AIR TRAFFIC CONTROL

Career Prep

THIRD EDITION

Dr. Patrick R. Mattson, CTO

A comprehensive guide to one of the best-paying Federal government careers, including test preparation for the initial Air Traffic Control exams.

Includes ATC Career Prep Software Suite

Dr. Patrick Mattson began his aviation career in 1969 as an Air Force air traffic controller during the Vietnam War. His academic degrees include a Bachelor of Science, Management, Master of Science, Administration, and Doctor of Education in Leadership–Higher Education. He holds FAA Ground Instructor and Control Tower Operator certificates; additionally, he is a Certified Member (CM) of the American Association of Airport Executives and has completed the FAA facility instructor training course. Recently retired after 20 years of teaching, he co-taught the first collegiate level History of Women in Aviation course. His academic career started in 1986 and he has developed and taught classes in subject areas including Air Traffic Control, Aviation Management, Aviation Careers, Airport Management and Airline Management.

Air Traffic Control Career Prep, Third Edition
Text by Patrick Mattson
Software program designed and coded by Cedric Busch and Elliot Kampa.

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Aviation Supplies & Academics, Inc.
7005 132nd Place SE
Newcastle, Washington 98059-3153
Email: asa@asa2fly.com
Website: www.asa2fly.com

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ASA-ATC-3
ISBN 978-1-61954-092-7

Printed in the United States of America

2018 2017 2016 2015 2014 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data:
Mattson, Patrick R.
Air traffic control career prep : a comprehensive guide to one of the best-paying federal government careers, including test preparation for the initial air traffic control exams / Patrick R. Mattson.
p. cm.
Includes bibliographical references.
ISBN-13: 978-1-56027-614-2 (pbk. : alk. paper)
ISBN-10: 1-56027-614-2 (pbk. : alk. paper)
1. Air traffic control—Vocational guidance. 2. Air traffic controllers. I. Title.
TL725.3.T7M38 2006
387.7'4042602373—dc22
2006021778

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Chapter One

Your Air Traffic Control Career

General Overview

For over 100 years, the aviation industry has played a leading role in the economy of the United States and has fostered a variety of technological advances. From the beginning, major airline companies have used the emerging technology to reshape the face of cargo and passenger travel. Keeping in step with the growth of aviation, the U.S. has had a variety of federal agencies that promote air safety and enable users of the National Airspace System (NAS) to enjoy a safe, orderly, and expeditious flight. General aviation, the airlines, and the military services have generated a large volume of air traffic in the past; it is predicted that these segments of the industry will continue to grow rapidly in the 21st century and beyond.

Today, the job of aviation safety is the responsibility of the Federal Aviation Administration (FAA). The role of the FAA is to ensure air safety and improve and coordinate the effectiveness of the NAS to meet the ever-growing demand caused by the increase in aviation operations.

While all parts of the FAA's operation are important, the crucial link in the efficiency of the system is the air traffic controller. The controller is the point of contact between users of the aviation system and their ultimate safe and expeditious journey through national airspace. Air traffic controllers are the least visible element of the aviation system, but form an integral part of air safety. The role of an air traffic controller is not an easy one; nor is the job attained without a great deal of effort, dedication, and discipline on the part of anyone who desires to enter this demanding occupation. For the person who enjoys a definite challenge and does not mind hard work, being an air traffic controller represents an exciting, rewarding, and high-paying career.

The FAA Air Traffic Control System

The United States has had a federal air traffic control (ATC) system since 1935. Today's FAA is the result of many citizens, pilots, legislators, airline companies, military services, and government agencies seeking way to best serve this country's aviation interests and needs. The FAA is not an independent agency; it is part of the Department of Transportation (DOT). The DOT is managed by the Secretary of Transportation, a cabinet-level position, secured by direct presidential appointment and confirmed by the Congress. The NAS consists of air traffic control, airports, airmen, aircraft, and airways. (Think of them as highways in the sky.) The FAA employs over 45,000 people to keep the airways and airspace safe and ensure the efficient use of the NAS, 24 hours a day, 365 days a year.

