

FAA Safety

BRIEFING

September/October 2016

Your source for general aviation news and information

Avenues to Aviation

What is GA? p. 8

Pathways to Pilothood p. 14

The World of Aviation Maintenance Operations p. 24



**Federal Aviation
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The September/October 2016 “Avenues to Aviation” issue of *FAA Safety Briefing* focuses on some of the varied career options available in aviation, particularly in general aviation. Feature articles explore both flying and non-flying aviation career options, as well as some of the new vocations that the small Unmanned Aircraft Systems rule has enabled.



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New Pathways to Pilothood

The June 21 announcement of the part 107 rule allowing routine commercial use of small unmanned aircraft systems (sUAS) is a major milestone for the FAA. As you probably know by now, this rule creates a regulatory framework that will increase safety and minimize operating risks. It is also expected to provide a huge boost to the U.S. economy. Estimates indicate it could generate \$84 billion and create more than 100,000 new jobs over the next 10 years.

This rule also provides new pathways to pilot-hood, both for those with existing pilot qualifications and for people who are just stepping into the world of aviation. The new rule will just be taking effect by the time you read this “Avenues to Aviation” focused issue of *FAA Safety Briefing* magazine, and I’d like to challenge each and every one of you to play a role in this exciting new area.

We Need Your Help

We’re working hard at providing both the public and our employees with all of the informational tools needed to understand the rule and communicate its impact. Here’s what you can do to be a part of it. The first step is to become familiar with the rule. The Getting Started page (www.faa.gov/uas/getting_started) and the FAQ page (www.faa.gov/uas/faqs) are good places to get your bearings on the specifics of part 107, and prepare you to respond to any questions you may receive from people who look to you for aviation advice. You’ll see that the regulations address height and speed restrictions and other operational limits, such as prohibiting flights over unprotected people on the ground who aren’t directly participating in the UAS operation. Some rules are subject to waiver as well. More information on the waiver process (currently led by FAA headquarters) can be found here: <http://go.usa.gov/xr9yR>.

Remote Pilot Certificate

One area of particular relevance to readers of this magazine is the fact that the part 107 rule establishes a new remote pilot airman certificate that will be required when operating under part 107. For credit toward certification, pilots who already hold a part 61 non-student pilot certificate and a current flight review can take an online training course hosted on FAASafety.gov. Since the information in

the course is available to everyone, I highly recommend that you use this course to become familiar with the operating rules and limitations for non-recreational sUAS operations.

Once you learn the basics, you can help by serving as safety ambassadors for sUAS operations. That means helping answer questions or directing folks to the FAA website at www.faa.gov/uas for details on the rule. To assist our coordination efforts among external stakeholders and here within the agency, the FAA has established a UAS Oversight and Compliance Focus Team (OCFT), which provides a single point of contact for field personnel on UAS oversight and compliance issues. The OCFT members, who are UAS subject matter experts from across Flight Standards (AFS), will work interdependently with headquarters’ policy divisions in Flight Standards, the Office of UAS Integration, and the Aircraft Certification Service, as needed. Their role is to make sure that AFS demonstrates consistent application of our UAS oversight and compliance responsibilities as we work to safely integrate UAS into the National Airspace System (NAS).

UAS integration opens the door to a more diverse and dynamic aviation future for all aircraft. The FAA plays a vital role in making sure that those who operate those aircraft — manned or unmanned — have the proverbial “right stuff” in terms of the knowledge, risk management ability, and skill needed to operate safely with everyone else in the NAS. So as we start this new chapter in aviation, we all have a part to play in making it a success and maintaining the world’s safest aviation system.

The part 107 rule also provides new pathways to pilot-hood, both for those with existing pilot qualifications and for people who are just stepping in to the world of aviation.

You can help by serving as a safety ambassador for sUAS operations.

Learn More

UAS – Getting Started

www.faa.gov/uas/getting_started

UAS FAQs

www.faa.gov/uas/faqs



Final Policy Issued for Airport Hangar Use



The FAA's final policy on the non-aeronautical use of airport hangars will take effect on July 1, 2017. The FAA is issuing the policy to clarify how aviation facilities — including hangars — can be used on airports that receive federal funds. The final policy strikes a balance between hangar use for aviation and non-aviation purposes.

The policy ensures hangars are available when there is an aviation need and if demand is low, allows hangars to be used for non-aviation activities. The FAA recognizes that non-aviation hangar space rental allows airport sponsors to be economically independent when hangars are not being used to fulfill aviation needs. Airport sponsors must receive approval from the FAA before hangars can be used for non-aviation purposes.

In addition, the policy outlines the type of aircraft that can be built in a hangar, the equipment and items that can be stored in hangars, and the role of the airport sponsors to ensure tenants pay fair market value for hangar space.

To view the notice of final rule, go to <https://federalregister.gov/a/2016-14133>.

FAA Acts to Protect Walrus in Alaska

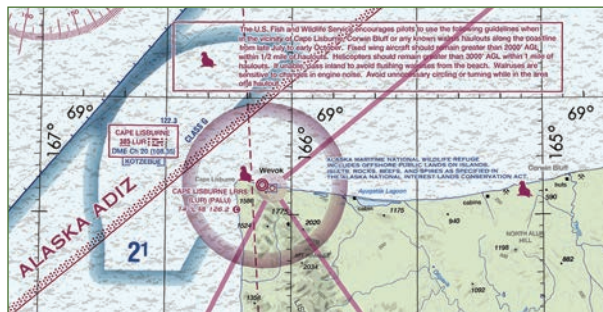
The FAA is working to address concerns that low-flying aircraft could cause walrus to stampe and kill their pups or harm humans on the Alaska Peninsula.

Female walrus and their young forage over the shallow continental shelf of the Chukchi Sea every summer. The walrus use sea ice as a platform to rest between foraging for food on the seafloor. The U.S. Geological Survey has said that changes in Arctic sea ice are causing walrus to temporarily

leave the water or “haul-out” on land rather than on ice, as they have in the past.

Alaska native villagers, pilots, and other interested stakeholders have expressed concerns about the effects of low-flying aircraft on animals that have hauled-out on land.

While the FAA does not establish Temporary Flight Restrictions (TFRs) or set altitude restrictions over walrus haul-outs, the agency is collaborating with the U.S. Fish and Wildlife Service to include information on visual flight rules (VFR) sectional charts to educate pilots about the locations of walrus haul-outs, and alert them that harassing walrus is a violation of U.S. law.



Pilots are encouraged to use the following guidelines when in the vicinity of any known walrus haul-outs from late July to early October. Fixed wing aircraft should remain greater than 2,000 ft. above ground level (AGL) within ½ mile of the area. Helicopters should remain greater than 3,000 ft. AGL within 1 mile. If unable, pass inland to avoid flushing walrus from the beach. Walrus are sensitive to changes in engine noise. Avoid unnecessary circling or turning while in the area of a haul-out.

FAA Highlights GA Safety and Innovation at AirVenture

During the last week of July, a large portion of the GA universe descended on Oshkosh, Wisc., for EAA's annual AirVenture convention and fly-in.

The FAA participated by providing seminars and briefings designed to help inform airmen about what the agency is doing to improve safety and foster innovation. FAA Administrator Michael Huerta spoke at his annual Meet the Administrator forum and took questions from the group on topics that ranged from pilot fitness and medical stan-



AirVenture drew a crowd of 563,000 visitors with record numbers of international visitors and exhibitors. One of the stars of the show was this rare Martin Mars flying boat that displayed its prodigious talents as a fire bomber to the assembled masses.

dards, to aircraft certification and ADS-B. A copy of the Administrator's remarks can be found here: <http://go.usa.gov/x4PVT>. Several other FAA executives were on hand to make safety presentations including Dr. James Fraser, Federal Air Surgeon, who fielded questions on the recently passed medical certification legislation. For more information on some of the innovations that impact GA, please see the FAA's updated general aviation safety fact sheet here: <http://go.usa.gov/x4Pux>.

Rotorcraft Safety Conference

The FAA's Rotorcraft Directorate is hosting its second International Rotorcraft Safety Conference, building on the success of last year's conference. The goal of the conference is to help find ways to reduce the national helicopter accident rate.

Takeoffs and Landings

Editor's Note — Aviation inherently involves movement, and this issue of FAA Safety Briefing marks a couple of transitions. With sadness, we bid adieu (not goodbye!) to Associate Editor Sabrina Woods, whose droll and informative articles have brightened these pages for the past three years. Sabrina recently accepted a position that allows her to focus more closely on her passion for human factors, but we let her go only on condition that she would continue to contribute her expertise from time to time. On the other side of the ledger, we offer an enthusiastic welcome to Jennifer Caron, whose witty writing for several internal FAA publications caught our eye. Just one meeting made it clear that Jennifer — who has her own delightful brand of droll wit — will be a splendid addition to our team. Onward!

From Sabrina Woods: It is with sadness that I have put down (at least on a daily basis) my jumbo sized red editing pen and moved on from the magazine staff. The last three years working with the *FAA Safety Briefing* team has been a wild ride. I got to interview and write about some pretty cool things and even more amazing people. I got to learn a great deal about everything that our National Airspace System (NAS) and the wonderful world of general aviation has to offer. But now I have moved over to the air traffic side and will be working on human factors studies and issues in aviation. Just like with the magazine team, this is one more way I am committed to doing my part to keep the NAS as safe as possible. I'll miss working in general aviation, but I'm not gone forever! Look for me to pop up every once in a while between the pages of *FAASB* as a guest writer. I know I very much look forward to it. As always, best wishes and happy flying!

From Jennifer Caron: I am very happy to announce that I am the new writer-editor on the *FAA Safety Briefing* team. I am a certified technical writer-editor, but also an aviation enthusiast, who first caught the "airplane bug" while working in airports throughout France as a communications liaison on the delivery and operation of airport safety communications. I went on to continue writing at the White House Correspondence Office and the Department of Homeland Security, but had the great opportunity to continue my interest in aviation at the FAA, where I've spent the past three years as a technical writer-editor supporting aviation safety engineers and inspectors in the Design, Manufacturing and Airworthiness Division, and in the Aircraft Certification Director's office. Currently, I am pursuing a Sport Pilot certificate, and I am looking forward to my new flight path with the *FAA Safety Briefing* team.



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This free event is open to the public and will be held October 25-27, 2016 at the Hurst Conference Center near Ft. Worth, Texas. The target audience is rotorcraft operators, pilots, mechanics, students, manufac-

turers, modifiers, and government regulators from the United States and abroad.

The conference will feature presentations from major industry and FAA leaders. Topics include: improving aeronautical decision making; creating a culture of safety; techniques for performing safer autorotations; choosing the best protection equipment; and basic helicopter safety and maintenance.

The FAA's Civil Aerospace Medical Institute will bring its Helicopter Spatial Disorientation Demonstration exhibit allowing attendees to experience various flight scenarios, including a few of the "do-not-try-this-at-home" variety.

Eligible conference attendees will receive Inspection Authorization credits and WINGS pilot proficiency program credits. For more information about the FAA conference, visit <http://faahelisafety.org> or contact eugene.trainor@faa.gov.

Register for Easy Automated Weather Alerts

Join thousands of pilots and register to receive automated alerts and push weather briefing data for your flight at www.1800wxbrief.com and/or www.duats.com. These online services provide alert notification messages when a condition affecting your most recent briefing for the flight has changed. Get automatic notifications when conditions change between the time of filing your flight plan and departure time.

