The Federal Aviation Administration's Imposed Work Rules:

The Effect on Air Traffic Controller Attrition, System Safety and Delays

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Executive Summary

On September 3, 2006, the Federal Aviation Administration (FAA) unilaterally imposed a set of work rules on its air traffic controller (ATC) workforce. These rules instituted unpopular changes to the annual leave policy, removed career advancement opportunities, established new pay bands that decreased controller wages significantly, and eliminated rest periods, among other provisions, which left many controllers dissatisfied with their work environment. As a direct result of these Imposed Work Rules (IWRs):

- The total number of Certified Professional Controllers (CPCs) has fallen to a 15 year low.
- Attrition from the ATC workforce has reached record levels and exceeded all expectations.
- Unprecedented numbers of air traffic controllers are retiring with time still left on the table before mandatory retirement, while many others are resigning from the workforce before even reaching retirement eligibility.
- Facilities throughout the country, particularly at major hubs and metropolitan centers, are severely understaffed.

In order to cope with the shortage of controllers, the FAA is calling in regular overtime and operating shifts without proper staffing. This creates problems for those who depend on air traffic controllers for their safe and efficient passage through the National Airspace System (NAS) because:

- Controllers are fatigued –they are working longer days and weeks, often at combined positions, without radar assistants and with fewer opportunities for rest.
- Operational errors have increased throughout the country, particularly where the staffing shortage is most severe.
- There has been an increase in delays. ATCs can work a finite number of aircraft safely at one time. In order to maintain the level of safety, limits may be placed on the number of aircraft allowed to enter one's airspace, resulting in delays.

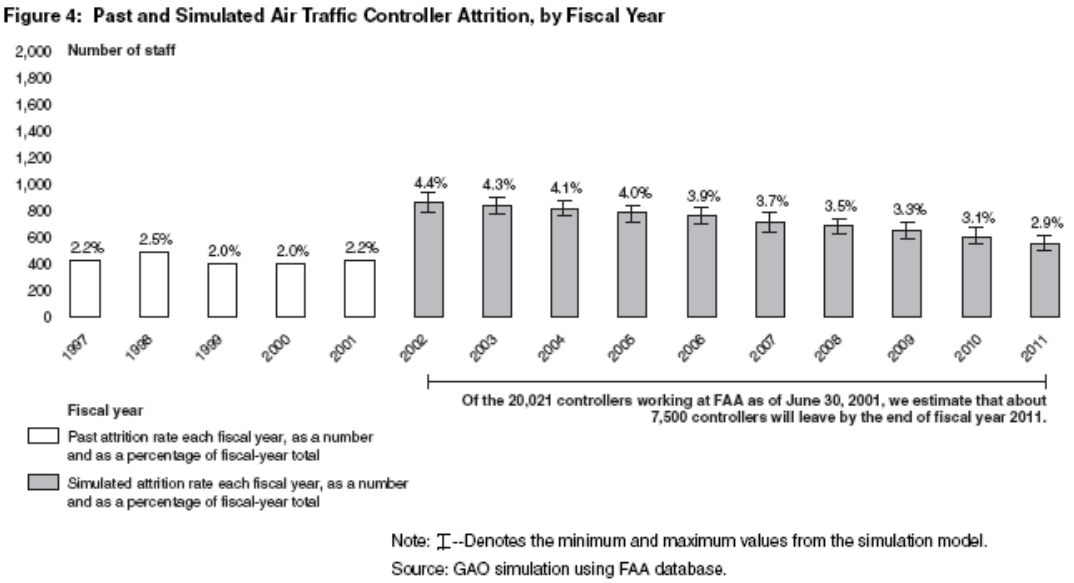
The FAA had hoped to handle the high rate of attrition by replacing those that leave with new hires. However, it has proven impossible to hire and train new controllers quickly enough to handle the outflow. As a result, many facilities are experiencing dangerously high ratios of trainees to CPCs. This has lead to delays in training and an increased reliance upon individuals who have not yet achieved full certification to work traffic.

The first step to alleviating this strain on the air traffic controller system is to reverse the implementation the IWRs, restore the last mutually negotiated and agreed upon contract, and require the FAA and NATCA to return to the bargaining table. These actions will stem the flow of veteran controllers from the workforce and help to restore the margin of safety.

Controller Attrition Exceeds Expectations

In 2002, the Government Accountability Office (GAO) conducted a study on ATC attrition and warned the FAA of a potential future shortage of air traffic controllers. The graph below shows the GAO prediction, which is based on past attrition patterns and future eligibility. It depicts a severe increase in controller attrition beginning in FY 2002, when many controllers hired in the aftermath of the PATCO strike became eligible to retire. After the peak in 2002, the GAO expected the attrition rate to slowly recede, coming down to approximately 700 by 2007. But the GAO could not have foreseen the changes to ATC wages and working conditions that would be brought about by the IWRs. In 2007 a total of 1,622 individuals (11.1 percent of the workforce) left the ATC workforce, far exceeding even the high end of GAO estimation.[1]

GAO Prediction[2]



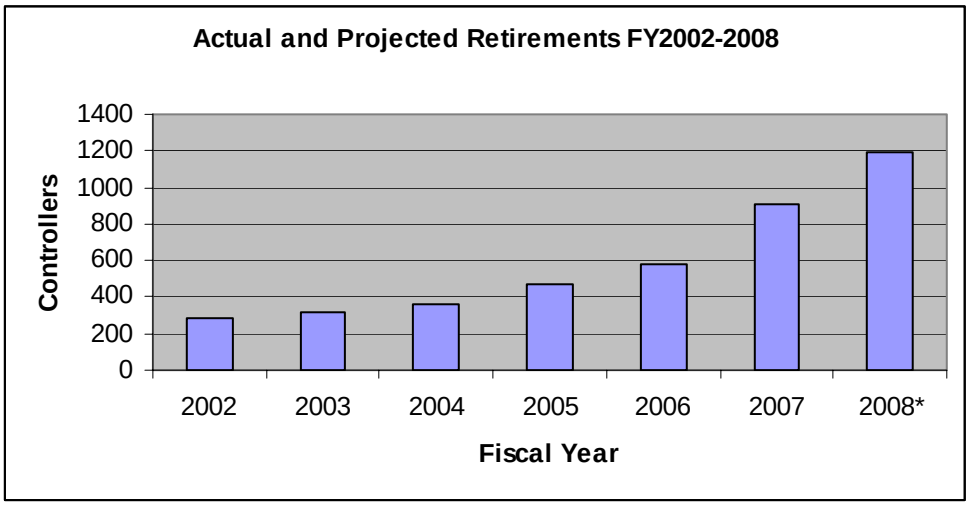
Attrition in FY 2008 is poised to exceed even that of FY 2007. Last fiscal year 1,622 controllers left the FAA ATC workforce, or an average of 4.4 per day. By January 5, 2008 603 controllers were lost through attrition in FY 2008, an average of 6.2 per day.[3] If the present rate continues, 2,276 will leave the ATC workforce by the end of the fiscal year.

The reason for this spike in controller attrition is clear; air traffic controllers are dissatisfied with the IWRs. In a presentation entitled, "Draft Retention Incentive Proposal for Controllers" from August 14, 2007, the FAA cites "dissatisfaction with pay" and "dissatisfaction with

[1] These statistics are based on payroll data for FY 2007 provided by the FAA to NATCA.
[2] Source: 2002 GAO report entitled *Air Traffic Control: FAA Needs to Better Prepare for Impending Wave of Controller Attrition*
[3] Based on payroll data obtained by NATCA from the FAA. They are current as of January 5, 2008.

management" as the top two reasons high-performing controllers are leaving the FAA. Both of these are directly attributable to changes resulting from the implementation of the IWRs

Retirements make up a significant portion of ATC attrition. In FY 2007 an unprecedented 911 air traffic controllers retired from the ATC workforce. The following graph shows actual controller retirements from FY 2002 to FY 2007 and a prediction for FY 2008 based on the rate of retirement thus far this fiscal year. Not only did 2007 retirements exceed expectations, but the number is not shrinking each year as in the GAO prediction – instead, it's growing[4] and the rate of growth has accelerated since the agency began implementing the IWRs in September 2006. In the first 97 days of FY 2008, 316 controllers retired or an average of 3.25 per day. If attrition continues at this rate 1,192 controllers will retire by the end of the fiscal year.[5]



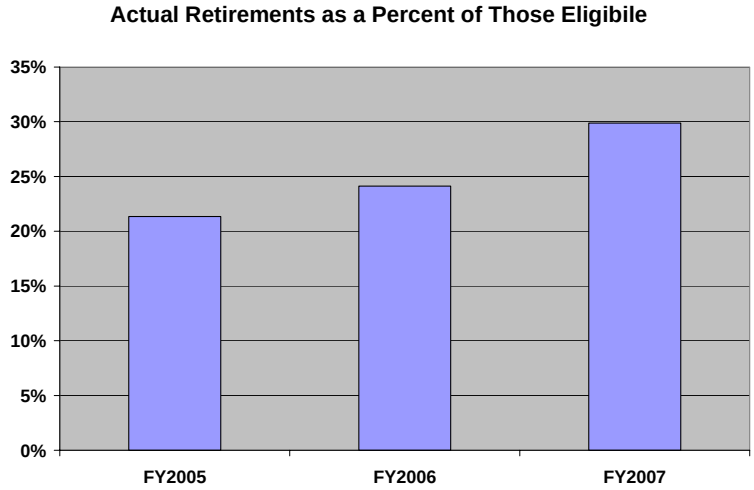
* Estimate based on first 97 days of fiscal year

This increase cannot be attributed solely to the aging workforce and an increase in controllers who are eligible to retire. Although the number of controllers eligible to retire has increased, the percent of those eligible that choose to retire has also increased since the imposition of the new work rules. Only 17 of the 911 retirements in FY 2007 (2 percent) were by those who had reached the mandatory retirement age. The following graph illustrates the percent of retirement eligible controllers who actually leave the workforce, which has increased from 21 percent in FY 2005 to 30 percent in FY 2007.[6]

[4]2002-2005 data is from the FAA 2006 ATC workforce plan entitled *A Plan for the Future: 2006-2015*. 2007 data comes from FAA payroll records obtained by the Union .