Airway Facilities

The U.S. air traffic control system is the most advanced in the world. The FAA relies on its Airway Facilities (AF) branch to keep the complex system running smoothly. The AF is involved in the maintenance, support, and administrative sections, employing over 9,000 dedicated and highly-trained personnel. They are directly responsible for the maintenance of the navigational aids, radar, computer, and communication systems located throughout the country. AF personnel are not air traffic controllers, but they must be experts in their field and maintain an in-depth knowledge of the air traffic control system and its needs.

ATC Facilities

Work Roles

The following information is adapted from the FAA's Air Traffic Control Specialist (ATCS) employment information pamphlets at the ATCS job series webpage (http://www.faa.gov/careers/employment/atc.htm). An air traffic control specialist is responsible for the safe, orderly, and expeditious flow of air traffic. It is their function to direct air traffic so it flows smoothly, efficiently and above all, safely—both on the ground and in the air. There are three specializations:

- **Terminal (Tower)**

  Terminal controllers control air traffic at airports and give pilots taxiing and takeoff instructions, air traffic clearances, and advice based on their own observations and information from the National Weather Service, air route traffic control centers (ARTCC), flight service stations, pilots, and other sources. They provide separation between landing and departing aircraft. They transfer control of aircraft to the ARTCC controller when the aircraft leaves their airspace, and they receive control of aircraft coming into their airspace from controllers at adjacent facilities. Air traffic controllers must be familiar with the aircraft identification and positions of the aircraft under their control, aircraft types and speeds, and the location of navigational aids and landmarks in the area.

- **Enroute Center**

  Air traffic control specialists at ARTCCs give aircraft instructions, air traffic clearances, and advice regarding flight conditions while enroute between airports. They provide separation between aircraft flying along the federal airways or operating into or out of airports not served by a terminal facility. Center controllers use radar, or in some cases, manual procedures to track the progress of all instrument flights within the center's airspace. Where radar coverage is available and their workload permits, enroute controllers also provide radar service to pilots who are not on instrument flight plans, alerting them to potential traffic conflicts. Enroute controllers transfer control of aircraft to controllers in adjacent centers, or approach control, or terminal, when the aircraft enters that facility's airspace.

- **Flight Service Station Specialist**

  (Contracted to Lockheed-Martin as of February 2005.)
  Air traffic control specialists at FAA automated flight service stations (AFSS) provide preflight, in-flight and emergency assistance to all pilots on request. They work with some pilots face-to-face at their facilities and also communicate with pilots by phone and radio. They

provide information about weather conditions for specific flights; receive and forward pilots' flight plans; relay air traffic control instructions; assist pilots in emergency situations; provide airport advisory service, and initiate searches for missing or overdue aircraft.