This capability allows you to file early and receive an email or text if the flight plan route or departure time weather and aeronautical information changes. Filing a flight plan early also helps to avoid delays and puts you "at the front of the line" when flow restrictions are imposed. It's essential to stay informed when new or adverse conditions arise, such as a severe weather forecast or observation, an airport closure, a Notice to Airmen, or a Temporary Flight Restriction. Remember, only pilots who register get automated alerts.

Vote with Your Feet

If you're starting out on your pathway to pilot-hood, one important step you'll need to take is medical certification. In the last issue, we provided a primer on how that system works and some of the things you need to know going in.

Allow me to offer some additional advice.

The primary objective of the FAA's Office of Aerospace Medicine is to deliver the safest possible system for both participants and the general public. That's why we require higher standards for pilots who will carry passengers for hire. Provided we can meet that primary objective, our next goal is to get as many airmen into the sky as is safely possible. Based on the last full year of data we have, we've done a pretty good job of that: 96 percent of airmen who walk into an Aviation Medical Examiner's (AME) office walk out with a medical certificate in hand. We only deny one tenth of one percent of applicants seeking a medical.

This information may not square with what other pilots have told you about medical certification. That's where we can help each other.

An Educated Applicant is Our Best Friend

If you discovered that your auto mechanic was trying to tune the carburetor of your fuel injected car, you'd probably take your business elsewhere. So why take your medical certification business to an AME whose copy of the AME guide — the rule book for medical certification — was last updated in the Ford Administration? The AME guide is constantly changing, with many changes to your benefit.

We've worked very hard on processes like Conditions AMEs Can Issue (CACI) that give AMEs more tools to help you get a certificate on site. Since its introduction a few years ago, we've already added several conditions (currently there are 16) to CACI and continue to investigate other possible additions. The bottom line is that many conditions that were once disqualifying, or required a deferral to the FAA, are now unrestricted medical certificates. That's why I feel like I'm going to get hypertension if I still see a deferral for hypertension!

Do Your Homework

As I have stated before, our system is good at spotting instances where AMEs issue medical certificates that we needed to review, but it can't easily see those cases where someone who could, and should, get a medical certificate is denied or deferred. If you

suspect you are getting denied or deferred when you shouldn't be, please let us know. I also recommend that you vote with your feet and find a new AME.

How do you know if you are being improperly deferred or denied? As with any process, a little bit of preparation goes a long way in medical certification. The medical standards are stated in 14 CFR part 67, and the AME guide contains more detailed information. You can look up a condition you might have and read the current guidance. You can also see the latest revision date. The AME guide is intended to be a living document, so if your AME is using a well-worn paper copy, that's probably not a good thing.

What if I Get Deferred?

The top reason airmen who are deferred don't get a medical certificate is that they fail to provide timely information to the FAA. We will generally ask for things like additional tests, status reports from your specialist, or a specific exam. These need to be provided in the time frame we specify. Your AME should be willing and able to help you through this process. We understand medical tests can be expensive, and that's why we have reduced the number of nuclear cardiac scans, neurological scans, and other exams we request. If we request it, though, and you or your AME believe you can offer a feasible alternative, please contact the Regional Flight Surgeon or Aerospace Medical Certification Division. We can also try not to duplicate tests by arranging them in a way to meet our needs and yours. We'll do our best to work with your AME to see if an "alternative means of compliance" is possible.

The key takeaway from all of this: a good *current* AME is an important part of your medical certification process.

James Fraser received a B.A., M.D., and M.P.H. from the University of Oklahoma. He completed a thirty year Navy career and retired as a Captain (O6) in January 2004. He is certified in the specialties of Preventive Medicine (Aerospace Medicine) and Family Practice. He is a Fellow of the Aerospace Medical Association and the American Academy of Family Practice.

Learn More

Title 14 Code of Federal Regulations (14 CFR) part 67

<http://go.usa.gov/xxc4x>

AME Guide

<http://go.usa.gov/x26cm>



Ask Medical Certification

PENNY GIOVANETTI, D.O.
MANAGER, AEROSPACE MEDICAL
SPECIALTIES DIVISION

Q1. Is there a concise list of conditions which would revoke a third-class medical and where can they be found? How is reporting of any of those conditions made to the FAA? And finally, is there a path to restoration if/when the condition improves?

A1. 14 CFR part 67 subpart D lists several conditions that are specifically disqualifying for third-class medical certificates. In addition, section 67.313 broadly covers any disease, defect, or use of medication which, in the judgment of the Federal Air Surgeon, may constitute a hazard to flying safety and are also disqualifying. Most commonly, airmen report these conditions on their MedXPress application for medical certificate, but they may also be reported directly by the airman, the AME, or a concerned citizen. Occasionally, they are anonymously reported via the FAA Hotline. Any of these conditions may be considered for special issuance, and airmen should consult with their AME regarding specifics. When all the requested information has been submitted, we deny only 0.08 percent of applications annually, so the path to restoration is wide.

Q2. I recently encountered a medical condition that required me to receive a Special Issuance of my third-class medical. I have a light sport aircraft and was wondering if I can abandon the medical exam process and just meet the light sport medical requirements.

A2. Pilots flying under the light sport rules are still required to abide by the provisions of 14 CFR section 61.53, "... a person shall not act as pilot in command, or in any other capacity as a required pilot flight crewmember, while that person knows or has reason to know of any medical condition that would make the person unable to operate the aircraft in a safe manner." While you legally may abandon the medical exam process, the fact that you are on a special issuance means that you have a condition which potentially makes you unable to operate the aircraft in a safe manner. We recommend that you continue with the medical exam process to assure that your medical condition is followed up on properly from an aerospace medicine standpoint and that you remain in compliance with 14 CFR section 61.53.

Penny Giovanetti, D.O., received a bachelor's degree from Stanford, a master's in Environmental Health and Preventive Medicine from the University of Iowa and a doctorate from Des Moines University. She completed a 27-year career as an Air Force flight surgeon. She is board certified in aerospace medicine, occupational medicine, and physical medicine/rehabilitation. She is also a Fellow of the Aerospace Medical Association and a private pilot.

Send your questions to SafetyBriefing@faa.gov. We'll forward them to the Aerospace Medical Certification Division without your name and publish the answer in an upcoming issue.

Safety Enhancement Topics

September: Understanding Impairment Risk Understanding how drugs can compromise a pilot's ability to control the aircraft.



October: Compliance Philosophy See how Compliance Philosophy constitutes a major cultural change with respect to how the FAA goes about ensuring regulatory compliance.



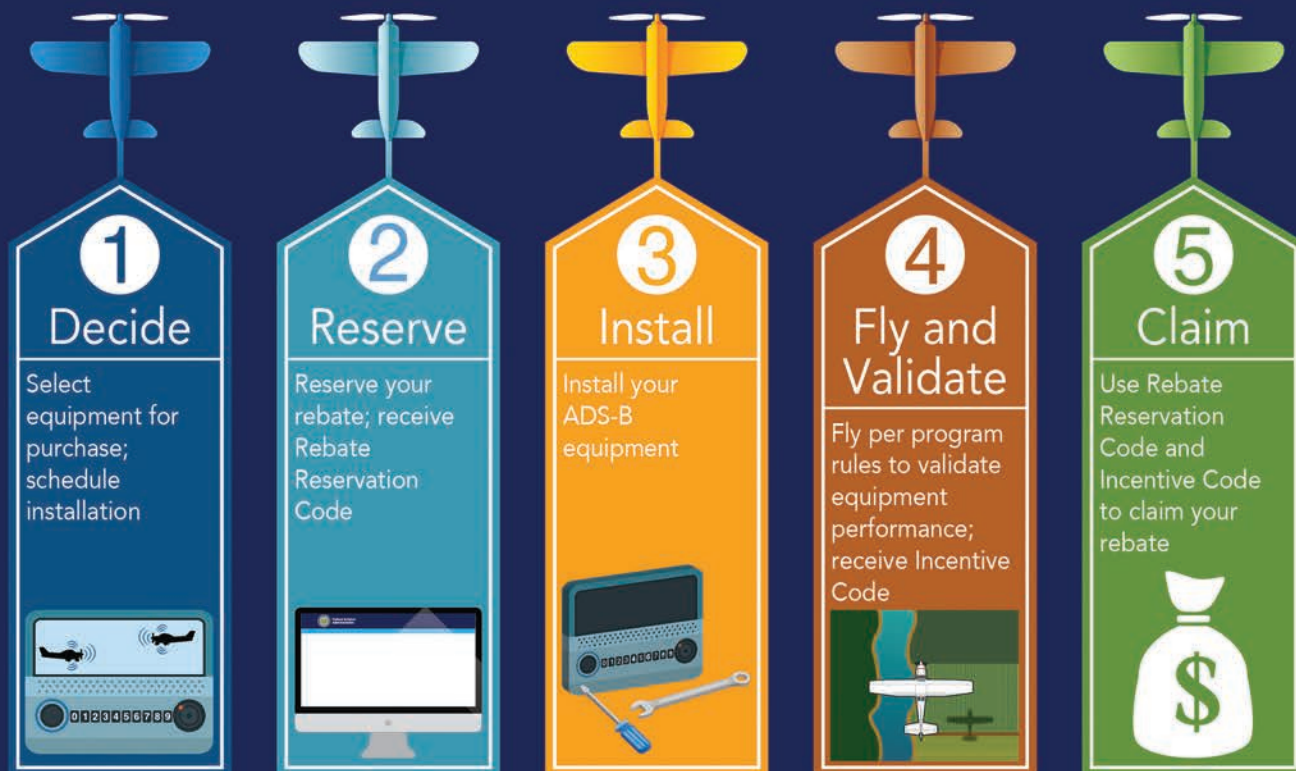
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What is



Running the Gamut of Aviation Endeavors

SABRINA WOODS

When most non-aviation people think about flying, they automatically think of the large, glistening wide-bodied behemoths that take to the skies from international airports, ferrying people across the globe on one trip or another. These types of flights typically carry legacy names such as *American*, *Delta*, and *United*. To these people, general aviation is an afterthought, if it is even considered at all.

Knowing that I work in the FAA's General Aviation and Commercial Division, but understanding little else, my friends will often ask me: What is GA? Strictly speaking, general aviation, or "GA," is any civil aviation operation that isn't the result of a scheduled or non-scheduled commercial transport operation. But what is GA really? It is:

A Little Bit of This ...

From a regulatory standpoint, GA means any type of aircraft that has a type or airworthiness certificate that has been issued by the FAA (in the United States), that has a maximum seating capacity of 20 passengers, and doesn't engage in scheduled passenger-carrying operations. As of 2014, there are roughly 362,000 GA aircraft worldwide with over 199,000 crisscrossing the National Airspace System (NAS). In just the United States alone, GA flights

log almost 23 million hours a year, most of those for business related purposes. Just as with commercial air carriers, GA doesn't have anything to do with military operations — those guys get their own category.

... And a Whole Lot of That


Would it surprise you to know that GA is the largest category of all aviation activities in the world? Or that the category of GA is so large, and so prolific, that the International Civil Aviation Organization finds it easier to define what GA *isn't*, versus what it is?

Several decades ago, general aviation was for barnstormers, ex-military aces, and airmail operators. Today, it has progressed into a multi-billion dollar enterprise consisting of business and leisure travel, search and rescue, agriculture operations, advertising, surveying, medical airlift, scientific endeavors, and flying for good old-fashioned pleasure. The aircraft are just as varied: from powered to non-powered, single-engine to multi-engine, turboprop to turbojet, rotorcraft, experimental, and home-built.