[5] Based on payroll data obtained by NATCA from the FAA. They are current as of January 5, 2008.

[6] Eligibility Data based on data in workforce plans from 2005, 2006 & 2007. Actual retirement data for FY 2005 and FY 2006 from the 2006 and 2007 workforce plans, FY 2007 retirement data obtained by NATCA from the FAA.



There has also been a significant increase in losses due to resignations, removals or deaths. In FY 2006, 261 controllers were lost in this category; in FY 2007 this number increased to 343,[7] and in the first 97 days of FY 2008 there were already 156[8] of these losses, indicating that such losses for this fiscal year are likely to exceed last year's total. Before the IWRs, FAA predictions for this category of attrition ranged from 84 to 94,[9] approximately one fourth the rate we are currently experiencing. This difference can be explained by two phenomena working in tandem: an increase in training failures boosting the removal numbers and a surge of younger employees dissatisfied and disillusioned by the working conditions and B-scale pay choosing leave the FAA workforce.

Despite clear indications that air traffic controllers are leaving the workforce at record rates, the agency seems unable or unwilling to make accurate predictions of attrition and plan accordingly. At the start of FY 2007, the FAA forecasted 643 ATC retirements during that fiscal year. In March that number was increased to 700, which was still 23 percent lower than the actual retirement attrition.

The inability of the FAA to accurately predict ATC attrition is not without clear cause. The FAA used historic attrition patterns to predict future patterns without regard to the unique situation created by the IWRs. After recognizing a bump in the attrition rate at the end of FY 2006 the FAA chose to re-baseline their predictions for 2007. However, their new methodology does not alleviate this problem. In their 2007 workforce report, the FAA used data from FY 2005 and FY 2006 to predict future attrition patterns, diluting the effect of the IWRs which only affected the last month of FY 2006. For example, the 2005 to 2006 data indicated that 24 percent of retirees were likely to be in their first year of eligibility – 168 controllers according to FAA predictions or 218 using actual retirements. In actuality 44 percent of retirees – 404 controllers – chose to do so in that first year of eligibility. The IWRs have created a new paradigm wherein controllers

[7] based on payroll data for FY 2007 obtained by NATCA from the FAA.
[8] Based on payroll data obtained by NATCA from the FAA. They are current as of January 5, 2008.
[9] FAA *A Plan for the Future 2006-2015: The Federal Aviation Administration's 10-year Strategy for the Air Traffic Control Workforce June 2006.*

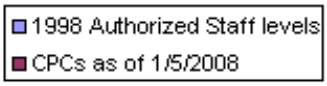
are leaving the agency as soon as they are able, and the agency has not planned for attrition based on the post-IWR reality

Understaffed Facilities

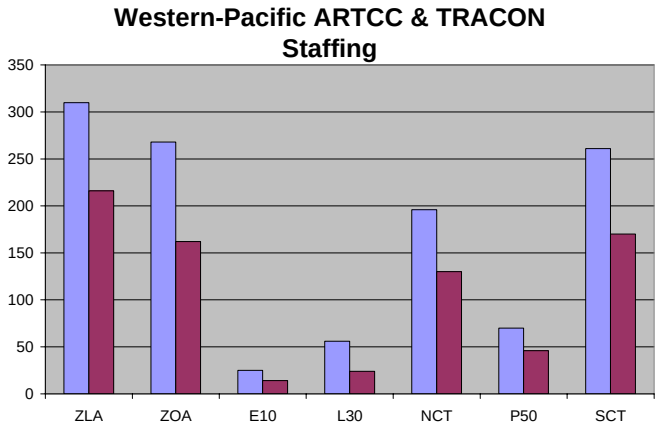
The result of this unprecedented attrition is that facilities nationwide are severely understaffed. As of January 5, 2008 there were 11,077 CPCs working in FAA facilities, the lowest number in 15 years. There are 1,093 fewer CPCs now than there were before the IWR and 1724 fewer than the FAA high-point in 2002.[10]

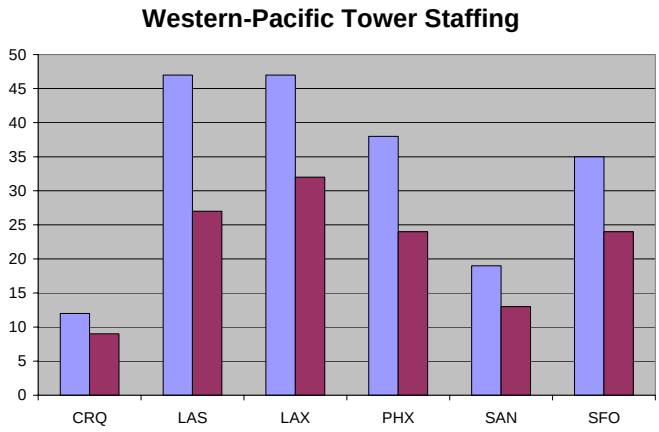
The following graphs depict actual staffing levels at major facilities in three of the busiest regions in the country: The Southern region, which includes the Atlanta area; the Eastern Region which includes both New York and DC areas, and the Western Pacific Region which includes the state of California. Staffing comparisons for all regions are included in Appendix B.

The graphs compare the number of CPCs working in each of these facilities as of the end of FY 2007, with the number of controllers jointly authorized for each facility by the FAA and NATCA in the 1998 contract. As the graphs illustrate, every one of these major facilities is operating short-staffed, many at less than 75 percent of the authorized level. Some facilities, like Oakland Center (which controls high altitude airspace over Northern California), are operating with only 60 percent of the staff they were authorized.[11]



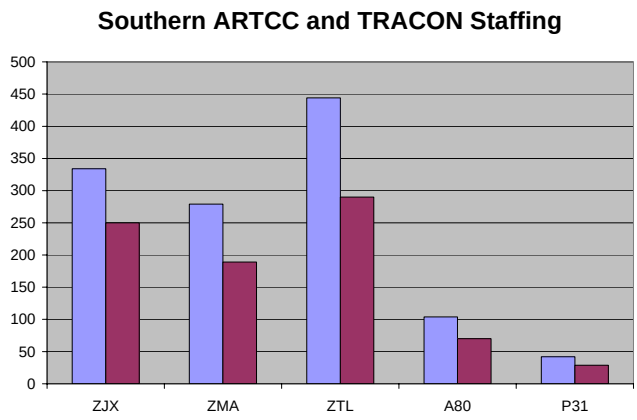
Western-Pacific Region

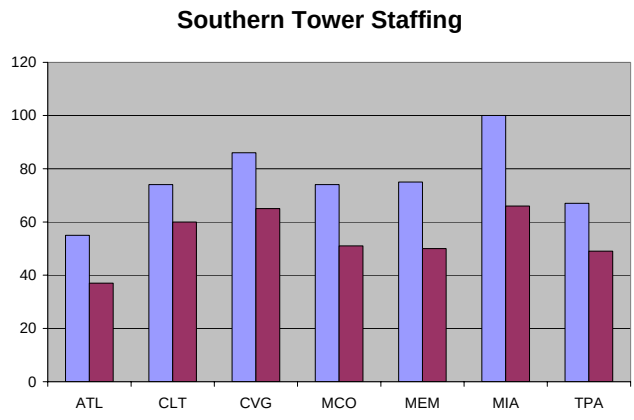




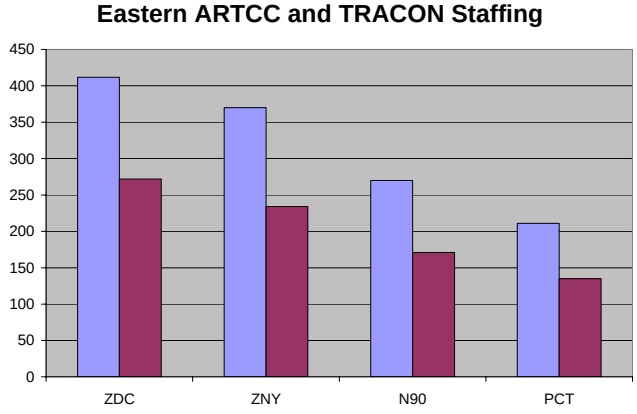
[10] Based on payroll data obtained by NATCA from the FAA and historical FAA documents obtained by NATCA.
[11] Based on payroll data obtained by NATCA from the FAA.