Type	Name	Number	Description
1	Tower without Radar	1	An airport traffic control terminal that provides service using direct observation primarily to aircraft operating under visual flight rules (VFR). This terminal is located at airports where the principal user category is low-performance aircraft.
2	Terminal Radar Approach Control (TRACON)	23	An air traffic control terminal that provides radar-control service to aircraft arriving or departing the primary airport and adjacent airports, and to aircraft transiting the terminal's airspace.
3	Combination Radar Approach Control and Tower with Radar	131	An air traffic control terminal that provides radar-control service to aircraft arriving or departing the primary airport and adjacent airports, and to aircraft transiting the terminal's airspace. This terminal is divided into two functional areas: radar approach control positions and tower positions. These two areas are located within the same facility, or in close proximity to one another, and controllers rotate between both areas.
4	Combination Non-Radar Approach Control and Tower without Radar	2	An air traffic control terminal that provides air traffic control services for the airport at which the tower is located and without the use of radar, approach and departure control services to aircraft operating under Instrument Flight Rules (IFR) to and from one or more adjacent airports.
6	Combined Control Facility	4	An air traffic control facility that provides approach control services for one or more airports as well as enroute air traffic control (center control) for a large area of airspace. Some may provide tower services along with approach control and enroute services.
7	Tower with Radar	129	An airport traffic control terminal that provides traffic advisories, spacing, sequencing and separation services to VFR and IFR aircraft operating in the vicinity of the airport, using a combination of radar and direct observations.
8	Air Route Traffic Control Center (ARTCC)	21	An air traffic control facility that provides air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the enroute phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
9	Combined TRACON Facility	4	An air traffic control terminal that provides radar approach control services for two or more large hub airports, as well as other satellite airports, where no single airport accounts for more than 60 percent of the total Combined TRACON facility's air traffic count. This terminal requires such a large number of radar control positions that it precludes the rotation of controllers through all positions.
—	Air Traffic Control System Command Center	1	The Air Traffic Control System Command Center is responsible for the strategic aspects of the NAS. The Command Center modifies traffic flow and rates when congestion, weather, equipment outages, runway closures or other operational conditions affect the NAS.

Figure 1-1. *Types and number of FAA air traffic control facilities.*

Source: U.S. DOT/FAA *A Plan for the Future: 10-Year Strategy for the Air Traffic Control Workforce 2013–2022* (Chapter 2, page 11).