GA is a business enabler. In 2013, GA jobs directly contributed \$29.5 *billion* dollars to the gross domestic product, and another \$42 billion indirectly. To the big corporate CEO this means getting to meet with clients face-to-face. For tour guides it means

they can get their customers up close and personal with the Hoover Dam and the Grand Canyon. For farmers, it is a means to survey and fertilize their crops. Perhaps most significantly, for almost every commercial airline and/or military pilot, a general aviation cockpit was their start on the path to earning their wings.

And of course, for most of us, GA is a means to escape life on the ground for a while and sail among the clouds in search of new horizons. It is the chance to show an eager son or daughter what it means to slip the surly bonds. It is a way to carry family members to reunions, weddings, birthdays, and other wonderful outings. It is the awe-inspiring airshow, and it is the local fly-in in search of the elusive \$100 hamburger.

General aviation symbolizes everything that is good about America: the innovation, curiosity, fellowship, and freedom to take to the skies to nurture man's inherent desire to fly. *THAT* is GA. 

Sabrina Woods is a human factors scientist for the FAA's Air Traffic Organization. She spent 12 years as an aircraft maintenance officer and an aviation mishap investigator in the Air Force.



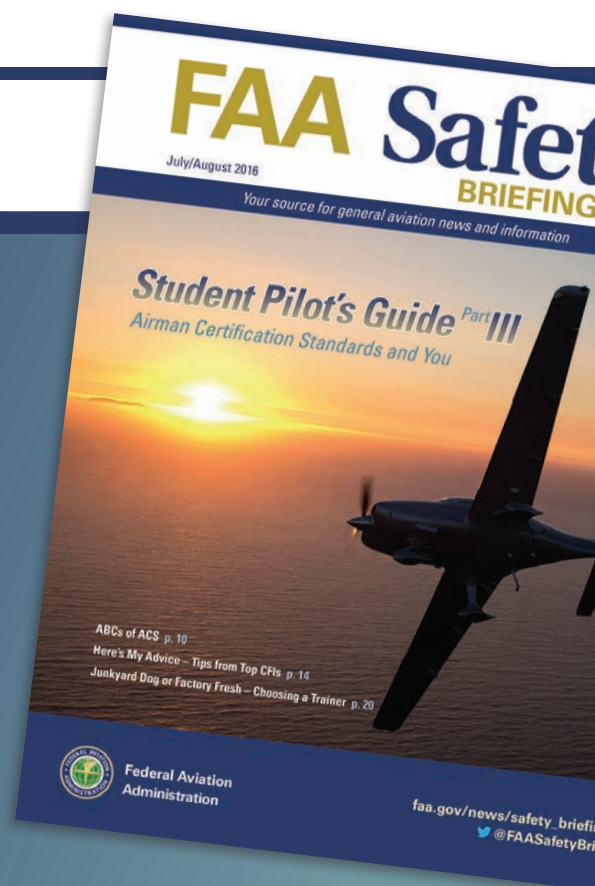
Photo by H. Dean Chamberlain

General aviation aircraft can vary from powered to non-powered, single-engine to multi-engine, turboprop to turbojet, rotorcraft, experimental, and home-built.

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Nurturing a Passion for Aviation

PAUL CIANCIOLO



Flying with Civil Air Patrol

It's been 20 years, but I still remember my very first experience with Civil Air Patrol (CAP). I was in high school and went with a friend to the local airport to learn a little more about the nonprofit and Air Force Auxiliary. The idea that we — as kids — could volunteer for something useful and serve our local community in a unique way was inspiring. We were originally focused on saving lives through CAP's search and rescue missions looking for missing aircraft.

Actually flying the aircraft hadn't crossed my mind yet ... until the Army landed a *Blackhawk* helicopter in front of the CAP meeting area so the cadets could hop in and look around. I was hooked, and my love for aviation grew beyond what I had ever imagined possible. Here's a look at what volunteering with CAP can do for your inner-aviator at any age.

For Ages 12-20

Civil Air Patrol's youth program, better known as its cadet program, is where I began my journey with aviation. You can join CAP as a cadet if you are at least 12 years old and have not yet reached your 19th birthday. Cadets can stay in the program until they turn 21, as long as they have not entered active duty in the military and are enrolled in a school. The

program's four focus areas are leadership, aerospace, fitness, and character.

Every cadet is eligible for five flights in a powered aircraft (usually a single-engine Cessna), five flights in a glider aircraft, and an unlimited number of backseat flights in the airplane when conditions allow. These free orientation flights are intended to share the thrill of flying with young adults. Also, in partnership with the Experimental Aircraft Association (EAA), CAP orientation flights qualify cadets for free EAA Young Eagles Flight Plan benefits.

On a side note, qualified *adult* pilots are also needed to fly cadets on these flights, which is paid for by the Air Force. It's a great way to build up flight hours while serving the local community.

Flying Solo

Cadets have the opportunity to apply for CAP flight academies for instruction in powered aircraft, gliders, hot air balloons, and unmanned aircraft systems (UAS). For manned aircraft, cadets receive approximately 10 hours of flight instruction, ground school, and most solo before leaving.

"We provide our cadets with the foundational skills to become safe and proficient pilots and spark

Photo by Maj. Robert Bowden

that lifelong passion for aviation,” explains Maj. Robert Bowden, director of CAP’s Johnson Flight Academy in Illinois, which just celebrated its 50th anniversary. “It’s incredible to see the transition of a cadet who may have never flown in a small airplane to having the tools and knowledge to safely operate that aircraft ... and hopefully go on to earn a private pilot certificate.”

Nurturing that love for aviation is really what the flight academies are all about. Not every cadet solos or goes on to earn a pilot certificate, but they do gain a sense of accomplishment. “Success here illustrates that these cadets have accomplished something that less than one-half of one percent will ever do,” notes Lt. Col. Bob McDonnell, director of CAP’s Shirley Martin Powered Flight Academy in Texas.

“The academy is a passion for us,” said McDonnell, who is also a pilot for Delta in his day job. CAP flight instructors who volunteer their time come from all over the country to teach cadets and share their passion for aviation.

Civil Air Patrol’s goal is to increase the number of flight and academic scholarships available to qualified candidates. Since the cost of flight training is beyond the reach of most cadets, the Civil Air Patrol Foundation, which is a separate nonprofit that provides additional support for CAP activities not funded by Congressional appropriation, has prioritized support of CAP’s powered flight academy programs.

“While the goal was \$50,000, the generosity of numerous groups allowed the [cadet flight scholarship] challenge to exceed this goal and make available additional funding for deserving cadets,” explains Don Rowland, CAP Chief Operating Officer. “The CAP Board of Governors issued a challenge to raise \$25,000 to be matched with foundation funds to provide full funding for the top graduates of CAP’s powered flight academies to obtain their private pilot certificates.”

Filling the Pilot Shortfall

The pipeline that historically produces airline pilots is shrinking, and the number of airline flights is increasing. The effects of this pilot shortage are already being felt by the regional airlines across the country. Civil Air Patrol is now committing resources to help combat the shortage.

For decades, the Air Cadet League of Canada — CAP’s sister cadet program to the north — has produced around 400 new private pilots a year at little or no cost to the cadet. That has resulted in two out of three Canadian airline pilots having been Air Cadets. Using this model, CAP is instituting a national

advanced flight academy (NAFA) summer program, which is a consortium of residential flight school campuses and aviation donors that together permit cadets to achieve a private pilot certificate.

“The goal is to provide 500 cadets a year with a private pilot certificate scholarship to greatly enhance the pool of eligible pilots for future aviation careers,” writes CAP National Commander Maj. Gen. Joe Vazquez in a recent letter to members. “For the summer of 2017, CAP will pay for five NAFA scholarships. Aviation donors (from major and regional airlines to aerospace corporations) have been solicited, and it is hoped that many more scholarships will be obtained for next year and beyond.”

For Ages 18 and Up

Flying in CAP isn’t just for the cadets. The fleet of more than 500 single-engine airplanes also has a non-combat operational Air Force mission to perform. As the U.S. Air Force Auxiliary, CAP is part of the Air Force Total Force and is considered an “instrumentality of the United States” when performing missions for the federal government under Title 10 United States Code chapter 909. Volunteer pilots, right-seat observers, and aerial photographers are part of a team of CAP members serving in the skies over their communities.

CAP flies a variety of missions that give members a unique opportunity to serve our country. Last fiscal year, CAP performed more than 860 search and rescue missions and saved 69 lives. Aircrews routinely fly as simulated targets to allow military fighter jets and law enforcement helicopters to practice safe intercepts of small general aviation (GA) aircraft violating restricted airspace. CAP aircraft escort military drones through Class B airspace to meet FAA’s “see and avoid” requirement. And flying after natural or manmade disasters to take video and photos of damage is the new normal for CAP. After Hurricane Sandy, CAP aircrews took more than 158,000 images for FEMA.

With such a robust ops tempo, CAP recognizes that having pilots available for these missions is a must. CAP cadets and qualified mission pilots are therefore authorized to use CAP airplanes for flight instruction toward any FAA certificate or rating. With a few exceptions, adult members cannot receive initial flight training on powered aircraft. However, any CAP member is authorized to use CAP gliders and balloons for initial and transition flight instruction toward any FAA certificate or rating.

In order to fly CAP aircraft, pilots must pass a

CAP flies a variety of missions that give members a unique opportunity to serve our country.



CAP Cadet Nicholas Tupper of Bloomfield Hills, Michigan, after a glider solo flight.



A CAP cadet in the left-seat learning to land an airplane at CAP's National Flight Academy in Virginia.



CAP Cadet Jacob Bradford of Byron, Illinois, cuts plastic for the skin of a model blimp being built during Civil Air Patrol's Great Lakes Region Engineering Technologies Academy.

rigorous "Form 5" online exam and check ride. A flight check may be administered by a qualified CAP check pilot, or it may be administered by a FAA inspector, designated check airman, or designated pilot examiner. If it has been a while since you have flown, or if you need to get up to speed on the aircraft available to your local CAP squadron, you can fly with a CAP instructor in the CAP aircraft as preparation for the exam.

Being a CAP pilot has other benefits in the GA community. CAP flight procedures are becoming an industry standard. As an example, if you are current to fly for CAP, you're current to rent with OpenAirplane, which is an online platform allowing FBOs and flight schools around the country to easily verify a pilot's credentials and eliminate the cost of an additional check ride when a pilot wants to rent an aircraft away from home.

OpenAirplane's Universal Pilot Checkout is based on CAP's pilot standards. Unlike a flight review, it is a pass/fail demonstration evaluated against FAA practical test standards. Both on the ground and in the air, you'll be demonstrating you can meet the standard.

"CAP pilots consistently demonstrate a safety record 60 percent better than the rest of the pilots flying single engine airplanes under part 91. It's this proven doctrine that enables us to offer CAP pilots access to our network," explains Rod Rakic, co-founder and president of OpenAirplane.

Civil Air Patrol as an organization has also voluntarily adopted a GA-appropriate version of the FAA's Safety Management System (SMS) approach to aviation safety. This is the formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. It includes systematic procedures, practices, and policies for the management of safety risk. Last year, the FAA published a rule that requires part 121 air carriers to develop and implement SMS in their companies. CAP is taking the lead in the GA community by implementing SMS. To learn more about SMS and how to implement it locally, go to www.faa.gov/about/initiatives/sms.

On a side note, pilots that participate in FAASTeam safety seminars can automatically count their training towards CAP safety requirements. Add your CAP ID number in your profile at www.faasafety.gov. Further, successful completion of a Form 5 exam can be counted towards completion of a phase of WINGS.

Educating the Community

CAP is charged by Congress with an educational mission, which is the source of its nonprofit status. According to Title 36 United States Code chapter 403, the organization will “provide aviation education and training especially to its senior and cadet members” and “encourage and foster civil aviation in local communities.”

