is likely not necessary as a result of MITRE addressing most of the Academy's concerns and a review of specific facilities which showed the model results being a reasonable proxy for the number of positions opened.

The FAA concurs with recommendation 1 and partially concurs with recommendation 2. For recommendation 1, the Agency recently concluded a Human-in-the-loop study with MITRE as recommended by the Academy and is now collaborating with NATCA and the Academy to validate the additional factors that make up the staffing standards including the scheduling algorithm and the availability factor in order to reach a definitive and validated process that is data driven. FAA plans to complete actions by September 30, 2016.

In regards to recommendation 2, the FAA agrees that it should develop a method to uniformly analyze the scheduling practices at facilities, however, we disagree that using the Operational Planning and Scheduling tool is necessary to complete this. The FAA has implemented the Business Analysis Tool Suite (BATS) at all En-Route Centers and the 10 large terminal radar approach control facilities. BATS, enables management at Air Traffic Control facilities to visualize their schedules to ensure adequate coverage and estimate annual leave liability. The above cited facilities are required to utilize BATS as a decision-support tool for the annual leave negotiations process in order to comply with FAA Order 3710.18 for calendar year 2016. The FAA will complete actions for this recommendation by September 30, 2016.

We appreciate this opportunity to offer additional perspective on the OIG draft report. Please contact H. Clayton Foushee at (202) 267-9000 if you have any questions or require additional information about these comments.