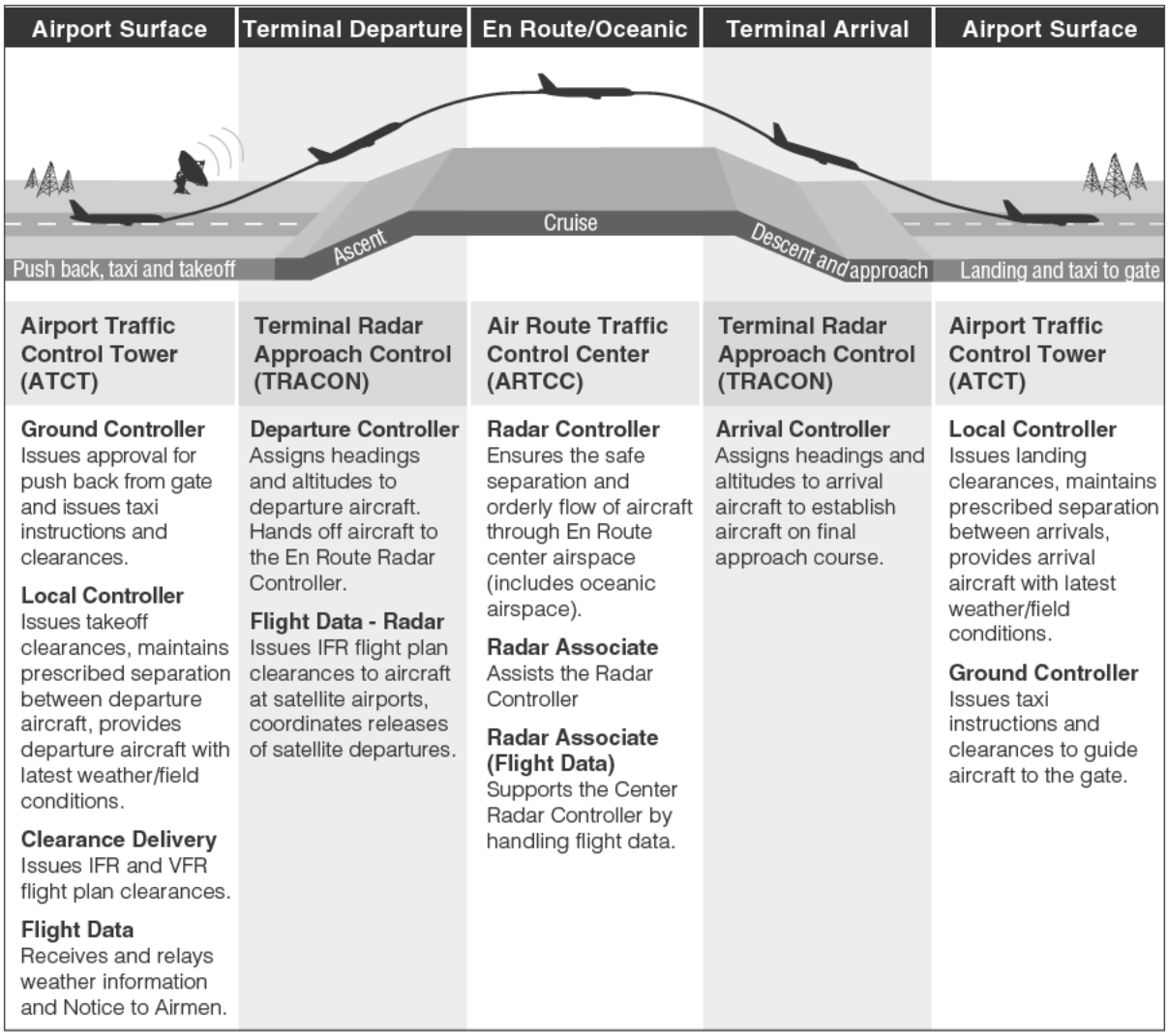

Figure 1-2. Air traffic control position and facility overview.
Source: U.S. DOT/FAA *A Plan for the Future...* (2012 edition, Chapter 3, page 21).

Regardless of where a controller works or the facility is located, the goal of the air traffic control system remains the same: ensure the safety of flight, meet the country's aviation needs, and provide for the efficient use of the National Airspace System. All air traffic controllers have a huge responsibility and take great pride in their profession. As civil servants, they provide a vital service to the aviation industry, its users, and the nation. The job requires quick, correct decision-making skills; employment in this field is not for everyone. Those who become fully-certified professional controllers are true professionals, dedicated to the mission of safe air travel in the U.S. and abroad.

ATC Facility Visits

It is often a rewarding experience for the applicant to visit an FAA air traffic control facility before or during the application process. FAA ATC facilities welcome visitors (with prior approval), especially those persons who are considering employment in the field. One should call first for an appointment during regular business hours and inform the facility representative of his/her interest in the FAA and air traffic control. Most facilities have career information on hand; see the end of this chapter (pages 12 through 14) for a map and list of phone numbers (Figure 1-5).

An ATC Career

This section (pages 5–10) is adapted from the 2012–2013 edition of the Occupational Outlook Handbook webpage.* Here are some significant points regarding an ATC career:

- Nearly all air traffic controllers are employed by the FAA.
- Large numbers of air traffic controllers will be eligible to retire over the next decade, potentially creating many job openings.
- Air traffic controllers earn high pay and good benefits.
- The military services and private companies (both overseas and in the USA) also employ air traffic controllers. These controllers use the same rules as the FAA controllers do.
- Employment of new FAA controllers will most likely be limited to about 10,000 retirement replacements over the next decade.

The air traffic control system is a vast network of people and equipment that ensures the safe operation of commercial and private aircraft. Air traffic controllers coordinate the movement of air traffic to make certain that planes stay a safe distance apart. Their immediate concern is safety, but controllers also must direct planes efficiently to minimize delays. Some regulate airport traffic; others regulate flights between airports.

Although airport tower or terminal controllers watch over all planes traveling through the airport's airspace, their main responsibility is to organize the flow of aircraft into and out of the airport. Relying on radar and visual observation, they closely monitor each plane to ensure a safe distance between all aircraft and to guide pilots between the hangar or ramp and the end of the airport's air-space. In addition, controllers keep pilots informed about changes in weather conditions such as wind shear—a sudden change in the velocity or direction of the wind that can cause the pilot to lose control of the aircraft.