Aerospace Education Members (AEM) enjoy many free educational opportunities ranging from receiving lesson plans to participating in a teacher orientation flight. This unique membership category is designed for educators or others involved in promoting aerospace education in classrooms, museums, or other youth organizations. A benefit to teachers is access to CAP’s STEM kits, which are used to inspire youth to explore careers in science, technology, engineering, and mathematics. These kits have already reached more than 150,000 K-12 students nationwide and CAP’s 25,000 cadets.

CAP has also expanded its youth leadership program curriculum to include K-6 students. Its Aerospace Connections in Education program is driven by grade-specific studies that enrich classroom aerospace, character education, and physical fitness for nearly 20,000 children in 34 states.

The FAA is also charged with preparing and inspiring the next generation of skilled professionals for the aviation/aerospace communities through its STEM Aviation and Space Education (AVSED) Outreach Program. In 2011, the FAA and CAP signed a memorandum of understanding to establish a “partnership in support of the FAA’s mission to support a safe, secure, and efficient aerospace system that contributes

to national security and economic growth in the 21st century and CAP’s mission to carry out its Congressional mandate to encourage and aid citizens of the United States in contributing their efforts, services, and resources in developing aviation and to provide aviation education and training.” For more about AVSED, go to www.faa.gov/education.

If you are looking for a place to nurture your passion for aviation, joining Civil Air Patrol may be for you. Those who are between the ages of 12 to 20 have a great opportunity to learn to fly, and current pilots have a unique opportunity to enhance their skills and fly for the greater good of our country. CAP is about supporting America’s communities with emergency response, diverse aviation and ground services, youth development, and promotion of air, space and cyber power.

Looking back on the time I have spent in CAP as a cadet and a regular member, I can honestly say that I have flown in more types of aircraft than I can remember. I can’t think of any other organization that could have given me so much exposure to the aviation world — even more than the time I spent on active duty in the Air Force. So this year on December 1, I ask you to wish Civil Air Patrol a happy 75th birthday!

If you are interested in learning more, check out www.GoCivilAirPatrol.com. 

Volunteer pilots, right-seat observers, and aerial photographers are part of a team of CAP members serving in the skies over their communities.

Paul Cianciolo is an assistant editor and the social media lead for FAA Safety Briefing. He is a U.S. Air Force veteran, and a rated aircrew member and public affairs officer with Civil Air Patrol.



Cadets from CAP Florida Wing's Ormond Beach Cadet Squadron prepare to launch model rockets provided through a Civil Air Patrol STEM kit.

Photo by 2nd Lt. Haley Dye



Pathways to Pilothood

How to Get Your Flying Career Off the Ground

MICHAEL G. GAFFNEY

Face it: once you have the aviation bug, it becomes all you can think about. You look to the sky and it calls you, but just how do you get started among all the choices? When it comes to pathways to becoming a pilot, it is important to know what you want to do with that desire and to get some advice from people who know and understand the flight training industry. For one who wants to fly professionally in commercial aviation as a corporate or airline pilot, for example, the paths are tried and true. For someone who just wants the freedom of flying for pleasure or business, the pathway has more choices. Let's explore some options!

Possible Pathways

While some of the finest aviation training in the world comes from the United States military, the number of slots available to candidates is very limited. For those who can get accepted — congratulations. For the rest of us civilians, there are a number of well-blazed paths to certification. These include independent flight instructors, flying clubs or airport flight schools, flight training academies, and university flight programs. There are other avenues available, but we'll confine this discussion to the most common ones.

An important note: the most structured paths are also going to be the highest-priced options. That said, many high school students since the 1950s have chosen to attend universities with flight training programs and found them to be excellent from both an educational as well as a quality of training perspective. Many flagship aviation programs offer excellent programs that allow students to earn Associates, Bachelors, Masters, and even a PhD in aeronautical areas while earning flight certifications. Having these credentials does not guarantee faster employment, but it does offer more options. Many airline and corporate flight department heads have graduated from these programs and have been given the option to stay flight current while carrying the responsibility (and the pay) of the manager or director. In addition, if the student earns a degree in safety, engineering, or airport management, it can open many other career options, including working for the FAA.

Evaluating Traditional Training Paths

Traditional civilian programs in the United States typically use the terms "part 141" or "part 61" (referring to the aviation certification portions of Title 14 of the Code of Federal Regulations (14 CFR), which govern U.S. pilot certification. A "part 141" school

uses a specific curriculum and undergoes active oversight by the FAA, which ensures that all regulations and standards are being met. A “part 61” training program is one that uses certification regulations, but is not subject to active FAA supervision of its operations. There are some excellent part 61 schools in the country that are run in a very professional manner without being 14 CFR part 141 approved. While the part 61 path might work well for a pilot who desires to fly for pleasure or personal business, it is probably not the most efficient if the end goal is to fly professionally. Airlines and corporate flight departments are generally looking for a documented, disciplined approach to training that is more likely to come from a certified flight training school, university aviation program, or flight training academy using some form of part 141 FAA oversight, along with a regimented training approach that mirrors the standards found in professional flight departments.

A frequent question is the difference between flight training schools and flight training academies. Flight training academies (such as CAE Oxford, FlightSafety, ATP, and American Flyers) are generally focused on producing career-focused pilots destined for the airlines. An academy typically trains uniformed cadets in batches and takes a high paced, high volume approach that is generally ill-suited for the casual flyer. A flight training school is more focused on individual certification achievements such as a private pilot certificate or adding an instrument rating. If this is your goal, then a flight training school is ideal. Some schools specialize in a particular kind of training using a syllabus tailored for that training, so it is important to pick the school whose emphasis matches your goals. For instance, some schools focus on glider or helicopter training, or may specialize in one particular brand of normal or light sport aircraft. Knowing what type of training a school emphasizes should be an important part of your selection criteria. If you have already selected a particular kind of aircraft, then finding a school that specializes in training with that aircraft is the ideal choice.

Flight training schools are plentiful in the United States and are generally found at airports surrounding most cities. My advice is to identify schools at airports that are not hubs for airline traffic. Airline traffic will always have priority over general aviation traffic, and the delays created by staying clear of arriving and departing airline traffic will definitely have an impact on training time and cost. In most metropolitan areas, there are designated primary

and secondary airports, and most flight training schools will locate themselves at the secondary airports just for this reason.

Flight and Ground Instructors

Hiring a flight instructor at an airport, or being assigned one at a flight training school, is how many of us learned to fly. It remains a viable path to certification, given time or budget constraints, but some caution is in order. While independent flight instructors may offer a cost effective solution on an hourly basis, they may not be the best solution over an extended certification program. All instructors in the United States are certified by the FAA using stringent certification standards, but not all instructors utilize “best in class” instructional techniques once in the field. Instructors who teach at reputable flight training institutions must pass ongoing competency and standardization checks, which ultimately assures that the student will get a more consistent training experience. As with doctors, lawyers, and engineers, there are groups that publish information about instructors who stand out as the most professional in their field. Both the National Association of Flight Instructors (NAFI) and the Society for Aviation and Flight Educators (SAFE) can provide information. There are also “Master Instructor” accreditation programs dedicated to accredi-

It is important to determine what you want to do with a desire to fly and to get some advice from people who know and understand the flight training industry.



Photo by H. Dean Chamberlain



Photo by H. Dean Chamberlain

ing flight and ground instructors who complete a grueling recertification program every two years. The bottom line is that you owe it to yourself to get the highest quality and safety minded training you can find, so do your homework.

Interviewing Your School

You also need to do your homework on the training facility you choose. For starters, be sure to visit more than one flight school. Most schools offer some kind of “discovery flight” geared toward helping you make the decision to get started. Use

A pilot’s lifelong flying habits are often formed by first impressions in the learning process. You owe it to yourself to get the best foundation you can find in your area.

this opportunity to look around and ask questions. Any training school worth its salt will be proud to tell you about the experience of its instructors, and tell

you about how its safety reporting program works. There are other telltale signs of a quality operation: How clean are the aircraft? How organized are the briefing and training areas? Ask to see the maintenance hangar, and look for an organized and orderly work area. Do they use simulators and have formal ground schools? Can they show you the syllabus that will be used for your training? Do they give you ranges and factors to consider for completing your training on schedule and on budget? If any of the answers to these questions seem uncertain, then you should continue evaluating your options. Be aware that there are many variables (e.g., weather

and aircraft maintenance) that can affect cost and schedule. Some schools may offer an attractively low price, but a little homework should tell you if the price quoted is too good to be true. Also remember that a pilot’s lifelong flying habits are often formed by first impressions in the learning process. You owe it to yourself to get the best foundation you can find in your area.

Parting Thoughts

In evaluating your paths to “pilothood,” focus on identifying your goals and selecting the school which will best achieve those goals by providing a structured program and standardized instructors that are trained to help accomplish your goals safely. Spend some time with your potential flight instructor to make sure your personalities and styles are compatible. The instructor must make it fun while keeping your training progressing along a defined syllabus. When in doubt, ask others.

Learning to fly should be one of the most exciting and exhilarating experiences of your life. A little research and prudent selection will make sure that it is. ✈️

Michael “Mike” Gaffney is an ATP pilot, Airframe and Powerplant Mechanic, and an experienced Chief Flight & Chief Ground Instructor with almost 3,800 flight hours. He was named the “National Flight Instructor of the Year” in 2007 and received the National Aviation Transportation Association (NATA) 2007 Flight Training Excellence Award. He is a 6-time Master Flight Instructor and Master Ground Instructor.

Guideposts

Ask any pilot certificated before now about what their ground training was like, and you are likely to hear about all the overly complex or downright silly things they had to “study” to pass the FAA knowledge test. I personally remember the frustration of trying to master wingtip bearing references, and doing multiple interpolations across several hard-to-read graphics to calculate a two-knot difference in the wind velocity ... at an altitude I could never reach in a typical GA airplane.

That’s why I also used to start every ground school course I taught by saying that I planned to teach my students not only what they needed to pass the FAA knowledge (“written”) test but, more importantly, to impart the material they really *would* need to know to pass the “real life” test.

Thanks to the newly-implemented Airman Certification Standards (ACS) approach, the subjects you need to study to pass the knowledge test are now connected not only to skills you must master for the practical test, but also to the complete set of things you need to know, consider, and do in “real life” flying activities. That’s a major improvement for aspiring private and instrument pilots. Over the next couple of years, the ACS will include the commercial, ATP, and instructor certificates on the pilot side, and the airframe and powerplant certificates for aviation maintenance technicians.

Training and Testing Resources

The ACS provides better guideposts on the primary avenues to aviation, but you can also benefit from perusing the many resources on the FAA website’s Airman Testing web page (www.faa.gov/training_testing/testing/).

Here are some of the “guideposts” that are just a mouse click away — and available at no cost.

- *Airman Certification Standards* — www.faa.gov/training_testing/testing/acs/. This page provides background, FAQs, and the final ACS for the private pilot airplane certificate, the instrument-airplane rating, and the remote pilot certificate (UAS).
- *Practical Test Standards* — www.faa.gov/training_testing/testing/test_standards/. The ACS will eventually apply to all airman certificates and ratings, but this page provides access to the Practical Test Standards (PTS) for

everything not yet transitioned to the ACS.