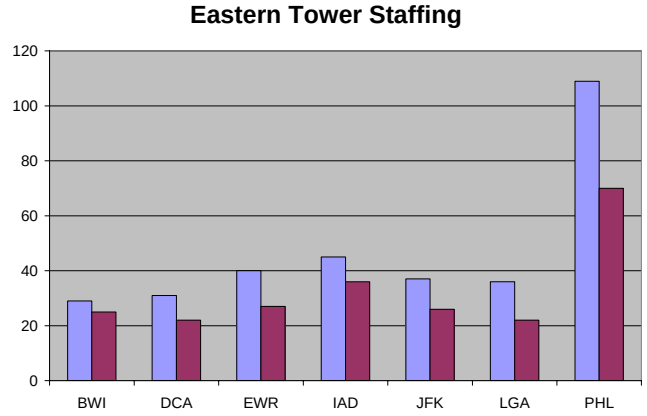
Southern Region Staffing





Eastern Region Staffing





High losses among veteran controllers also mean that the ATC workforce is not only shrinking, but is suffering a significant loss of experience. Simple mathematics shows that recently-certified, less-experienced controllers will have to be relied upon to provide training for new hires, in addition to working an increasing percentage of traffic. There has been ample research on the topic of experience and its correlation to work performance, nearly all of which has shown experience to be positively correlated with, and an effective predictor of, performance.[12] The importance of experience is even more pronounced for complex tasks, one study found.[13] In the highly complex universe of air traffic control, experience is crucial.

[12] Quinones, Miguel, J. Kevin Ford, Mark Teachout "The Relationship Between Work Experience and Job Performance: A Conceptual and Meta-Analytic Review", *Personnel Psychology* 1995 v. 48.
[13] Avolio, Bruce, David Waldman, Michael McDaniel "Age and work performance in non-managerial jobs: the effects of experience and occupational type" *Academy of Management Journal* 1990. Volume 33, No. 2 407-422.

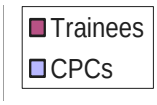
A Workforce in Training

FAA estimates of the controller workforce differ from those above because the agency counts not only CPCs but also those still in training, including individuals who are not certified to work traffic at any sector. Although the staffing levels authorized in 1998 do not exclude developmentals, at the time the contract was signed, developmentals in the system accounted for less than 10 percent of the authorized levels.[14] No one at that time predicted that the number of trainees in the system would come to make up a significant portion of the workforce or that uncertified controllers would be relied upon to work large amounts of air traffic. As a consequence of the rise in controller attrition, trainees have come to represent a growing portion of the workforce. As of January 5, 2008 one quarter of the ATC workforce was still in training.

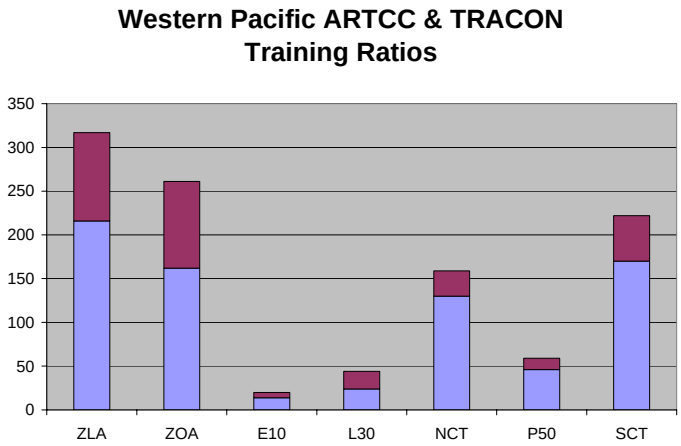
While trainees make up 25.3 percent of the entire controller workforce, that number varies from facility to facility. Seventy-four facilities – including Las Vegas TRACON, LaGuardia Tower, Phoenix Tower, and Oakland Center[15] – currently exceed the manageable upper limit of 35 percent.[16] Eighteen ATC towers have more trainees than fully certified controllers.[17]

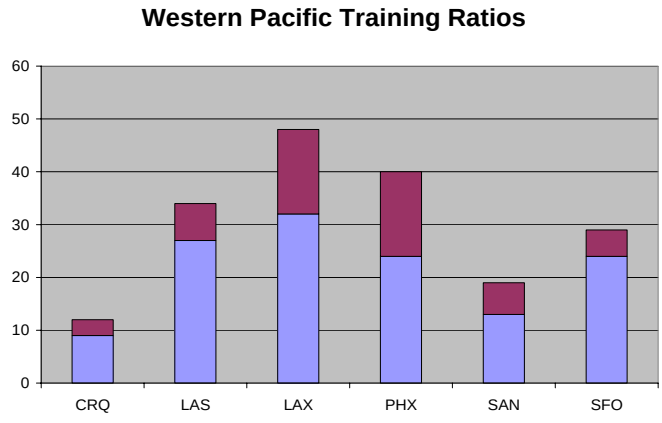
The following graphs illustrate the proportion of the workforce that was still in training as of the end of FY 2007 at major facilities in the Eastern, Southern, and Western Pacific regions (graphs for all regions are included in Appendix D). The graphs show that trainees make up a significant portion of the work force at each of these facilities. Many of these facilities already exceed the manageable limit, and some, such as Las Vegas TRACON and Phoenix Tower, are approaching 50 percent.

[14] This percentage is an estimate based on figures in GAO-02-591 and GAO/RCED-97-84. In the 1997 report, the GAO estimated that the average controller took 3 years to reach full certification. Thus the percentage was calculated based on new hire data in the GAO report for the three years prior to staffing level authorization.
[15] These statistics are based on payroll data obtained by NATCA from the FAA. They are current as of January 5, 2008.
[16] Department of Transportation Inspector General Report AV-2007-032, "FAA Continues To Make Progress In Implementing Its Controller Workforce Plan, But Further Efforts Are Needed In Several Key Areas" 9 February 2007 pg 13.
[17] These facilities are: HSV, FAR, PRC, FFZ, SEE, TOA, TEB, BUR, CCR, VGT, FCM, TMB, NEW, HLN, MRY, RST, CNO and CMA

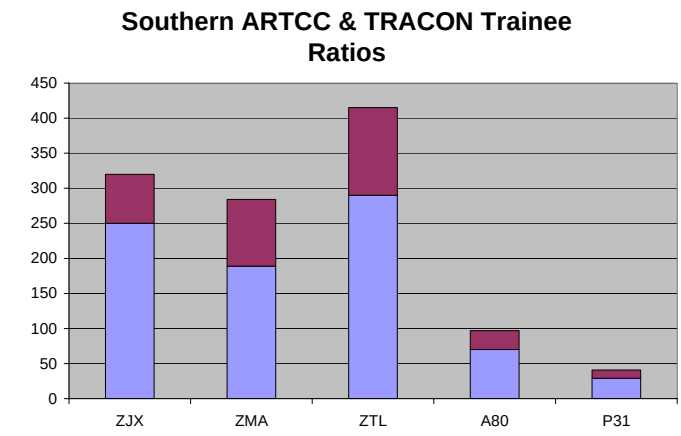


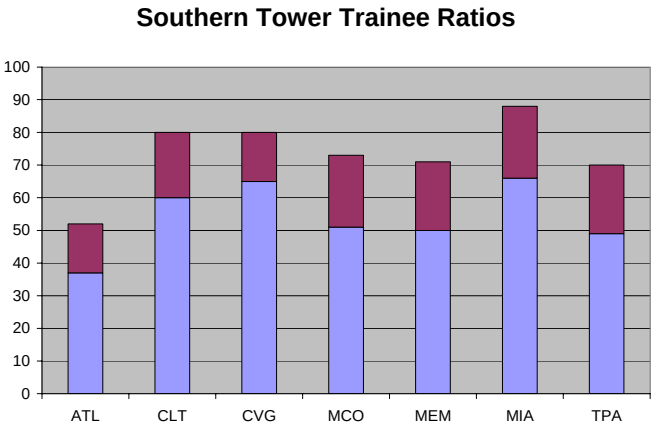
Western Pacific Region Trainee Ratios



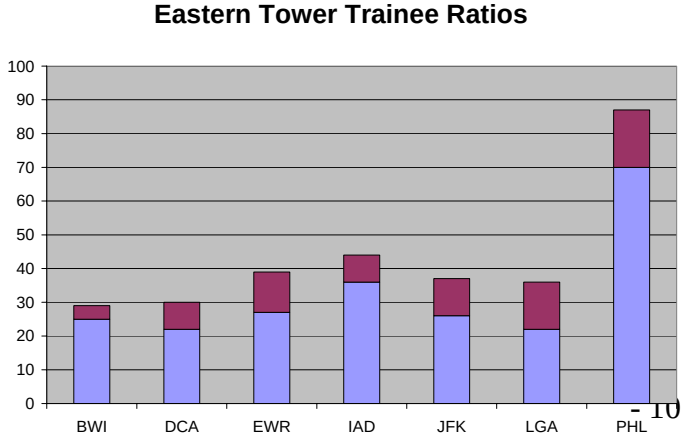


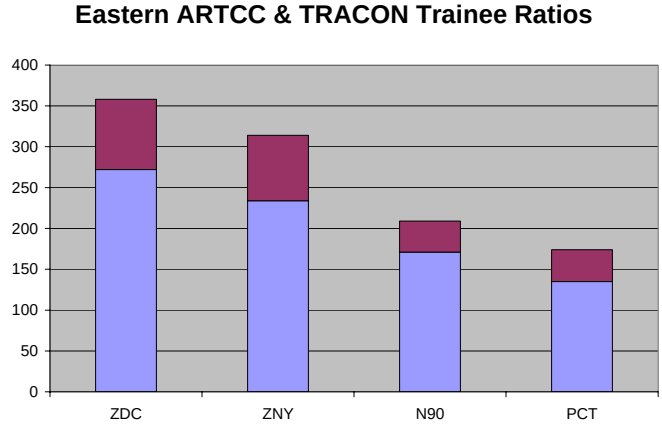
Southern Region Trainee Ratios





Eastern Region Trainee Ratios





The FAA is relying on these trainees to replace controllers who are leaving, but this strategy depends on high rates of training success and rapid certification, neither of which is occurring. Union research has shown that more than 200 trainees have failed out since end of FY 2006 or nearly 20 percent of those that were hired during that fiscal year.[18] Furthermore, the staffing shortage has caused the training process to slow, as understaffed facilities suffer a shortage of CPCs capable of giving training. At Miami Center, for example, trainees have had to wait up to sixteen months from their date of hire to receive any on the job training (OJT)[19] due to the facility's staffing shortage. Additionally, understaffed facilities must rely increasingly on developmentals – those not yet fully certified – to work traffic, thereby limiting their opportunities to receive additional training. In their 2006 workforce report the FAA has stated that "inadequate staffing levels will result in…delays in training"[20] and that has proven to be the case.