During arrival or departure, several controllers direct each plane. As a plane approaches an airport, the pilot radios ahead to inform the terminal of the plane's presence. The controller in the radar room, just beneath the control tower, has a copy of the plane's flight plan and has already observed the plane on radar. If the path is clear, the controller directs the pilot to a runway; if not, the plane is directed into the traffic pattern along with other aircraft waiting to land. As the plane nears the runway, the pilot is asked to contact the tower. There, another controller, who is also watching the plane on radar, monitors the aircraft the last mile or so to the runway, delaying any departures that would interfere with the plane's landing. Once the plane

* http://www.bls.gov/ooh/transportation-and-material-moving/air-traffic-controllers.htm

has landed, a ground controller in the tower directs it along the taxiways to its assigned gate. The ground controller usually works entirely by sight, but may use radar if visibility is poor.

The procedure is reversed for departures. The ground controller directs the plane to the proper runway. The local controller then informs the pilot about conditions at the airport, such as weather, speed and direction of wind, and visibility. The local controller also issues runway clearance for the pilot to take off. Once in the air, the plane is guided out of the airport's airspace by the departure controller.

After each plane departs, airport tower controllers notify Enroute controllers who will next take charge. There are 21 air route traffic control centers located around the country, each employing 300 to 700 controllers, with more than 150 on duty during peak hours at the busier facilities. Airplanes usually fly along designated routes; each center is assigned a certain airspace containing many different routes. Enroute controllers work in teams of up to three members, depending on how heavy traffic is; each team is responsible for a section of the center's airspace. A team, for example, might be responsible for all planes 30 to 100 miles north of an airport and flying at an altitude between 6,000 and 18,000 feet.

To prepare for planes about to enter the team's airspace, the radar associate controller organizes flight plans coming off a printer. If two planes are scheduled to enter the team's airspace at nearly the same time, location, and altitude, this controller may arrange with the preceding control unit for one plane to change its flight path. The previous unit may have been another team at the same or an adjacent center, or a departure controller at a neighboring terminal. As a plane approaches a team's airspace, the radar controller accepts responsibility for the plane from the previous controlling unit. The controller also delegates responsibility for the plane to the next controlling unit when the plane leaves the team's airspace.

The radar controller, who is the senior team member, observes on radar the planes in the team's airspace and communicates with the pilots when necessary. Radar controllers warn pilots about nearby planes, bad weather conditions, and other potential hazards. Two planes on a collision course will be directed around each other. If a pilot wants to change altitude in search of better flying conditions, the controller will make sure no other planes will be along the proposed path. As the flight progresses, the team responsible for the aircraft notifies the next team in charge of the airspace ahead. Through team coordination, the plane arrives safely at its destination.

Both airport tower and enroute controllers usually control several planes at a time; often they have to make quick decisions about completely different activities. For example, a controller might direct a plane on its landing approach and at the same time, provide pilots entering the airport's airspace with information about conditions at the airport. While instructing these pilots, the controller would also observe other planes in the vicinity, such as those in a holding pattern waiting for permission to land, to ensure that they remain well separated.

In addition to airport towers and enroute centers, air traffic controllers also work in flight service stations operated at more than 100 locations. These flight service specialists provide pilots with information on the station's particular area, including terrain, pre-flight and in-flight weather information, suggested routes, and other information important to the safety of a flight. Flight service station specialists help pilots in emergency situations and initiate and coordinate searches for missing or overdue aircraft. They are not, however, involved in actively managing air traffic.

Some air traffic controllers work at the FAA Air Traffic Control Systems Command Center in Herndon, Virginia, where they oversee the entire system. They look for situations that will create bottlenecks or other problems in the system, then respond with a management plan for traffic into and out of the troubled sector. The objective is to keep traffic levels in the trouble spots manageable for the controllers working at enroute centers.