- *Reference Handbooks* — www.faa.gov/regulations_policies/handbooks_manuals/. This page provides links to all the official FAA resources for training and testing, including the FAA-H-series handbooks. Of particular note is the latest edition of the *Pilot’s Handbook of Aeronautical Knowledge* (FAA-H-8083-25B), which reflects updates recommended by aviation training industry experts in the ACS Working Group. By the time you read this issue of *FAA Safety Briefing*, publication of the substantially revised *Airplane Flying Handbook* (FAA-H-8083-3B) will be imminent.
- *Testing Resources* — www.faa.gov/training_testing/testing/testing/. There are a number of helpful “guideposts” available through this page. For instance:
 - *What’s New and Upcoming in Airman Testing* (www.faa.gov/training_testing/testing/media/whats_new_general.pdf) lists topics and types of questions no longer included in FAA knowledge tests.
 - *Knowledge Test Sample Questions* - www.faa.gov/training_testing/testing/test_questions/.
 - *Frequently Asked Questions* — www.faa.gov/training_testing/testing/media/questions_answers.pdf. Separate from the ACS-specific FAQs, this document addresses a broad range of questions on airman certification, testing, and training.

Visit Often ... and Subscribe

Anyone involved in aviation training and testing can benefit from the extensive information offered through these and the many other links you will see when you visit the Airman Testing page. Please visit often or, better yet, click on the “subscribe” link in the upper right corner to receive an email notice of updates to these resources.

Happy surfing!

Susan Parson (susan.parson@faa.gov, or @aviBrix for Twitter fans) is editor of FAA Safety Briefing. She is an active general aviation pilot and flight instructor.

THE AIRWAY LESS TRAVELED

Alternate Career Options in Aviation

Two airways diverged in the National Airspace System (NAS); I took the one less traveled.

To paraphrase Robert Frost, sometimes taking the less obvious path really does make all the difference. Discussion of aviation careers usually focuses almost entirely on pilots and Aviation Maintenance Technicians (AMTs). Those are the most obvious choices, and both offer employment ranging from mom-and-pop hangar operations to world-spanning airlines. But the well-trodden path is not always a good fit.

I speak from experience. I started out thinking I was on the path to the typical airline pilot career. As my training progressed, though, I realized I was finding a lot less fun and a lot more stress. Since I had been quite happily in and around GA airplanes for almost a decade by then, the less fun/more stress experience was a clear wake-up call. I had also realized that the roving lifestyle and occasional “turbulence” in terms of airline job security was not my cup of tea.

So I firmly decided that flying for a living just wasn’t for me. I continued flight training, which was a lot more fun and a lot more productive after my career choice epiphany. Instead of every lesson being a job and every checkride being an exam, training went back to being more like a series of interesting challenges.

But there was still an open question. I knew I wanted to be in the aviation world, but I didn’t know where I might fit in. As I looked around, I found that there are actually quite a few aviation career options that might be a good fit for a non-flying lifestyle.

Dispatch and Meteorology

Dispatch and meteorology have common features, as both involve working with the operating environment for aviation.

Meteorology requires expertise on the physical environment that the aircraft will encounter. The kind of meteorology required in aviation can focus on short or long-term forecasting, climate modeling, weather phenomenon research, or any number of other



sub-specialties. That means that aviation directly or indirectly employs thousands of meteorologists in government agencies, private consulting firms, universities and academic institutions, agricultural interests, utility companies, and many more. So if this kind of work appeals to you, the opportunities are many — but you will first have to invest the time and money needed for the academic degrees you will need in meteorology or atmospheric science.

Dispatch is a critical component of the airline world. The dispatcher has to be an expert in the complex legal and technical components of the airline operating environment. Dispatch provides the flight crew with all the planning information needed to complete a flight. These professionals then monitor the flight and provide operational updates to the crew as needed. While the captain may have the ultimate authority over the conduct of the flight, the dispatcher is there to provide advice and support and, in some aspects of the flight, is jointly responsible with the captain under 14 CFR part 121 (the regulations that pertain to air carrier operations).

Dispatchers are certificated by the FAA under 14 CFR part 65 (airmen other than flight crew members). In order to apply for a dispatcher certificate, you must either meet certain experience requirements (described in 14 CFR section 65.57(a)) or complete an FAA-approved course along with a knowledge and practical test. In addition, you must be at least 21 to take the knowledge test, and at least 23 to meet the eligibility requirements for the certificate. The knowledge base for the dispatcher knowledge test is very similar to that of an Airline Transport Pilot.

So if you want to be directly involved with airline flight operations, but not fly, meteorology or dispatch might be of interest.

The Wide World of Airports

The general public, and even pilots, have a tendency to think of airports as a patch of pavement pointed in the direction of the prevailing winds. But airports require a lot more work — and a lot more workers — than you might realize. Designing, building, and updating airports requires both engineering and aviation expertise. Given the large sums involved in such work, consulting and engineering firms can use people with an aviation background to help them be more competitive in the aviation market. A degree with training in aviation and business or engineering is helpful if you are looking for a job in airport design. A civil engineering background could also be useful.



Photo by James Williams

More jobs exist in day-to-day airport management. A small GA airport might employ one or two people, or else have one person covering multiple airports. Airport management at larger commercial airports could involve dozens of people spread across a host of specialized departments. At a larger airport you may start out with a smaller role, but it can be a good place to build experience. At major airports, the needs of the airlines (passengers and cargo) tend to be the most pressing. At a smaller GA airport, you will likely have a much more varied group of stakeholders.

You will quickly learn that what the Fixed Base Operator (FBO) wants will be different from what the skydiving operator wants, and both of these may be different than what the hangar tenants want. Figuring out how to keep as many people happy as possible is as much art as it is science. Regardless of the size of the airport, airport employees always face the challenge of balancing the needs and desires of user groups.

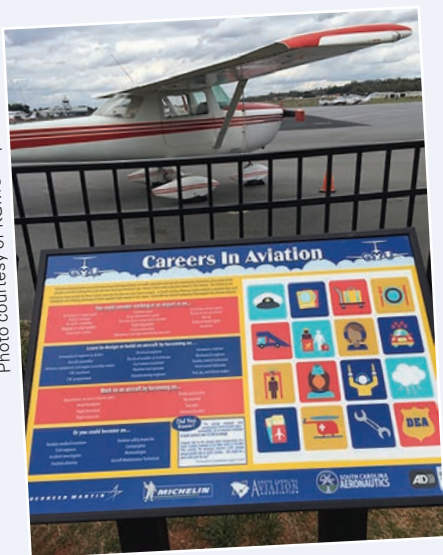
For this reason, airport administration and management work can appeal to aviation-minded people who enjoy problem-solving and diplomacy. A degree in aviation or engineering is helpful in this field. You will also be expected to know your way around FAA regulations and information sources like Advisory Circulars. You can get specific training either through academic channels or through professional organizations like the American Association of Airport Executives, the Airports Council International, or the National Business Aviation Association to name just a few. Some of these organizations also offer accreditation and certification programs that provide you with qualifications that are recognized across the industry.

Telling the Story of Aviation

Aviation journalism and aviation advocacy both tell the story of aviation, but with differing motivations and objectives.

An aviation journalist is exactly that: a journalist

The general public, and even pilots, have a tendency to think of airports as a patch of pavement pointed in the direction of the prevailing winds. But airports require a lot more work — and a lot more workers — than you might realize.



who reports on aviation. Like any significant industry, aviation has its own trade press, with a range of media outlets. Some aviation journalists work for mainstream media outlets and focus on aviation topics of interest to the general public. Others may specialize in specific industry segments. If you enjoy aviation, and like to write, this may be a good option for you. To prepare for a career in aviation journalism, it's a good idea to have a background in English or journalism, as well as have experience working in aviation.

Aviation advocacy is another possible career field. Those employed by an advocacy group use communication skills to inform as well as to persuade. As an advocate, your job is to represent the interests of your stakeholders. Sometimes this work involves lobbying the government or working with the media. Since many aviation

funding for flight training and proficiency so that their employees can learn to fly or keep flying.

Taking Care of Business

If you've spent any time in or around aviation businesses, you've probably noticed that most are very passionate about what they do. It seems obvious to those of us who are in the aviation world. Anyone involved with running an FBO, flight school, maintenance shop, or charter company knows aviation is inherently a tough business; the costs involved are high, the margins are thin, and the competition is fierce.

A passion for aviation and a strong business mind are two beneficial attributes if you're considering an aviation business career. Good business training is also widely available.

These are just a few of the many options that are available to you should you decide that flying might not be for you. Think about what you're good at and what you like to do, and then consider how your interests and your skills align with the skill sets necessary for each of these fields. Keep in mind that the lifestyle requirements have to work as well — for instance, dispatchers will likely do shift work, while airport designers may have a more conventional schedule.

The bottom line is that if you have the skills and the gumption to lay the groundwork and do the homework, you can translate your passion into profit — or at least a reasonable living.

What suggestions do you have? Let us know at SafetyBriefing@faa.gov or [@FAASafetyBrief](https://twitter.com/FAASafetyBrief) on Twitter. ✈️

James Williams is FAA Safety Briefing's associate editor and photo editor. He is also a pilot and ground instructor.

Airport administration and management work can appeal to aviation-minded people who enjoy problem-solving and diplomacy.

advocacy groups have publications, expertise in journalism can combine with advocacy work.

There is no obvious or set path to this kind of career, but necessary skills include a solid understanding of aviation regulations, as well as how the legislative process and executive agencies work. A political science or marketing degree could help as a starting point.

We asked Aircraft Owners and Pilots Association (AOPA) Director of Human Resources Joanna Norville what they look for in applicants and why someone should consider AOPA. "AOPA is a great place to work and we are hiring! We look for people who are creative, motivated, and good at working collaboratively on a variety of initiatives important to general aviation. As the leading general aviation advocacy organization, having an interest in aviation obviously also helps." AOPA even provides its employees with

A Little Bit of Everything

A Look at General Aviation Flying Career Options



If you're like many nascent or prospective flyers (myself included at the time), you're likely to be drawn to the glamor, excitement, and — let's be honest — the money that a professional airline pilot career offers. Many an aviator has caught the airline flying “bug” at an early age watching, in awe, a 400-ton aluminum giant depart as gracefully as a swan. Or maybe it was during one of your very first commercial flights while catching a glimpse of a uniformed crew member calmly attending to a maddening array of buttons and switches in the flight deck. It's a natural fascination.

I, for one, am grateful for having such inspirational aviation experiences early in life that would later steer both my education and career field choices. And while there is a lot to be said for our compatriots flying heavy metal to destinations far and wide, let's not forget there are literally hundreds of other flying career options out there no less important, and certainly no less exciting — and maybe a few you never knew existed.

So, in honor of this issue's Avenues to Aviation theme, let's take a look at some of the many general aviation flying career options out there. (*Editor's note:* By no means is this an exhaustive list. Some might even say it only scratches the surface!)

Aviation Education

The role of a certificated flight instructor (CFI) is undoubtedly the initial go-to career path for aspiring aviators no matter what their aviation end game may be. In addition to providing you with a sound foundation of aviation

knowledge and airmanship, being a CFI also provides the opportunity to sharpen your people skills and gain experience in a variety of aircraft.

While some may regard being a CFI merely as an inescapable means of gaining the hours needed to hop to the next flying job, others regard this noble profession as a rewarding and personally satisfying career. At some larger flying schools, like many university flight programs, CFIs have opportunities for advancement including roles as chief flight instructor or director of flight operations. Another appealing aspect of being a CFI is the flexibility to work full- or part-time and sometimes just on the weekends. Whatever your motivation is, flight instructing is truly a rewarding craft that can help mold safe practices and decision-

At some larger flying schools, like many university flight programs, CFIs have opportunities for advancement including roles as chief flight instructor or director of flight operations.



making skills for generations of future pilots. If you want to know more, the FAA has several CFI-related online resources at www.faa.gov/training_testing/training.