Although OJT is an integral part of preparing the next generation of air traffic controller controllers, training itself adds a level of complexity to ATC operations. During OJT trainees work live air traffic, while a CPC monitors both the trainee's actions and the radar. This additional level of complexity increases the likelihood of producing errors. For example in the first month of FY 2008 a disproportionate 13 percent of operational errors occurred during OJT.[21] As recently as December 27, 2007, a controller-in-training at Chicago Center was involved in a serious operational error. This trainee allowed an American Airlines MD-80 departing from O'Hare to come within 400 vertical feet of a regional jet on its way to Milwaukee before the CPC trainer was able to step in and avert a catastrophic collision.

Furthermore, as referenced above, facilities are relying increasingly on developmentals to work traffic. These individuals not only lack experience but often have never worked at adjacent positions. Air traffic control is a team effort, requiring a deep understanding of how one's own actions impact those working adjacent airspace – a skill that developmentals simply have not had the opportunity to develop. While the FAA does not distinguish between errors made by developmentals working solo and those made by Certified Professional Controllers, some NATCA locals maintained their own data. At Atlanta Center, six of the 62 errors in FY 2007 were made by developmentals working solo and an additional 16 occurred during OJT, for a combined 35 percent of errors. Of the 35 errors at Chicago Center four were by developmentals, and five more were during OJT (26 percent). At Miami Center there were 28 errors, three made by developmentals working solo and three during OJT (21 percent).

Workload and Fatigue

In April 2007, the National Transportation Safety Board (NTSB) placed fatigue on its list of most wanted transportation safety improvements, calling upon the FAA to take steps to "reduce accidents and incidents caused by human fatigue." Since 1989 the NTSB has issued more than

[18] Survey of facilities conducted by NATCA National Legislative Committee, January 2008. Statistics reflect results from over 300 facilities.
[19] Interview with facility representative from ZMA
[20] "A Plan for the Future 2006-2015: The Federal Aviation Administration's 10-Year Strategy for the Air Traffic Control Workfoce" June 2006, Federal Aviation Administration
[21] FAA monthly Operational Error summary for 11/2007

80 fatigue-related safety recommendations. Of the six issued to the FAA that remain open, four have not been satisfactorily addressed.[22] Additionally, the GAO report on runway and ramp safety[23] cited controller fatigue as one of the main threats to runway safety and asserted that "progress on addressing runway safety will be impeded until the human factors issues involving fatigue are addressed."

Although levels of fatigue cannot be easily measured, the effects should not be underestimated. One study showed that the cognitive psychomotor impairment experienced after 17 hours of sustained wakefulness was the equivalent of that experienced by an individual with a blood alcohol concentration of .05 percent, the legal intoxication limit for driving in most western countries.[24]

The IWRs and the resultant staffing crunch have created an environment conducive to high levels of fatigue among ATC. Operations managers, left with an understaffed facility, are faced with two choices for handling the ever-increasing air traffic: call in overtime or work short-staffed.

Both of these options create fatigue among the workforce. The staffing problem is so severe that controllers are often experiencing a dangerous combination of working short-staffed, overtime shifts. Controllers that have worked longer hours and longer weeks are also working more complex and difficult positions without the benefit of a fully staffed shift.

Understaffed Shifts

Prior to the IWR, many facilities had locally-agreed-upon staffing levels for each shift; larger facilities had these levels further delineated by area. Results of a recent facility survey conducted by NATCA showed 97 percent of facilities are operating at least one controller short on a typical shift. The average morning shift is operating with 1.7 fewer controllers than had previously been authorized (4.2 at major facilities), more than 367 controllers short in total. In the evenings the numbers are even worse. Each shift is short 1.8 controllers, for a total of 383 controllers short over the 211 facilities that responded to that question in the survey. [25]

Some of the busiest facilities in the country are also some of the most short-staffed. McCarran International Airport in Las Vegas (LAS), operated with only 33 percent of the authorized number of controllers on a randomly selected day. JFK Tower in New York operated with 43 percent of the authorized amount.

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[22] NTSB Most Wanted Transportation Safety Improvements: Federal Issues, Aviation: Reduce Accidents and Incidents Caused By Human Fatigue
http://www.ntsb.gov/Recs/mostwanted/aviation_reduce_acc_inc_humanfatig.htm

[23] GAO Report to Congressional Requesters *Runway and Ramp Safety: Sustained Efforts to Address Leadership, Technology, and Other Challenges Needed to Reduce Accidents and Incidents* GAO-08-29

[24] Dawson, Drew and Katherine Reid, "Fatigue, Alcohol, and Performance Impairment", *Nature* vol. 388 p. 235-237. 17 July 1997

[25] NATCA government Affairs department issued this survey on 11 November 2007 and collected responses through 29 January 2008. A total of 238 responses were received. 215 facilities answered the questions relevant to the shift staffing statistics indicated. The data shown is based on the responses from those 215 facilities.

A short-staffed shift often means that managers are forced to reduce the number of Radar Assistants (RAs), increasing the workload for the controller working the radar. A controller working without an assistant is responsible not only for communication with aircraft but also coordination with other controller positions and facilities and updating flight progress information. Additionally, managers may be forced to combine positions, creating greater complexity by requiring each controller to monitor greater numbers of confliction points and an increased volume of aircraft. An FAA document examining errors at Eastern Terminal facilities between October 1, 2006 and Sepbember 25, 2007 revealed that nearly one quarter of these errors (75 of 313) occurred while positions were combined.[26] The FAA's own research stated that, "evidence was found that increased sector complexity may be associated with reduced situational awareness and may lead to a large number of, and more severe, errors."[27]

Overtime

In an understaffed facility, the only way to properly staff most shifts is to call in overtime. The recent study by the GAO reports that "at least 20 percent of the controllers at 25 air traffic control facilities, including towers at several major airports were working six-day weeks." These 25 facilities included 6 facilities that had between 40 percent and 52 percent of their controllers working six-day weeks, and seven facilities that had 30-39 percent working six-day weeks. Hartsfield-Jackson Atlanta International Airport, the busiest airport in the country, had 52 percent of their controller workforce regularly working six-day weeks.

The Implications: Errors and Delays

Each controller is capable of working a finite number of aircraft safely at one time. That number differs based on an individual controller's skill and experience, the complexity of the airspace, the presence or absence of a radar assistant, the weather, the individual's level of fatigue and a number of environmental and other factors. The staffing crisis and the IWRs that exacerbated it are burning this candle at both ends. It is creating a workforce of less experienced controllers, making them work increasingly complex airspace in a higher stress environment with fewer opportunities for rest.

Every time the amount of traffic exceeds the optimal level for the number of controllers present there are two options: work the aircraft or restrict the number of aircraft that are allowed to enter this airspace. Most often these decisions are not made at the level of individual controller; rather, they are made by traffic management coordinators at the area, facility, or National Airspace System (NAS) level. Each time the first option is chosen, there is an increased chance for error. Controllers report that many operational errors occur in the comparative calm following a major "push", a likely result of mental fatigue. This problem is exacerbated when short staffing not only increases the frequency and severity of these pushes but also limits a controller's ability to take breaks and recuperate after these busy times. Each time the second option is chosen, planes are prevented from taking off, held in holding patterns, or vectored

[26] FAA document entitled "Service Area District OEs Between 10/1/2006 and 9/25/2007"

[27] Rogers, Mark D, Richard H Mogford, Leslye S Mogford, US Department of Transportation, Federal Aviation Administration Office of Aviation Medicine *The Relationship of Sector Characteristics to Operational Errors.* May 1998

along longer routes in order to slow the progression of aircraft into the airspace. These practices cause delays.

FAA publications indicate that understaffing can have negative consequences, though they assure the flying public that those effects will be "observed in the area of system capacity – not system safety." "Inadequate staffing levels," they say "will result in air traffic control system delays and delays in training."[28] NATCA research shows that the effects can be observed in both system capacity and system safety.

Increased Operational Errors

A survey of more than 230 ATC facilities showed an overall eight percent increase in operational errors between FY 2006 and FY 2007. Seventy-eight facilities – including 36 major facilities – reported an increase in errors.[29] It should be noted that these survey results are likely to reflect an underestimate of the actual increase in near-misses. In June of 2007 the FAA redefined the term operational error so as to only include those incidents where less than 90 percent of the separation minimum was maintained, thereby skewing the statistics to give the appearance of improvements to safety.[30]

Not surprisingly, many of the facilities suffering from the most severe staffing shortages have experienced a severe increase in operational errors. Los Angeles Center (ZLA), reported a three year high of 52 errors in FY 2007, an increase from 32 in FY 2005.[31] At the end of FY 2007, ZLA employed only 216 fully certified controllers – barely exceeding 2/3 of the 310 authorized in the 1998 contract and 11 controllers short of the FAA's own staffing minimum.[32]

Similar statistics are true at Chicago Terminal Radar Approach Control (C90 or Chicago TRACON), which made the news this December when controller error caused an American Airlines 757 to come within three miles of a United Airlines 757 crossing its path while both planes were being directed to land at O'Hare. This facility has seen the number of operational errors increase from 18 in FY 2005 to 38 in FY 2007. As of the end of FY 2007 the facility employed 83 fully certified controllers, well below the authorized level of 101. The level of staffing is expected to drop even more, as 27 CPCs will be eligible to retire before the end of FY 2008.