Working Conditions

Controllers work a basic 40-hour week; however, they may work additional hours for which they receive overtime pay or equal time off. Most controllers rotate night and weekend shifts because all centers, and most large control towers, operate 24/7.

During busy times, controllers must work quickly and efficiently. Total concentration is required to keep track of several planes at the same time and to ensure all pilots receive correct instructions. The mental stress of being responsible for the safety of several aircraft and their passengers can be exhausting for some people.

According to the DOT/BLS data, there were about 23,000 jobs in 2012 at an average salary of $118,430 per year. The vast majority were employed by the FAA. Air traffic controllers work at airports—in towers and flight service stations—and in air route traffic control centers. Some professional controllers conduct research at the FAA's national experimental center near Atlantic City, New Jersey. Others serve as instructors at the FAA Academy in Oklahoma City, Oklahoma. A small number of civilian controllers work for the U.S. Department of Defense. In addition to controllers employed by the federal government, some work for private air traffic control companies providing service to contracted non-FAA towers. These towers must follow the same rules as their FAA counterparts.

Training, Other Qualifications, and Advancement

To become an air traffic controller, a person must pass a pre-employment test that measures his or her ability to learn the controller's duties in order to qualify for job openings. The Collegiate Training Initiative (CTI) program is one of several methods used by the FAA to recruit and hire controller applicants; the others include military veterans, military retirees (Phoenix-20 program), FAA reinstatements (PATCO), Flight Service employees, AT-SAT direct hire, and Academy applications. As of November 2013, the AT-SAT pre-employment test is currently offered only to students in the CTI program but this might change if the FAA decides to start hiring again from the general population (known as "off-the-street"). In addition, applicants must have 3 years of full-time work experience or 4 years of college, or a combination of both. In combining education and experience, 1 year of undergraduate study (30 semester or 45 quarter hours) is equivalent to 9 months of work experience.

Upon successful completion of the CTI program, individuals who receive school recommendation and meet the basic qualification requirements, including age limit and a qualifying score on the FAA authorized pre-employment test, become eligible for employment as an air traffic controller. Candidates also must pass a medical exam, drug screening, and security clearance before they can be hired. After selection, employees attend the FAA Academy in Oklahoma City for 15 weeks of training, during which they learn the fundamentals of the airway system, FAA regulations, controller equipment, and aircraft performance characteristics, as well as more specialized tasks.

After graduation, it takes several years of progressively more responsible work experience, interspersed with considerable classroom instruction and independent study, to become a fully qualified controller. Controllers who fail to complete either the Academy or the on-the-job portion of the training are usually dismissed. Controllers must pass a physical examination each year and a job performance examination twice each year. Failure to become certified in any position at a facility within a specified time may also result in dismissal. Controllers are also subject to drug screening as a condition of continuing employment.

Air traffic controllers must be articulate, because pilots must be given directions quickly and clearly. Intelligence, a basic math aptitude, and a good memory are also important because controllers constantly receive information that they must immediately grasp, interpret, and remember. Decisiveness is also required because controllers have to make quick decisions. The ability to concentrate is crucial because controllers must make decisions in the midst of noise and other distractions.

At airports, new controllers begin by supplying pilots with basic flight data and airport information. They then advance to the position of ground controller, then local controller, departure controller, and finally, arrival controller. At an air route traffic control center, new controllers first deliver printed flight plans to teams, gradually advancing to radar associate controller and then radar controller.

If approved, controllers can transfer to jobs at different locations, advance to supervisory positions such as management or staff jobs in air traffic control, or to top administrative jobs in the FAA. However, there are only limited opportunities for a controller to switch from a position in an enroute center to a tower.