Flying for Hire

If you don't see an instructional career in your future, there are a slew of other commercial flying activities that can help you pay the bills. Examples include aerial photography, surveying, banner towing, glider towing, skydiving operations, and sightseeing tours. More remote areas, like Alaska, have a greater demand for bush pilots to help get people and supplies from place to place, or transport pilots to hunting, fishing, or backwoods camping expeditions. Most of these activities require a commercial certificate, and many also involve being in high-risk situations or require specific skill sets (e.g., tail wheel time, off airport landings, and localized high-density traffic).

Take fish spotting for example, a flying occupation common to the Alaska area. Pete Devaris, FAA Senior Technical Advisor for Flight Standards in Alaska, (profiled here in 2011), once worked with a team of flying salmon spotters who would guide ships to prime fishing spots. "With all our competitors, we'd have 50 to 60 planes flying over the same bay at once," recalls Devaris, "and that was often with low ceilings and blowing snow. Working in those conditions required leadership skills at a life-and-death level. If you weren't a staunch professional at all times, it could cost a life."

Crop Doctors

Covered under a specific set of regulations (14 CFR part 137), agricultural aircraft operations (aka "crop-dusting," or more properly, aerial application)

play a vital role in protecting and aiding the production of food, fiber, and biofuel. They also help protect our nation's forests and control harmful pests like disease-carrying mosquitoes.

According to a 2012 industry survey conducted by the National Agricultural Aviation Association (NAAA) (www.agaviation.org), there were approximately 1,350 aerial application businesses in the United States, which used an 87/13-percent split between fixed-wing aircraft and rotorcraft, respectively. Ag pilots must have a commercial certificate to work for hire and meet the requirements of part 137, which allows for more risky low-level operations. Although it can be an exciting occupation, aerial application requires a tremendous amount of training, skill, and precision. If crop-dusting piques your interest, NAAA offers a program called Compaass Rose (www.agaviation.org/compaassrose), where veteran ag pilots introduce potential recruits to the world of aerial application presented at the NAAA national convention or at selected state association conventions. More FAA resources on part 137 can be found here: <http://go.usa.gov/x32jQ>.

There's No Business Like Show Business

The heyday for old-school barnstorming and flying circuses may be long gone, but the entertaining spirit of these activities lives on through the many air shows and fly-ins that occur on any given Saturday across the nation. At their heart, of course, are the dedicated performers who have honed their skills to elicit as many oohs, ahhs, and wows as possible. It takes hard work, hours of training, and a lot of patience to get into the airshow arena, but it's probably one of the more exciting career options possible, not to mention the impact it has on inspiring future aviators.

A private (and commercial certificate if you plan to get paid) is required, as well as an initial, then annual, checkride with an aerobatic competency evaluator or ACE. ACEs are certified by the International Council of Air Shows (ICAS). For more information on this career field as well as some scholarship options for budding performers, check out the ICAS Foundation website www.icasfoundation.org/scholarships.

If you're into regularly performing feats of derring-do, another career option is to be a stunt pilot or aerial camera pilot for movies and television. These pilots are often called upon to perform precise and highly coordinated action sequences carried out in a helicopter, airplane, hot air balloon, or more recently, unmanned aircraft. Many local news media outlets also utilize pilots to assist with aerial footage, and of course with the ubiquitous live traffic "chopper" coverage.

Eye in the Sky

Local, state, and federal government agencies and entities offer several career areas that require flying expertise. Examples include local law enforcement, firefighting, air ambulance and emergency medical services, pipeline surveillance and inspection, federal law enforcement (Customs and Border Patrol, Drug Enforcement Administration, FBI, etc.), wildlife monitoring and surveillance, and meteorology. The FAA employs several inspectors and test pilots charged with maintaining the safety and integrity of aircraft, airports, and airspace technology. The FAA also maintains a cadre of designated pilot examiners who act on the agency's behalf to administer practical flight tests and certify airmen.

"Chartering" Your Next Career

Another avenue for pilot careers is with corporate or charter flying. This type of "on-demand" flying requires some schedule flexibility which can involve short hops or multi-day layovers. Aircraft used could vary from a light single-engine to a large business or commercial jet. Depending on how the ownership of the fleet is set up, you could find yourself flying under part 91, 91k, or 135 regulations.

The air freight business provides another set of options for pilots. Here the flying can also vary greatly among the different operators — some use smaller aircraft, like a Cessna *Caravan* on domestic routes, while others use jumbo jets like the Boeing 747. Keep in mind that many cargo carriers operate late at night, so proper rest (and nourishment) before and after a flight is critical.



Another variation on the air cargo career is the ferry pilot, whose cargo is the airplane itself — that is, they deliver new airplanes to a dealer or private customer.

Just Because ...

Although volunteer pilot operations are typically unpaid, there are numerous non-monetary benefits you can gain through flying for a good cause. In addition to providing direct value to the organization you're flying for, volunteer flying can also help sharpen your skills, expand your aeronautical experience, and enhance the public's perception of general aviation. Examples of service-oriented flying include disaster relief, Civil Air Patrol search and rescue, missionary support, animal rescue, and transporting medical patients. For a more complete overview of volunteer flying, including many of the associated safety and regulatory concerns, see the article "Flying Just Because" in the July/August 2012 issue of *FAA Safety Briefing*.

It's clear to see that the availability and vast diversity of general aviation operations here in the United States provide a lot to think about when choosing a flying career. So whether you're just getting started in aviation, or have been flying for years and considering a change, take a look at what GA offers. Like a slice of supreme pizza, it's got you covered with a little bit of everything. ✈️

Volunteer flying can also help sharpen your skills, expand your aeronautical experience, and enhance the public's perception of general aviation.

Do you know of any other GA flying careers not mentioned here? Share them with us at SafetyBriefing@faa.gov or via Twitter @FAASafetybrief.

Tom Hoffmann is the managing editor of FAA Safety Briefing. He is a commercial pilot and holds an A&P certificate.



Oh, The Places You'll Go

A Look at the World of Aviation Maintenance Operations

TOM HOFFMANN AND SABRINA WOODS

As a certificated airframe and powerplant (A&P) technician, you have many different avenues you can take to embark on a successful and rewarding career. The path you choose is most likely to be based on a few personal preferences.

But first, to recap, in order to obtain an A&P certificate as a U.S. citizen, you must be at least 18 years old, be able to read, write, speak, and understand English, and you must have 18 months of practical experience with either powerplants or airframes, or 30 months of practical experience working on both at the same time. An alternative to this experience requirement is graduating from one of the approximately 170 FAA-approved aviation maintenance technician schools. (You can search for schools at <http://av-info.faa.gov/MaintenanceSchool.asp>). If you take the university route for this training, you'll have the added benefit of a two or four-year degree in your back pocket. After the experience and/or schooling come three tests: a written, oral, and practical test.

Although this article is focused more on A&Ps, there is another category of certificate that is available to perform aircraft maintenance — the repairmen certificate. The requirements are somewhat similar to an A&P, but a repairmen certificate is both location and company specific; it carries a literal

address where the individual is authorized to work. Repairmen must also be employed for a specific job requiring special qualifications by an FAA-certified Repair Station, commercial operator, or air carrier. For more information, including the requirements for both light-sport and experimental repairmen certificates, reference subpart E of 14 CFR part 65 (<http://go.usa.gov/x3NjH>).

Now, back to those personal preferences that can help to shape and mold your maintenance career.

Where Everybody Knows Your Name

Particularly in general aviation, people tend to think of their local FBO mechanic when they think of aviation maintenance, and for a good reason: quite a few mechanics get their start this way. The smaller county or regional facilities might come equipped with a “hangar out back” that is run by one or two certificated mechanics, with at least one holding an inspection authorization (IA) endorsement.

These settings can be more intimate with a mechanic becoming accustomed to a host of “usuals” who regularly leave their aircraft in the mechanic’s capable hands. The benefit to working in this kind of environment is that you can “be your own boss.” Controlling your own hours, intake, and

output, appeals to many. Also, the more experience you have on a single type aircraft, the better you are likely to get at understanding its quirks and sorting out its issues. You can quickly become the expert.

Adrian Eichhorn, a pilot and A&P who works out of Manassas Regional Airport (KHEF) can attest to this idea. “One thing that was suggested to me early on, and which I recommend doing, is to be a specialist on one type of aircraft.” Eichhorn has done just that in the last 20 years by building a reputation as an expert on Bonanzas. “There’s a big shortage of specialists out there,” continues Eichhorn. “You can have a great career in aviation maintenance if you find a niche and focus on that.” While this can be a lucrative option for some, Eichhorn points out that this approach also has to be earned with the requisite amount of experience and understanding of a particular aircraft’s systems.

The disadvantages to being involved with this type of small or independent operation include the fact that the life of a lone A&P can ebb and flow with the flying season. That means you have to be prepared for those less busy days to ensure that the income, and the opportunities for learning, stay relatively high.

If you’re willing to sacrifice some independence to work in a faster-paced environment, you could try your hand at working at a flight school or at one of the many larger corporate/general aviation FBOs. These shops typically deal with larger fleets and can offer you experience working on a wider array of aircraft types and components. A larger operation can in many cases allow for greater job stability and more advancement opportunities (e.g., lead mechanic, lead inspector, shop supervisor, director of maintenance).

Getting Ahead

Speaking of career advancement, one important way an A&P can “climb the ladder” in his or her field is by obtaining an IA endorsement. To be considered for an IA, an A&P mechanic must have held his or her certificate for at least three years, and been active for the last two years. An IA candidate must also have:

- A fixed base of operation where he or she can be located in person or by phone
- The available equipment, facilities, and inspection data necessary to properly inspect the airframe, powerplants, propeller, or any related part or appliance he or she will be approving for return to service.

Finally, applicants must pass an IA knowledge test — more on that can be found here: <http://go.usa.gov/x3Nvm>. To submit an application, use FAA Form 8610-1, Mechanic’s Application for Inspection Authorization. An IA information guide is also available at <http://go.usa.gov/x3NfV>.

Another evolving area for aircraft mechanics to consider focusing on is avionics. Although avionics technicians only represent a small part of the overall aviation maintenance workforce, their skills are becoming more and more in demand in an increasingly digital world. The FAA mandate to install Automatic Dependent Surveillance-Broadcast (ADS-B) Out equipment by 2020 will continue to fuel that demand, along with an increasing desire for more sophisticated autopilot, communication, and cockpit weather display systems. An Airframe rating allows a mechanic to repair and maintain some avionics equipment, but other licenses and certifications may be needed.

Airline Aspirations

Much like pilots are often attracted to working with “heavy metal” in the air carrier world, many aircraft mechanics have similar aspirations. Depending on the airline and/or the position, you may be able to gain employment with little or no experience beyond your A&P. In addition to earning a degree in

One way an A&P can “climb the ladder” is by obtaining an IA endorsement.



Photo by Tom Hoffmann



the aeronautical field, some aviation maintenance university programs offer internships to help you get practical experience and can assist with job placement after graduation.

Although avionics technicians represent a small part of the overall aviation maintenance workforce, demand for their skills is growing in an increasingly digital world.

Once hired, airline mechanics usually either work in line maintenance at the airline terminals, or perform larger scale inspections and repairs at an overhaul base. After gaining additional experience, a mechanic can move up to become a lead technician, supervisor, or a shift, hangar, or station manager.

According to 17-year United Airlines aircraft technician Miguel A. Chungata, “the sky’s the limit with career opportunities.” To be successful in the airline business, though, he adds that “you really have to have a love for maintenance and not be afraid to get your hands dirty.” In addition to those hard-to-clean fingernails, you’ll likely encounter noisy work environments, high-pressure situations, and the need to sacrifice nights and weekends until you build seniority. “It’s not a 9-5 job, that’s for sure,” says Chungata. “But if you’ve got a passion for aviation, nothing beats the satisfaction of swapping out an entire widebody engine in order to keep the operation running smoothly.”