So far in FY 2008, safety appears to be further compromised. Except for the first two days of the fiscal year, the FAA has exceeded its own benchmarks for allowable numbers of operational errors every day.[33] We are also poised to exceed the FAA's allowable limit of runway incursions for the first time since the benchmarks were recorded. At Chicago Center (ZAU), they exceeded

[28] "A Plan for the Future 2006-2015: The Federal Aviation Administration's 10-Year Strategy for the Air Traffic Control Workforce" June 2006, Federal Aviation Administration
[29] NATCA Government Affairs Department issued this survey on 11 November 2007 and collected responses through 29 January 2008. A total of 238 responses were received.
[30] FAA Air Traffic Organization Policy Notice N JO 7210.663, Subject: Operational Error Reporting, Investigation, and Severity Policies
[31] Error data from NATCA survey results
[32] Based on payroll data obtained by NATCA from the FAA.
[33] Source: FAA today 10/1/2007 – 1/16/2008

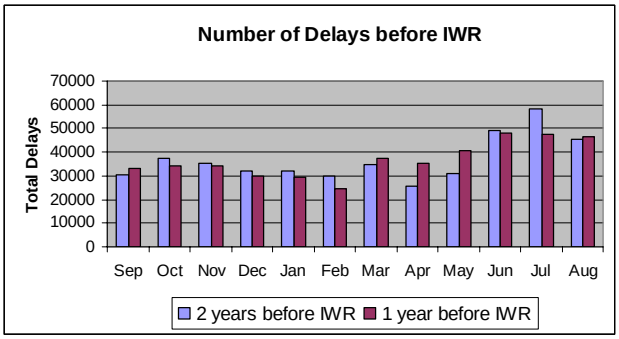
their annual limit of four serious (A or B level) operational errors during the first 11 weeks of the fiscal year.

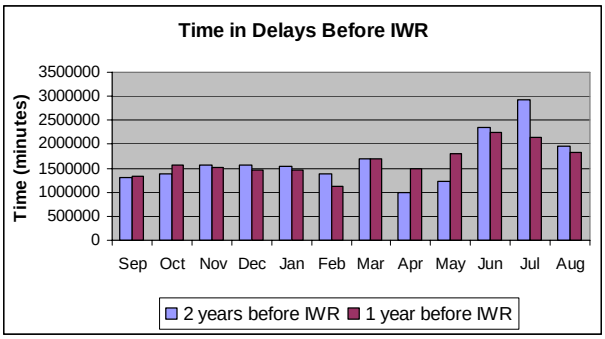
Delays

As any air traveler in the United States can tell you, delays have increased as well. In FY 2007 20,378 more aircraft were delayed than in the previous fiscal year. The average length of the delay also increased by over six minutes, making for a combined increase of nearly 363 weeks over the previous fiscal year.[34]

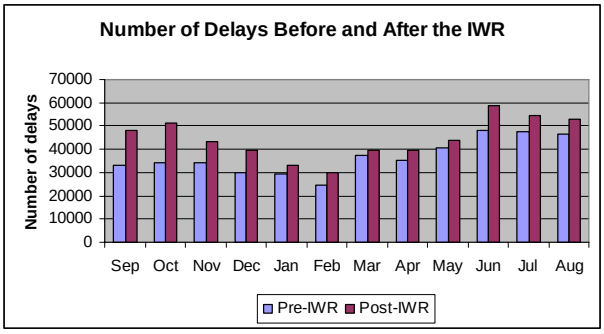
Popular wisdom attributes these delays to an increase in air travel. However, the increase in delays far outmeasures the increase in operations. According to FAA data, total operations in FY 2007 was only 0.2 percent higher than the previous fiscal year. In contrast, total time of delays increased by 18 percent.[35]

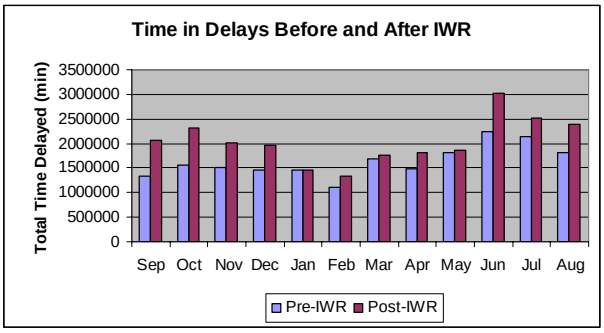
As with the errors, the steep increase in delays can be largely attributed to the work rules imposed on the air traffic controllers. Observe the following pairs of graphs. The first pair shows delays by month from September 2004 to August 2006 – the two years immediately preceding the imposition of the IWRs. While overall errors increased in the latter year the increase was by no means consistent.[36]





This stands in stark contrast to the second pair, which looks at delays from September 2005 to August 2007 -- the years immediately preceding and immediately following the IWRs. During the first year under the IWRs, there has been a consistent increase in delays in every single month, as well as a far more profound increase in overall delays.





[34] Source: OPSNET delays database
[35] Source: OPSNET operations database
[36] Source: OPSNET delays database

It also should come as no surprise that the facilities suffering from some of the most dire staffing shortages are also experiencing severe increases in delays. Philadelphia Airport, for example, is operating with 42 fewer controllers than they were authorized in 1998 (61 percent), and is ranked 29th of 32 in departure on-time performance with only 69 percent of flights leaving on time. This is a three point decrease since the previous year and a 13 point decrease since 2002.[37]

In fact, the five worst-ranked airports for arrival delays are each operating with no more than 76 percent of their approved work force. LaGuardia, the airport with the largest percentage of arrival delays has 64 percent their approved number of controllers, Newark has 65 percent, JFK has 73 percent, Philadelphia, as noted above has 61 percent and O'Hare has 76 percent of the approved workforce. [38]

Even those with comparatively few delays are beginning to feel the effects of the IWRs. Orlando Airport, has fallen from fifth in on-time performance (arrivals) to 15th between November 2006 and November 2007. During that same time frame, 34 individuals –nearly 50 percent of those employed there – stopped working as controllers at Orlando Tower. [39]

Conclusion

The FAA, by imposing work rules on its controller workforce, has caused an unprecedented rate of attrition of air traffic controllers. Although the agency had expected an increase in retirements, as those hired in the aftermath of the PATCO strike reach the age of retirement eligibility, the IWRs have pushed both retirement and resignation rates far beyond what the agency had prepared for. The agency has been unable to replace controllers quickly enough and is now experiencing dangerously high ratios of trainees to CPCs, delays in training and an increased reliance on uncertified individuals to work air traffic. The staffing shortage also means that each controller is frequently forced to do a job designed for two to three people, work frequent over time shifts and has fewer opportunities for rest. The resultant fatigue has led to an increase in both operational errors and flight delays.

The first step to alleviating the strain on the air traffic control system is to remove the IWRs and require the FAA and NATCA to return to the bargaining table. The fulfillment of this legal obligation, combined with the removal of unfavorable conditions of the IWR, will stem the flow of veteran controllers from the workforce.

[37] RITA Bureau of Transportation Statistics
[38] RITA Bureau of Transportation Statistics
[39] RITA Bureau of Transportation Statistics

Appendix A: Air Traffic Control Facility Codes

BHM	Birmingham Municipal ATCT	Alabama
HSV	Huntsville ATCT	Alabama
MGM	Montgomery RAPCON	Alabama
MOB	Mobile ATCT	Alabama
A11	Anchorage TRACON	Alaska
ANC	Anchorage International ATCT	Alaska
FAI	Fairbanks International ATCT	Alaska
JNU	Juneau International ATCT	Alaska
MRI	Merrill Field ATCT	Alaska
ZAN	Anchorage	Alaska
DVT	Deer Valley	Arizona
FFZ	Mesa ATCT	Arizona
GCN	Grand Canyon ATCT	Arizona
P50	Phoenix TRACON	Arizona
PHX	Phoenix International ATCT	Arizona
PRC	Prescott ATCT	Arizona
SDL	Scottsdale ATCT	Arizona
TUS	Tucson International ATCT	Arizona
U90	Tucson TRACON	Arizona
FSM	Fort Smith TRACAB	Arkansas
LIT	Little Rock ATCT	Arkansas
APC	Napa County ATCT	California
BFL	Bakersfield ATCT	California
BUR	Burbank ATCT	California
CCR	Concord ATCT	California
CMA	Camarillo ATCT	California
CNO	Chino ATCT	California
CRQ	Carlsbad ATCT	California
E10	High Desert TRACON	California
EMT	El Monte ATCT	California
FAT	Fresno ATCT	California
HWD	Hayward ATCT	California
LAX	Los Angeles International ATCT	California
LGB	Long Beach ATCT	California
LVK	Livermore ATCT	California
MRY	Monterey Peninsula ATCT	California
MYF	San Diego Montgomery ATCT	California
NCT	Northern California TRACON	California
OAK	Oakland ATCT	California
ONT	Ontario International ATCT	California
PAO	Palo Alto ATCT	California
POC	La Verne Brackett ATCT	California