Job Outlook

According to the May 2012 U.S. Bureau of Labor Statistics data, employment of air traffic controllers through 2018 to 2020 is expected to grow 13%, as many FAA controllers are eligible and decide to retire. Steady-to-increasing air traffic will require more controllers to handle the additional work. The increasing automation of the air traffic control system and federal budget constraints may limit future employment growth; however, this growth is not expected to keep pace with growth in the number of aircraft flying. New computerized systems will help controllers make routine decisions, which will allow them to handle more traffic, thus increasing their productivity.

Although the majority of today's air traffic controllers will be eligible to retire over the next decade, not all are expected to do so. Replacement needs will nevertheless be substantial and will result in about 10,000 new controllers hired through 2021. Despite the increasing number of jobs coming open, competition to get into the FAA training programs is expected to remain keen, as there generally are many more applicants than there are openings. But those who graduate have good prospects of getting a job as a controller. Air traffic controllers who continue to meet the proficiency and medical requirements enjoy more job security than do most workers. The demand for air travel and the workloads of air traffic controllers decline during recessions, but controllers are seldom laid off.

Pay and Benefits

As of October 1, 2013, the initial salary was $17,803 for 15 weeks while in training at the FAA's Oklahoma City Academy. FAA Academy students may receive up to $52.20 per day for lodging and $41.60 for meals and incidentals. If you stay with family/friends while at the Academy, you may not qualify for the lodging per diem as the government assumes you are not incurring costs for that lodging. The payments are not retroactive. Each class of students is briefed and provided the paperwork to prepare travel vouchers. *It is very important to note that you need to apply for the payments.*

The salary range for new controller candidates successfully completing the Academy is $36,928 to $46,075 depending on the facility of assignment. Most control towers pay less than enroute centers, with major international airport towers and TRACONs paying near or more than the enroute center scale. Academy Graduates (AG) are placed in a developmental status until they make CPC (fully rated in their area of facility assignment). Developmental status has three stages. After acquiring appropriate ratings, a controller can earn from $95,745 (journeymen) to $134,043 for a certified professional controller (CPC) plus locality pay; this does not include premium pay and/or benefits.

The 2012 range of controller compensation, including salary, premium pay, and benefits was $136,000 to $205,000 with the median at approximately $165,000.* Both the job responsibilities and complexity of the particular facility determine a controller's pay. Annual pay increases are tied to the federal government's general schedule and step increases; this pay increase schedule was spelled out in the March 14, 2012 contract agreement between the FAA and NATCA (union). Controllers who work at the FAA's busiest air traffic control facilities earn higher pay. Depending on length of service and or military time, air traffic controllers receive 13 to 26 days of paid vacation and 13 days of paid sick leave each year, life insurance, and health benefits. In addition, controllers can retire at an earlier age and with fewer years of service than other federal employees. Air traffic controllers are eligible to retire at age 50 with 20 years of service as an active air traffic controller, or after 25 years of active service at any age. There is a mandatory retirement age of 56 for active FAA controllers who manage air traffic, but they can seek other jobs (traffic management, administration, etc) with the FAA in order to remain in a salaried status.

Federal law also provides for exemptions to the mandatory age of 56, up to age 61, for controllers who have exceptional skills and experience. For more information see the Denver Center webpage, "FAA ATC Hiring" (see Appendix 6 for the web address).

Certified Professional Controllers (CPC)

A CPC is one who holds all of the appropriate ratings for their facility of assignment. Each air traffic control facility has its own criteria for certification. This is due to the type of air traffic service each facility provides and the amount of traffic handled on an annual basis. To determine pay levels, the facilities are first grouped by the type of air traffic service they provide: Flight Service Station (FSS), Airport Traffic Control Tower (ATCT), or Air Route Traffic Control Center (ARTCC). Then each group is divided into levels of activity representing the volume

* Note from author: The above information regarding controller pay was current at the time of my research. Readers should check with the FAA for official salary and benefits information (varies for each facility) at time of application.

of air traffic services provided. ARTCCs are divided into three levels while ATCTs are divided into five. Level I is the lowest volume of air traffic related services provided. Heavier traffic greatly increases the controller's workload, thus the higher pay at busier facilities. Each facility keeps a careful record of its aviation related services so it will be classified correctly and staffed appropriately. A rural airport may have only a dozen or less controllers, whereas at a very busy airport, the large international tower may employ as many as 125 controllers and the enroute center over 300.