A Little Help from Your Friends

According to the Bureau of Labor Statistics (BLS), aircraft mechanics and avionics technicians held about 137,300 jobs in 2014. Although BLS forecasts indicate minimal job growth in this field through 2024, mechanics who specialize in more cutting-edge technology and composites, and who are knowledgeable about computers, are predicted to have an edge in the market going forward.

Another way to gain an advantage career-wise is to get involved with mechanic-minded groups or professional associations, like the Professional Aviation Maintenance Association (PAMA) or the Aeronautical Repair Station Association (ARSA). These groups regularly host educational seminars which can always double as a networking event. You can also read publications like *Aviation Maintenance Magazine* (www.avm-mag.com) or reference the many maintenance-related materials and resources on the FAA’s website (www.faa.gov/mechanics). For links to the AMT Awards Program, as well as dozens of AMT training courses, check out the FAA Safety Team’s website (www.FAASafety.gov).

So whether you’re doing annuals on a single-engine Cessna, or heavy checks on an Airbus A380, being an aircraft mechanic can be an extremely demanding, but immensely rewarding career. By being thorough and taking pride in your work, you can ensure it is a successful one as well. ✈️

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Sabrina Woods is currently a human factors scientist with the FAA’s air traffic organization. She spent 12 years as an aircraft maintenance officer and an aviation mishap investigator in the Air Force.

Look Listen FOCUS



LIVES
ARE AT
STAKE!



- **IT CAN HAPPEN TO YOU:** When operating at unfamiliar airports, you may accidentally cross a hold short line.
- **THE FIX:** Ask for progressive taxi instructions - ATC is there to help! Always have the airport diagram available and reference it when writing down clearance instructions. Be sure to brief hot spots while on the ramp and verbalize your taxi route out loud, even if you're by yourself, to help commit it to memory.



Federal Aviation
Administration

For additional runway safety education, take the AOPA Air Safety Institute's Runway Safety online course at www.airsafetyinstitute.org/runwaysafety.



BRAD C. ZEIGLER

Piloting a Small Unmanned Aircraft

Your Dream Job of the Future!

It's no surprise that one of the fastest growing sectors in today's aviation is the commercial drone industry. Drones, also known as small unmanned aircraft systems (sUAS), have seen a dynamic increase in sales, and it's safe to say that the number of sUAS entering the national airspace will continue to increase, and the demand will grow. This demand and enthusiasm for sUAS, paired with the commercial opportunities that the FAA's new part 107 rule for sUAS offers, has opened up many new and exciting job opportunities that have never before been considered or even thought possible. More than 70,000 jobs are forecasted for the first three years of UAS integration, according to the Association for Unmanned Vehicle Systems International (AUVSI), a nonprofit organization dedicated to promoting and supporting unmanned systems.

Many sUAS flying jobs require little to no pilot experience. Unlike your traditional, manned aviation pilot jobs, where your career path is largely determined by your flight experience, ratings, and certificates, sUAS jobs focus more on the work you're performing.

So let's take a look at some jobs.

Aerial Photography and Videography

Do you have an eye for the perfect shot, or the patience and creativity to capture amazing footage?

If yes, then aerial photography and videography might be just the type of sUAS job you're looking for. Aerial photography and videography has experienced the largest growth in the sUAS industry. There are many opportunities available, and this is a great way to get into the sUAS business. This industry runs the gamut, from real estate agents hoping to woo buyers with a bird's eye view of their property listing, to motion picture crews filming the next blockbuster movie. Many aerial photography and videography sUAS pilots are self-employed entrepreneurs working a wide variety of freelance assignments ranging from weddings to corporate events.

Does journalism interest you? Many news organizations are hiring remote sUAS pilots to gather news footage.

Public Service/Rescue

Do you enjoy helping the public, and do you have experience in law enforcement, firefighting, or emergency management? Public service sUAS jobs require specific experience in these areas, but if you have it, then there may be a sUAS job for you. Police, fire, and emergency services agencies across the country look to sUAS as a solution for managing critical situations. Faster and cheaper than manned aircraft assets, police departments use the quick "eye in the sky" ability that sUAS provides to track

criminal activity and document crime scenes. Fire departments use sUAS to provide thermal imagery of ground fires, which provides a better picture of incidents before firefighters enter the scene. In hazardous materials incidents, sUAS allow incident commanders to quickly survey sites without “suing up” or putting any responder at risk. Emergency managers use sUAS to conduct disaster assessments following storms, wildfires, earthquakes, and other major catastrophes.

Educational/Academic

Is teaching or training your passion? If you are a remote pilot who has a passion for sUAS, and a desire to pass on that knowledge to the next generation of aviators, then the academic world may be to your liking. Once limited to only a few aeronautical colleges and universities, today’s need for sUAS teachers and trainers has grown, as more and more colleges and universities are offering UAS educational programs and degree opportunities. If you don’t have the academic qualifications to teach at a college or university, take a look at the UAS flight schools. There are many schools looking for sUAS trainers.

Bridge/Rail/Utility Inspection

Do you have an eye for detail? A sUAS inspector job could be the detail you’re looking for. Inspectors climb bridges, scale transmission towers, and walk railroad lines. Now they perform these same functions by mounting a camera to a sUAS to visu-


ally inspect infrastructures. Many utility companies prefer the quick deployment of sUAS, particularly in areas where manned aircraft are not practical for cost or safety reasons.

Wildlife Management

Do you love the outdoors? Many opportunities have opened up in wildlife management, as sUAS are on track to replace binoculars as the preferred method to discretely observe wildlife behavior. Around the world, wildlife conservationists are using sUAS to preserve and protect wildlife from the air. Park managers are starting to use sUAS to count population sizes for certain species, and the U.S. Fish and Wildlife service will soon use sUAS to distribute vaccines to prairie dogs in Montana.

Drone Racing

How about flying a sUAS as a sport? Drone racing is an emerging sport that uses sUAS and first-person view to race through a course at breakneck speed. Just this past March, at the World Drone Prix in Dubai, a 15-year-old won \$250,000, with a \$1 million total purse up for grabs.

These are just a few examples of the limitless job opportunities that exist in the world of sUAS. Go out there, explore, and remote pilot your way into your dream job of the future. 

Brad C. Zeigler is an Aviation Safety Analyst with the General Aviation and Commercial Division. He is also an Airline Transport Pilot, Certified Flight Instructor and frequent Cessna 182 flyer around the Washington, DC area.



FAA sUAS PART 107: THE SMALL UAS RULE

The Small UAS rule adds a new part 107 to Title 14 Code of Federal Regulations (14 CFR) to allow for routine civil operation of small Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) and provide safety rules for those operations. The rule defines small UAS as unmanned aircraft weighing less than 55 pounds. To mitigate risk, it will limit small UAS to daylight and civil twilight operations with appropriate collision lighting, confined areas of operation, and visual-line-of-sight operations.

The rule addresses airspace restrictions, remote pilot certification, visual observer requirements, and operational limits in order to maintain the safety of the NAS and ensure that small UAS do not pose a threat to national security. Because UAS constitute a quickly changing technology, a key provision of this rule is a waiver mechanism to allow individual operations to deviate from many of the operational restrictions of the rule if the Administrator finds that the proposed operation can safely be conducted under the terms of a certificate of waiver. This new rule became effective August 29, 2016.

Part 107 does not apply to model aircraft like noncommercial drones and radio-controlled (RC) aircraft. Model aircraft operators must continue to satisfy all the criteria specified in Section 336 of Public Law 112-95 (which will now be codified in part 101), including the stipulation they be operated only for hobby or recreational purposes.

THE IMPACT TO AIR TRAFFIC CONTROL

After the effective date, those operators that have successfully passed the required knowledge test and received a remote pilot certificate may begin operations in Class G airspace at or below 400 AGL without contacting ATC or issuing a NOTAM.

For operations in controlled airspaces (Class B, C and D airspace, and E surface area) the Air Traffic Organization, in collaboration with NATCA, is establishing a process where the operator can make a request and receive approval through an automated system. The operators will not contact individual ATC facilities to make the request. ATC guidance, procedures, policies and processes will be available prior to the effective date of the rule. For more information on the new rule visit the FAA UAS website at www.FAA.gov/UAS.

MAJOR PROVISIONS

- Unmanned aircraft must weigh less than 55 lbs. (25 kg)
- Visual line-of-sight (VLOS) only; the unmanned aircraft must remain within VLOS of the remote pilot in command and the person manipulating the flight controls of the small UAS
- Small unmanned aircraft may not operate over any persons not directly participating in the operation, not under a covered structure, and not inside a covered stationary vehicle
- Daylight-only operations or civil twilight (30 minutes before official sunrise to 30 minutes after official sunset, local time) with appropriate anti-collision lighting
- Must yield right-of-way to other aircraft
- May use visual observer (VO) but not required
- Maximum groundspeed of 100 mph (87 knots)
- Maximum altitude of 400 feet above ground level (AGL) or, within 400 feet of a structure, 400 feet above that structure
- Minimum weather visibility of 3 miles from control station and must remain 500 feet from clouds (no ceiling requirement)
- Operations in Class B, C, D and Class E surface areas are allowed with ATC approval
- Operations in Class G airspace are allowed without ATC permission
- sUAS cannot be operated from a moving aircraft
- sUAS cannot be operated from a moving vehicle unless the operation is over a sparsely populated area
- No careless or reckless operations
- No carriage of hazardous materials
- FAA airworthiness certification is not required



Image of a UAS.

FAA.GOV/UAS



**Federal Aviation
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B.Y.O.B. (Build Your Own Bird)

Amateur-built aircraft are a hot commodity. These days, not an airshow goes by without several carefully and lovingly crafted Van's, Kitfox, and Zeniths of every color and style on display. Although it is hard work, there is something to be said for taking a few key parts and pieces, coupling them with sheet metal and fabric, and creating a beautiful flying machine. The rewards are great if you are thinking about undertaking this challenge, but there are a few risks as well. If you believe you are ready to take wrench in hand and build your own bird, here's some basic information about the process and what you can expect.

No Pros Allowed (51 percent of the time)

First is to make sure you know the rules and regulations that make up the amateur-built aircraft category. 14 CFR part 21, section 21.191(g), defines an amateur-built aircraft as one that "has had a major portion fabricated and assembled by person(s) who undertook the construction project solely for their own education or recreation." The Experimental Aircraft Association (EAA) dubbed this the "51 percent rule," meaning that 51 or more percent of your aircraft has to have been built by you or someone else without "commercial" assistance. That means that you can go solo, you and your best buddy can make it a regular weekend project, *or* you, your spouse and kids can even make it a family affair.

Phone a Friend

Once you review the rules, the next step is to contact your nearest FAA Manufacturing Inspection District Office or Flight Standards District Office. There you can chat with an inspector about the type of aircraft you want to build, how complex you want it to be, and the materials you intend to use. Be prepared to provide a drawing or photo of your proposed aircraft, portraying it from the front, rear and sides. The office will then give you any guidance, forms, or additional information necessary to ensure you thoroughly understand the FAA regulations that apply to your project.

Once all the construction work is done, you submit your aircraft to either office for a special airworthiness certificate. You will have to provide evidence to the FAA that the "major portion" of the work has been done without the aid of a professional, and that the aircraft complies with acceptable



Photo by Tom Hoffmann

The Van's RV-8 aircraft is a popular option among kit builders.

aeronautical standards and practices. The paperwork you will need for this process includes: the AC Form 8050-3 (Certificate of Aircraft Registration), the builder's log, sufficient information to clearly identify the aircraft (photos work well), a notarized FAA Form 8130-12 (Eligibility Statement, Amateur-Built Aircraft), and a program letter detailing everything you have accomplished leading up to the build.