PSP	Palm Springs ATCT	California
RHV	Reid Hillview ATCT	California
SAN	San Diego ATCT	California
SBA	Santa Barbara Municipal ATCT	California
SCK	Stockton ATCT	California
SCT	So. California TRACON	California
SEE	Gillespie Field ATCT	California
SFO	San Francisco International ATCT	California
SJC	San Jose International ATCT	California
SMF	Sacramento Metro ATCT	California
SMO	Santa Monica Municipal ATCT	California
SNA	Orange County ATCT	California
STS	Sonoma County ATCT	California
TOA	Torrance Municipal ATCT	California
VNY	Van Nuys ATCT	California
ZLA	Los Angeles ARTCC	California
ZOA	Oakland ARTCC	California
APA	Centennial ATCT	Colorado
ASE	Aspen Pitkin County ATCT	Colorado
BJC	Jefferson County Arpt ATCT	Colorado
COS	Colorado Springs ATCT	Colorado
D01	Denver TRACON	Colorado
DEN	Denver International ATCT	Colorado
PUB	Pueblo Memorial TRACAB	Colorado
ZDV	Denver ARTCC	Colorado
BDL	Bradley International ATCT	Connecticut
Y90	Yankee TRACON	Connecticut
ILG	Greater Wilmington ATCT	Delaware
DAB	Daytona Beach ATCT	Florida
FLL	Fort Lauderdale ATCT	Florida
FPR	Fort Pierce ATCT	Florida
FXE	Ft. Lauderdale Exec ATCT	Florida
JAX	Jacksonville International ATCT	Florida
MCO	Orlando International ATCT	Florida
MIA	Miami International ATCT	Florida
ORL	Orlando Executive ATCT	Florida
P31	Pensacola TRACON	Florida
PBI	Palm Beach International ATCT	Florida
PIE	St. Petersburg ATCT	Florida
PNS	Pensacola Regional ATCT	Florida
RSW	Fort Myers ATCT	Florida
SFB	Central Florida Regional ATCT	Florida
SRQ	Sarasota ATCT	Florida

TLH	Tallahassee ATCT	Florida
TMB	Tamiami ATCT	Florida
TPA	Tampa International ATCT	Florida
VRB	Vero Beach Municipal ATCT	Florida
ZJX	Jacksonville ARTCC	Florida
ZMA	Miami ARTCC	Florida
A80	Atlanta Large TRACON	Georgia
AGS	Augusta ATCT	Georgia
ATL	Atlanta Hartsfield ATCT	Georgia
CSG	Columbus	Georgia
PDK	De Kalb Peachtree ATCT	Georgia
SAV	Savannah International ATCT	Georgia
ZTL	Atlanta ARTCC	Georgia
ZUA	Guam	GUAM
HCF	Honolulu Consolidated Facility	Hawaii
ITO	Hilo ATCT	Hawaii
OGG	Kahului ATCT	Hawaii
BOI	Boise ATCT	Idaho
TWF	Twin Falls ATCT	Idaho
ARR	Aurora Municipal ATCT	Illinois
C90	Chicago TRACON	Illinois
CMI	Champaign ATCT	Illinois
CPS	East St. Louis ATCT	Illinois
DPA	Dupage ATCT	Illinois
MDW	Chicago Midway ATCT	Illinois
MLI	Moline Quad City ATCT	Illinois
ORD	Chicago O'hare International ATCT	Illinois
PIA	Greater Peoria ATCT	Illinois
PWK	Palwaukee ATCT	Illinois
RFD	Rockford ATCT	Illinois
SPI	Springfield ATCT	Illinois
ZAU	Chicago ARTCC	Illinois
EVV	Evansville Dress Regional ATCT	Indiana
FWA	Fort Wayne Municipal ATCT	Indiana
HUF	Terre Haute ATCT	Indiana
IND	Indianapolis International ATCT	Indiana
LAF	West Lafayette ATCT	Indiana
SBN	South Bend ATCT	Indiana
ZID	Zid Indianapolis ARTCC	Indiana
ALO	Waterloo Municipal ATCT	Iowa
CID	Cedar Rapids Municipal ATCT	Iowa
DSM	Des Moines Municipal ATCT	Iowa
SUX	Sioux City ATCT	Iowa

ICT	Wichita Midcontinent ATCT	Kansas
ZKC	Kansas City ARTCC	Kansas
CVG	Greater Cincinnati International ATCT	Kentucky
LEX	Lexington ATCT	Kentucky
LOU	Louisville Bowman ATCT	Kentucky
SDF	Louisville Standiford ATCT	Kentucky
BTR	Baton Rouge Metro ATCT	Louisiana
LCH	Lake Charles TRACAB	Louisiana
LFT	Lafayette Regional ATCT	Louisiana
MLU	Monroe Regional TRACAB	Louisiana
MSY	New Orleans Moisant ATCT	Louisiana
NEW	Lakefront ATCT	Louisiana
SHV	Shreveport ATCT	Louisiana
BGR	Bangor International ATCT	Maine
PWM	Portland International ATCT	Maine
ADW	Andrews Air Force Base ATCT	Maryland
BWI	Baltimore Washington International ATCT	Maryland
ACK	Nantucket ATCT	Massachusetts
BED	Bedford ATCT	Massachusetts
BOS	Boston Logan ATCT	Massachusetts
K90	Cape TRACON	Massachusetts
ARB	Ann Arbor Municipal ATCT	Michigan
AZO	Kalamazoo County ATCT	Michigan
D21	Detroit TRACON	Michigan
DTW	Detroit Metro ATCT	Michigan
FNT	Flint ATCT	Michigan
GRR	Grand Rapids ATCT	Michigan
LAN	Lansing ATCT	Michigan
MBS	Saginaw ATCT	Michigan
MKG	Muskegon County ATCT	Michigan
PTK	Pontiac ATCT	Michigan
TVC	Traverse City ATCT	Michigan
YIP	Willow Run ATCT	Michigan
DLH	Duluth International ATCT	Minnesota
FCM	Flying Cloud ATCT	Minnesota
M98	Minneapolis TRACON	Minnesota
MIC	Minneapolis Crystal ATCT	Minnesota
MSP	Minneapolis St. Paul ATCT	Minnesota
RST	Rochester Municipal TRACAB	Minnesota
STP	St. Paul Downtown ATCT	Minnesota
ZMP	Minneapolis ARTCC	Minnesota
GPT	Gulfport Biloxi Regional ATCT	Mississippi
JAN	Jackson International ATCT	Mississippi

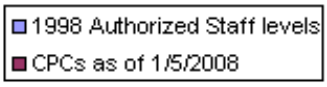
NMM	Meridian Nas RATCF	Mississippi
MCI	Kansas City International ATCT	Missouri
MKC	Kansas City Downtown ATCT	Missouri
SGF	Springfield Regional ATCT	Missouri
STL	St. Louis/Lambert International ATCT	Missouri
SUS	Spirit Of St. Louis ATCT	Missouri
T75	St. Louis TRACON	Missouri
BIL	Billings International ATCT	Montana
GTF	Great Falls International ATCT	Montana
HLN	Helena Regional ATCT	Montana
LNK	Lincoln Municipal ATCT	Nebraska
OMA	Omaha ATCT	Nebraska
R90	Omaha TRACON	Nebraska
L30	Las Vegas TRACON	Nevada
LAS	Las Vegas International ATCT	Nevada
RNO	Reno ATCT	Nevada
VGT	North Las Vegas ATCT	Nevada
A90	Boston Consolidated TRACON	New Hampshire
MHT	Manchester ATCT	New Hampshire
ZBW	Boston ARTCC	New Hampshire
ACY	Atlantic City ATCT	New Jersey
CDW	Caldwell ATCT	New Jersey
EWR	Newark International ATCT	New Jersey
MMU	Morristown Municipal ATCT	New Jersey
TEB	Teterboro ATCT	New Jersey
ABQ	Albuquerque ATCT	New Mexico
ROW	Roswell ATCT	New Mexico
ZAB	Albuquerque ARTCC	New Mexico
ALB	Albany County ATCT	New York
BGM	Edwin A. Link ATCT	New York
BUF	Greater Buffalo International ATCT	New York
ELM	Elmira ATCT	New York
FRG	Republic ATCT	New York
HPN	Westchester County ATCT	New York
ISP	Long Island Macarthur ATCT	New York
JFK	John F Kennedy International ATCT	New York
LGA	La Guardia ATCT	New York
N90	New York TRACON	New York
POU	Poughkeepsie ATCT	New York
RME	Griffiss Air Force Base ATCT	New York
ROC	Rochester Monroe County ATCT	New York
SYR	Syracuse International ATCT	New York
ZNY	New York ARTCC	New York