CPC Training Progression

The information in this section is adapted from the DOT/FAA publication, *A Plan for the Future: 10-Year Strategy for the Air Traffic Control Workforce.* Figure 1-3 depicts an example of training progression in a large FAA facility such as a combined radar approach control and tower radar. After completing the FAA Academy classes at Oklahoma City, new trainees are given Academy Graduate status and proceed to their assigned facility. They are then placed in a formal training program where they are monitored while working a control position, until certified at that position. They receive pay increases to different developmental levels (D1, D2, D3) working their way to CPC, a fully certified controller who can work all positions in their assigned facility unmonitored. Controllers can also receive trainer, night, holiday and weekend differential pay. Training completion is pass/fail and is not guaranteed.

See the 2012 "pay bands" example in Figure 1-4; the minimum is base pay with possible percentage increases each year, the maximum is the most you can earn at that level. These figures do not include locality percentage pay, which can add anywhere from 14.16% to 35.15% to base pay depending on your assigned facility. For example, an Academy Graduate assigned to the St. Paul, Minnesota downtown airport would receive $44,839.87 (base pay $37,070 plus locality percentage of 20.96%).

Trainees are awarded D1 status (and the corresponding increase in pay) after being checked out on several positions. Training can take between six months and three-plus years, depending upon the ability of the individual and the size/complexity of the facility. The levels of responsibility (and pay) gradually increase as a trainee progresses through training. Once developmental controllers are fully checked out at the D1 level, they can work several positions in the tower (Clearance Delivery, Ground Control and Local Control). Once checked out on the Runway Crossing Coordinator position, the developmental controller would be considered tower certified, but still not a CPC, as CPCs in this type of facility must also be certified on positions in the radar room.

The levels of responsibility continue to increase as one progresses toward CPC status, but trainees can and do control traffic much earlier in the training process. Historically, the FAA has used these position-qualified controllers to staff operations and free up CPCs for more complex positions as well as to conduct training.

AIR TRAFFIC CONTROL *Career Prep*

Third Edition
Dr. Patrick R. Mattson, CTO

A comprehensive guide to one of the best-paying Federal government careers, including test preparation for the initial Air Traffic Control exams. Includes access to ATC Career Prep Software Suite so you can become familiar with and practice the 8 tests in the AT-SAT exam.

Air traffic controllers can earn high salaries and get good benefits—they are in big demand as much of the current workforce prepares to retire. The *Air Traffic Control Career Prep* introduces you to the aviation industry, the FAA's role, and what to expect as you pursue this career, with general information on opportunities, working conditions and benefits, training and qualification requirements. This "ATC Career Prep" will be beneficial to prospective ATC candidates who want to improve their chances of earning a high score on the ATC entrance exam.

The ATC pre-employment and aptitude test known as the "AT-SAT" is covered here, the subjects and the time allowed, with ample practice sets to study. Sample questions, answers, and explanations for each of the subjects are provided, including analogies, scan ability, angles and applied math, dial reading, and ATC scenarios. The practice tests, software suite, and information in this book will serve you well as you start on the exciting career path to becoming an air traffic controller.

Dr. Patrick R. Mattson began his aviation career as an Air Force air traffic controller during the Vietnam War. His academic degrees include a Bachelor of Science, Management, Master of Science, Administration, and Doctor of Education in Leadership–Higher Education. He holds FAA Ground Instructor and Control Tower Operator certificates. Recently retired after 20 years of teaching, he developed and taught classes in History of Women in Aviation, Air Traffic Control, Aviation Management, Aviation Careers, Airport Management and Airline Management.

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