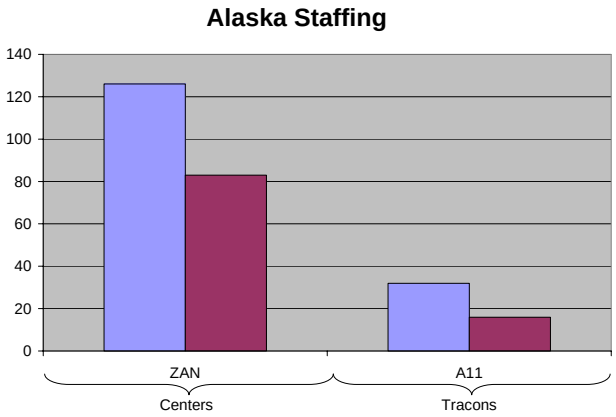
AVL	Asheville Regional ATCT	North Carolina
CLT	Charlotte ATCT	North Carolina
FAY	Fayetteville Municipal ATCT	North Carolina
GSO	Greensboro ATCT	North Carolina
ILM	Wilmington ATCT	North Carolina
RDU	Raleigh Durham ATCT	North Carolina
BIS	Bismarck TRACAB	North Dakota
FAR	Fargo ATCT	North Dakota
GFK	Grand Forks ATCT	North Dakota
CAK	Akron Canton Regional ATCT	Ohio
CLE	Cleveland Hopkins ATCT	Ohio
CMH	Port Columbus International ATCT	Ohio
DAY	Dayton International ATCT	Ohio
MFD	Mansfield Municipal ATCT	Ohio
TOL	Toledo Express ATCT	Ohio
YNG	Youngstown Municipal ATCT	Ohio
ZOB	Cleveland ARTCC	Ohio
OKC	Oklahoma City ATCT	Oklahoma
RVS	Tulsa Jones ATCT	Oklahoma
TUL	Tulsa International ATCT	Oklahoma
EUG	Eugene ATCT	Oregon
HIO	Portland Hillsboro ATCT	Oregon
P80	Portland TRACON	Oregon
PDX	Portland International ATCT	Oregon
ABE	Allentown ATCT	Pennsylvania
AGC	Allegheny County ATCT	Pennsylvania
AVP	Wilkes-Barre ATCT	Pennsylvania
ERI	Erie International TRACAB	Pennsylvania
MDT	Harrisburg International Arpt ATCT	Pennsylvania
PHL	Philadelphia International ATCT	Pennsylvania
PIT	Pittsburgh International ATCT	Pennsylvania
PNE	N.E. Philadelphia ATCT	Pennsylvania
RDG	Reading Municipal ATCT	Pennsylvania
SJU	San Juan International ATCT	Puerto Rico
ZSU	San Juan	Puerto Rico
PVD	Providence ATCT	Rhode Island
CAE	Columbia Metro ATCT	South Carolina
CHS	Charleston International ATCT	South Carolina
FLO	Florence City County ATCT	South Carolina
GSP	Greenville/Spartanburg	South Carolina
MYR	Myrtle Beach ATCT	South Carolina
FSD	Sioux Falls ATCT	South Dakota
BNA	Nashville Metro ATCT	Tennessee

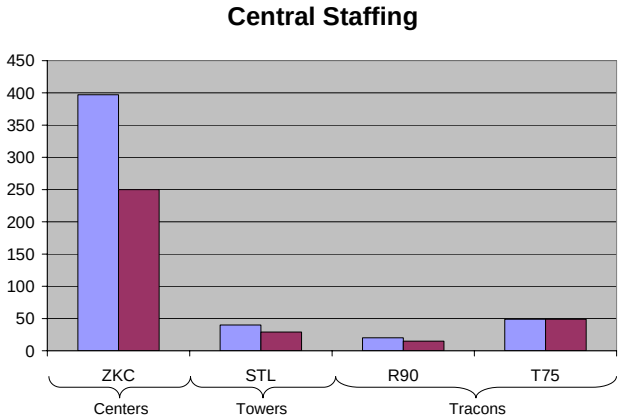
CHA	Chattanooga ATCT	Tennessee
MEM	Memphis International ATCT	Tennessee
TRI	Tri-City Regional ATCT	Tennessee
TYS	Knoxville ATCT	Tennessee
ZME	Memphis ARTCC	Tennessee
ABI	Abilene Dyess RAPCON	Texas
ACT	Waco ATCT	Texas
ADS	Addison ATCT	Texas
AFW	Fort Worth Alliance ATCT	Texas
AMA	Amarillo ATCT	Texas
AUS	Austin ATCT	Texas
BPT	Jefferson County ATCT	Texas
CRP	Corpus Christi ATCT	Texas
D10	Dallas/Fort Worth TRACON	Texas
DAL	Dallas Love Field ATCT	Texas
DFW	Dallas/Fort Worth ATCT	Texas
DWH	Houston Hooks ATCT	Texas
ELP	El Paso International ATCT	Texas
FTW	Fort Worth Meacham ATCT	Texas
GGG	Gregg County TRACAB	Texas
HOU	William P. Hobby ATCT	Texas
I90	Houston TRACON	Texas
IAH	Houston Int'l ATCT	Texas
LBB	Lubbock ATCT	Texas
MAF	Midland Regional ATCT	Texas
SAT	San Antonio ATCT	Texas
ZFW	Fort Worth ARTCC	Texas
ZHU	Houston ARTCC	Texas
S56	Salt Lake City TRACON	Utah
SLC	Salt Lake City International ATCT	Utah
ZLC	Salt Lake ARTCC	Utah
BTV	Burlington International ATCT	Vermont
STT	St THOMAS ATCT	Virgin Islands
DCA	Washington National ATCT	Virginia
HEF	Manassas ATCT	Virginia
IAD	Dulles International ATCT	Virginia
ORF	Norfolk International ATCT	Virginia
PCT	Potomac Large TRACON	Virginia
PHF	Patrick Henry International ATCT	Virginia
RIC	Richmond International ATCT	Virginia
ROA	Roanoke Regional ATCT	Virginia
ZDC	Washington ARTCC	Virginia
BFI	Boeing Field ATCT	Washington

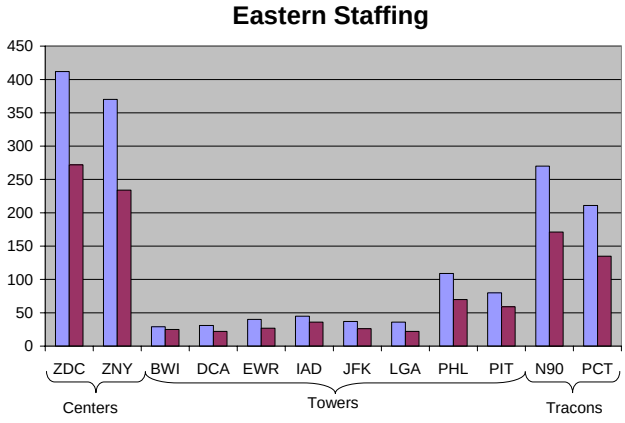
GEG	Spokane International ATCT	Washington
MWH	Grant County ATCT	Washington
PAE	Everett ATCT	Washington
PSC	Tri-Cities ATCT	Washington
S46	Seattle Tacoma TRACON	Washington
SEA	Seattle Tacoma International ATCT	Washington
ZSE	Seattle ARTCC	Washington
CKB	Clarksburg ATCT	West Virginia
CRW	Charleston ATCT	West Virginia
HTS	Huntington ATCT	West Virginia
GRB	Green Bay ATCT	Wisconsin
MKE	Milwaukee Mitchell ATCT	Wisconsin
MSN	Madison ATCT	Wisconsin
CPR	Casper ATCT	Wyoming

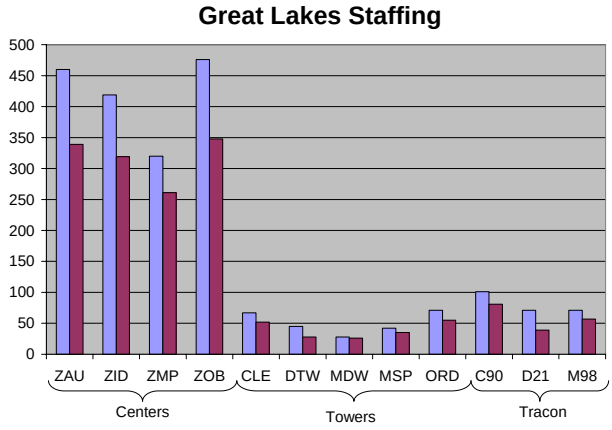
Appendix B: Air Traffic Control Facility Staffing by Region

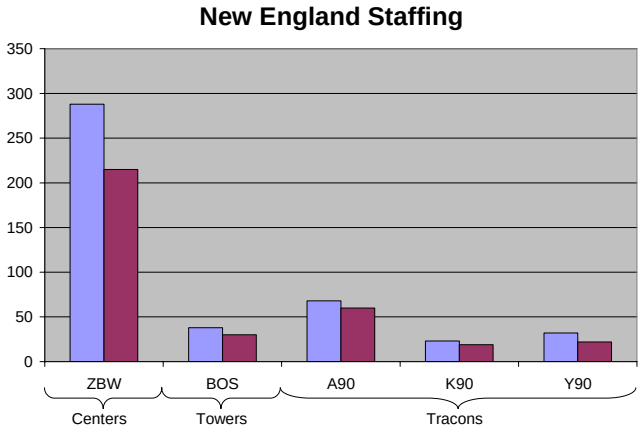


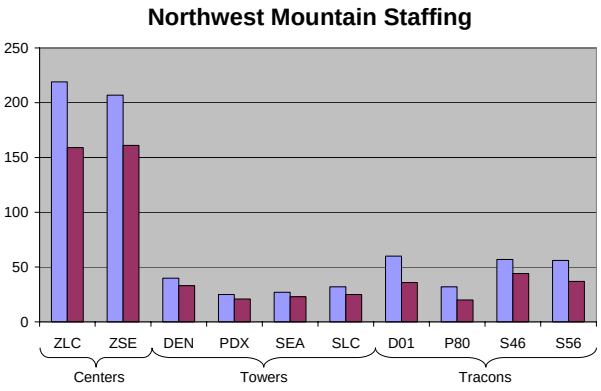


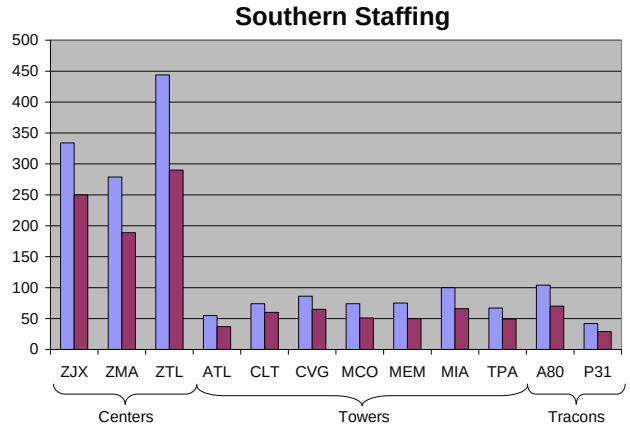


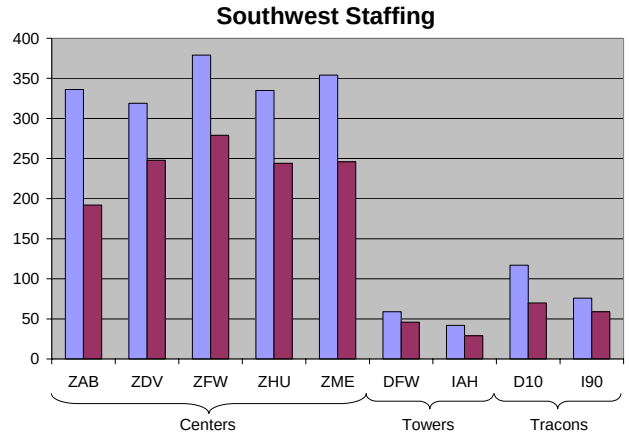









Southern Staffing
500
450
400
350
300
250
200
150
100
50
0
ZJX ZMA ZTL ATL CLT CVG MCO MEM MIA TPA A80 P31
Centers
Towers
Tracons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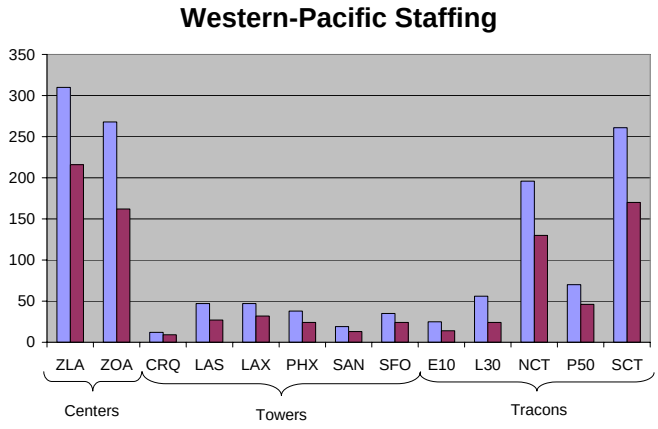
Centers
Towers
Tracons


Western-Pacific Staffing
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250
200
150
100
50
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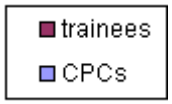
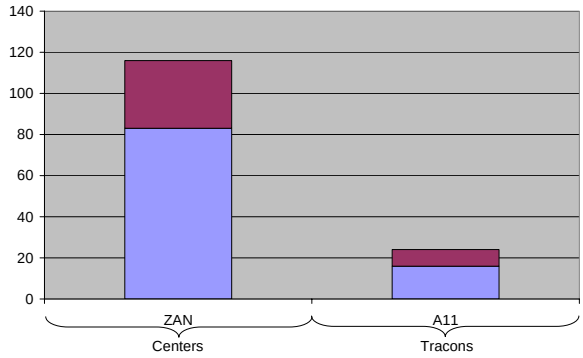
ZLA ZOA CRQ LAS LAX PHX SAN SFO E10 L30 NCT P50 SCT
Centers
Towers
Tracons

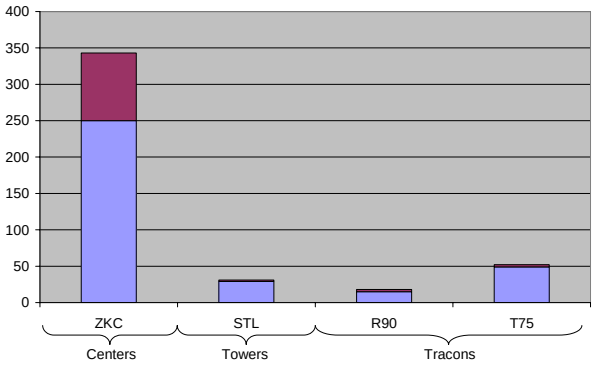
Appendix C: Trainee Ratios by Region



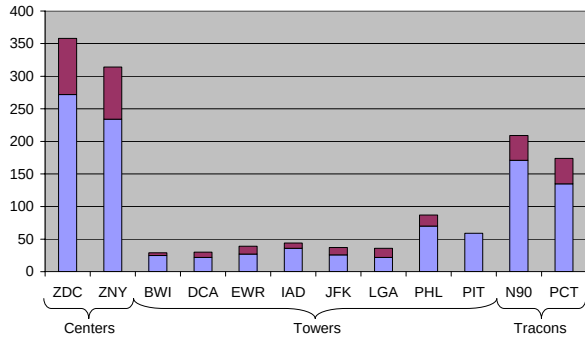
Alaska Trainee Ratio



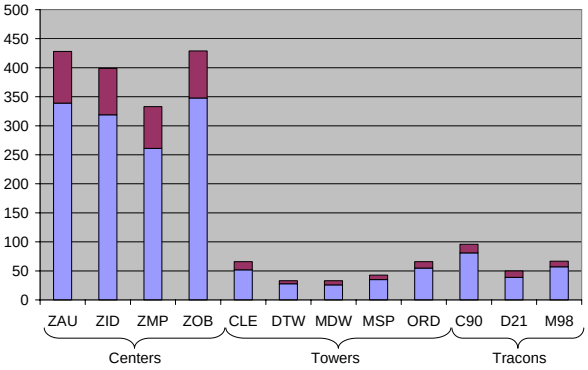
Central Trainee Ratios



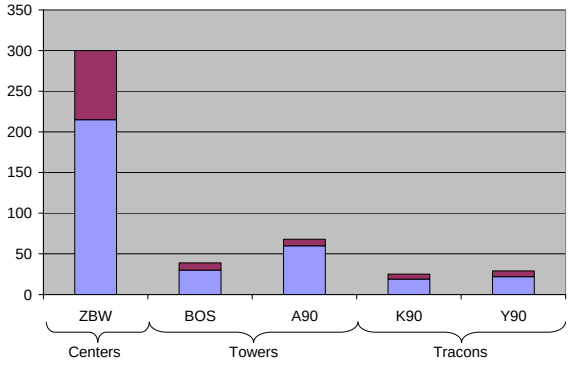
Eastern Trainee Ratios



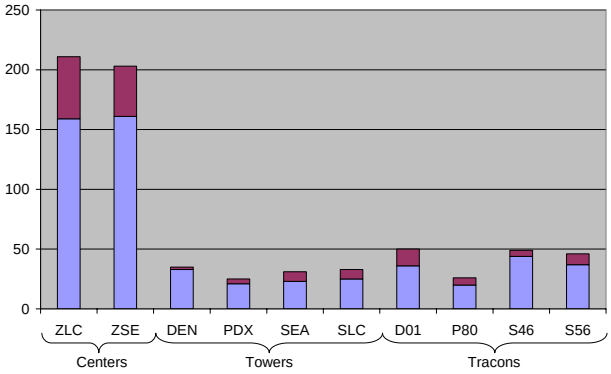
Great Lakes Trainee Ratios



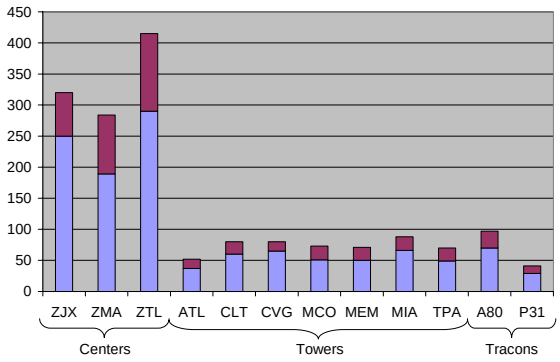
New England Trainee Ratios



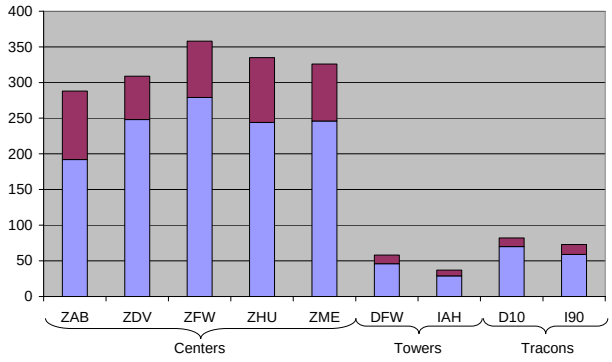
Northwest Mountain Trainee Ratios



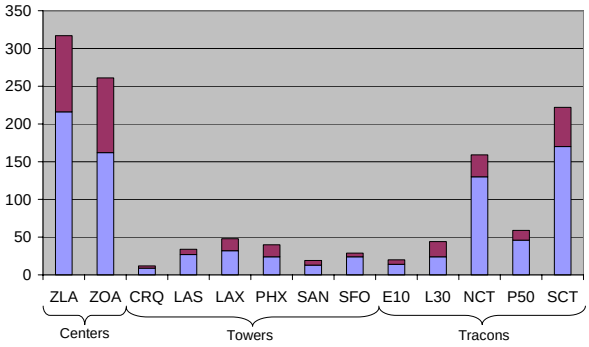
Southern Trainee Ratios



Southwest Trainee Ratio



Western Pacific Trainee Ratios



Appendix D: NATCA Contacts

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