In addition to FAA resources, a great place to find a group of like-minded people is with a type club for the aircraft you are thinking about building. Many popular manufacturers have a prominent online and forum presence. They host meetings, chat rooms, and seminars, and can even render assistance when a particular component is giving you trouble. Your local type club chapter can provide you with a wealth of information about the idiosyncrasies of building the aircraft, and perhaps even more importantly, flying it.

Another good idea is to check out the Aircraft Kit Industry Association (AKIA). Helmed by Dick Van-Grunsven (founder of Van's Aircraft), their mission is to represent aircraft kit manufacturers, designers, suppliers and supporters in promoting safety of the aircraft kit industry.

Are You Kitting?

Kits are great! They get you going without having to start from scratch and can greatly speed

A great place to find a group of like-minded people is with a type club for the aircraft you are thinking about building.

up the process. Typically, a kit will provide all the parts to build the airframe of your new aircraft. You source and supply the engine, avionics, textiles, and props yourself.

Choosing to build from a kit is a great option for those who might not have a ton of time or the fabrication savvy to start from scratch. It strikes a bit of

Remember, there is no shame in seeking help from someone who might have more experience to get you through the trickier parts of building your own plane.

middle-ground between wanting an off-the-shelf finished product and wanting to go DIY. Manufacturers are tapping into that desire and providing some really nifty kits that accomplish both. Just keep in mind to stay within the “51 percent” rule, even when using

kits, and that build quality will always depend on your level of skill. Remember, there is no shame in seeking help from someone who might have more experience to get you through the trickier parts (see “Phone a Friend”).

About Those Risks ...

One risk to building your aircraft is the money and time you will have to afford to get to completion. A buddy of mine has been building his Van’s RV-6 for 11 years now. Twice he has had to stop altogether for significant events like the birth of his first child, and when Hurricane Isaac blew portions of his garage (along with bits of his Van’s) away. Now he just jokes about finishing some time when “junior” is out of college.

More major risks have to do with airworthiness. While writing this very article, I received notification of an amateur-built mishap in South Dakota. It is far too soon to know the details of what exactly went wrong, but early reports point to engine failure.

Powerplant issues are the leading cause of amateur-built aircraft mishaps. Typically, it is a result of the engine not producing enough power for the aircraft, or there is an issue with the fuel or fuel supply systems. The pilot is startled or becomes confused — not fully understanding why his or her engine has decided to act up — and an aerodynamic stall ensues.

In building your own aircraft you have quite a bit of latitude to do what you want. The FAA just wants to make sure that any unforeseen wrinkles are ironed out before they become major problems. That is why the Phase 1 flight testing and transition training are key.

Amateur-built aircraft have to be carefully scrutinized and taken through their paces prior to being issued an airworthiness certificate. Data show that the first 50 hours of flight are uniquely challenging for most pilots because they must learn to manage the handling characteristics of an unfamiliar aircraft while also managing the challenges of the flight test environment. In some (perhaps many) cases, the pilot’s skills are rusty after years of spending more time building than flying.

The FAA has issued Advisory Circular (AC) 90-89B, the *Amateur-Built Aircraft and Ultralight Flight Testing Handbook* (see Learn More) to guide builders in preparing for the flight test. It includes advice on weight and balance checks, taxi, engine performance, and operational procedures. After the ground checks are the flight checks. Here is where the Additional Pilot Program (AC 90-116) can greatly benefit you, by allowing another qualified pilot (preferably familiar with your make and model) to act as a second set of eyes and ears in ensuring that the aircraft is sound. Once the aircraft passes its checks and is certificated, investing in a few transition training flight hours with an experienced CFI is always a great idea.

Amateur-built aircraft open up a whole other avenue for you to own and fly your own plane. Plus, the time, effort, and pride you put into building serve as the ultimate reflection of who you are as a person. Happy building and safe flying!

Learn More

FAA Amateur-built Aircraft Page

<http://go.usa.gov/ch3gq>

AC-20-27G - Certification and Operation of Amateur-Built Aircraft

<http://go.usa.gov/ch3g2>

Amateur-built checklist (fixed-wing)

<http://go.usa.gov/ch34r>

AC-90-89B - Amateur-Built Aircraft and Ultralight Flight Testing Handbook

<http://go.usa.gov/cha2V>

AC-90-116 – Additional Pilot Program

<http://go.usa.gov/chaDQ>

AKIA website

<http://www.akia.aero>



Angle of Attack

TOM HOFFMANN

Avenues to (Safe) Aviation

If you're new to flying, we hope this career-minded issue has given you some helpful ideas to think about when considering an occupation in general aviation. The same goes for more veteran flyers who might be pondering a "change of scenery" in their work. But whether you plan on flight instructing, banner towing, or crop spraying, there's an underlying theme of safety and professionalism in each and every aviation job you can think of.

Here at the FAA, it's our job to help foster that culture of safety within the aviation community, including those who don't have a formal safety department at their disposal. Among the agency's many safety goals is a specific focus on reducing the general aviation fatal accident rate. Administrator Huerta has made this goal a top priority during his term, advocating hard for greater data-driven risk analysis, proposals to restructure airworthiness standards for GA aircraft, and leveraging the life-saving potential of technologies like angle of attack indicators.

Outreach campaigns, like the #FlySafe effort, have also been effective ways of conveying a safety message to the GA community. By working together with industry partners and the GA Joint Steering Committee (GAJSC), the FlySafe campaign has continued to focus on loss of control (LOC) issues that are leading accident causal factors. Each month, a new safety enhancement topic is introduced that educates pilots on specific risk mitigation strategies and tools they can use to improve in-flight safety.

The following is a list of those subject areas that will be highlighted in the coming year:

- Compliance Philosophy
- Stabilized Approach
- Flight Risk Assessment Tools
- Single-Pilot CRM
- Personal Minimums & Weather Cameras

- Maneuvering Flight
- Mountain Flying
- AOA & VMC Training
- Startle Response
- Pilots & Medications
- Runway Safety
- Flight Training After a Period of Inactivity

Many of these topics you may recognize from a previous year, but the importance of these subject areas bears repeating and closer examination. We'll also try to provide additional resources and pass along new tips in these areas. Look for the fact sheets on each of these topics on the *FAA Safety Briefing* homepage at www.faa.gov/news/safety_briefing.

The FAA Safety Team's (FAASafetyTeam) WINGS Pilot Proficiency Program is another helpful tool in reducing GA accidents. The WINGS Program consists of learning activities and flight tasks selected to address the documented causal factors of aircraft accidents. It's based on the premise that pilots who maintain currency and proficiency in the basics of flight will enjoy a safer and more stress-free flying experience. Go to www.faasafety.gov for more.

At the time this article is being written (slightly past the halfway mark for 2016), it's heartening to report that the total GA fatal accident number is 14 below our "not to exceed" target rate of 1.02 fatal accidents per 100,000 hours in fiscal year 2016. That's encouraging news. And perhaps it's a sign that we're helping pilots, slowly, but surely, *take back* control. Fly Safe!

Tom Hoffmann is the managing editor of FAA Safety Briefing. He is a commercial pilot and holds an A&P certificate.

Fly with us on Twitter
 @FAASafetyBrief



The Fright of Your Life

Few events in a helicopter pilot's life are more alarming than having a bird crash through a wind-screen while in flight. The results can be fatal to both the pilot and his or her passengers. Even if no physical injuries occur, the event can cause emotional trauma.

The FAA is working to improve the odds in the pilot's favor through proposed rules that would require that helicopter manufacturers build bird strike-resistant helicopters, including windscreens. Last March, the Aviation Rulemaking Advisory Committee (an industry body that provides advice on a broad range of rulemaking activity) approved creating a working group to study the best ways to protect helicopters from bird strikes. This is an important first step toward creating federal rules to address this issue.

Pilots can take immediate steps to protect

themselves by voluntarily wearing helmets that have eyewear with shatter-resistant lenses. The use of helmets has been shown to increase the likelihood of surviving a bird strike. In March, for example, a seagull crashed through the windscreen of a helicopter being flown over West Palm Beach, Fla., according to a preliminary FAA accident/incident report. The bird struck the pilot's helmet. According to the report, the pilot reported no injuries to himself or his crew member and later landed the helicopter without further incident.

Wildlife strikes have killed more than 255 people and destroyed more than 243 aircraft of all types worldwide since 1988, according to an FAA-U.S.

Department of Agriculture report released in July 2014. Factors that contribute to this threat are the increasing populations of large birds and increased air traffic by quieter, faster aircraft.

North America has experienced an explosion in the bird population during the past three decades as birds adapt to urban environments and airports. This increase includes 13 of the continent's 14 bird species that average more than eight pounds, according to the FAA-USDA report.

While the proposed rules will attempt to ensure that helicopters are certified to resist bird strikes, there are several preventive measures pilots can take now to reduce the risk of a bird strike:

- Increase altitude and keep the airspeed down while climbing. Bird strike rates tend to drop the higher the aircraft is. Birds also instinctively dive when threatened to gain airspeed and maneuverability.
- Avoid flights over bird-prone areas, such as wildlife sanctuaries, landfills, and fish packing plants. If you must fly over bird-prone areas, fly slowly until reaching a safe altitude.
- Keep landing/pulse lights on to get the birds' attention.

Gene Trainor is a technical writer and editor in the FAA's Rotorcraft Directorate.

FAST FACTS

- The number of strikes annually reported in the United States has jumped more than six-fold from 1,851 in 1990 to a record 11,315 in 2013 (142,603 strikes for 1990-2013).
- Birds are involved in 97 percent of the reported strikes in civil helicopters.
- Gulls, waterfowl, raptors and vultures lead the animals that are involved in strikes.
- Costs for helicopters damaged by bird strikes average \$41,158 per incident.

Sources: Wildlife Strikes to Civil Aircraft in the United States 1990-2013, FAA, U.S. Department of Agriculture, July 2014. Wildlife strikes to civil helicopters in the US, 1990-2011, U.S. Army, U.S. Department of Agriculture.

Wildlife strikes have killed more than 255 people and destroyed more than 243 aircraft of all types worldwide since 1988.

Photo by James Williams



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Flight Forum

Just Keep Logging Along

Our readers offer up some good advice and some comments about “eLogbook Logistics” in the May/June edition of FAA Safety Briefing (www.faa.gov/news/safety_briefing/2016/media/MayJun2016.pdf).

I enjoyed your article on electronic logbooks. I am an active CFII and have been using an electronic logbook (Logbook Pro) for years. As you pointed out, the big issues are endorsements, Flight Reviews, IPCs, Recurrent Training, etc. For student endorsements, I simply print out the endorsement, scan a copy for my files, give the original to the student, and email a scanned copy to them. Some electronic logbooks allow students to attach a scanned copy to their logbook; otherwise, I suggest that they keep it in a paper file in a safe place.

For my own Flight Reviews, IPCs, Recurrent Training, etc., I note it on the electronic logbook entry and save a scanned copy of whatever document is provided to my cloud storage. Once a quarter I export my complete logbook to an Excel file and save that as well to my cloud storage. In a “belt and suspenders approach,” I keep a mirrored copy of my logbook files and endorsements in one file on a cloud system, and backups in a completely separately file. I also keep a copy on the hard drives on both my desktop and laptop computers — you can never be too safe.

— Leo

I really enjoyed “eLogbook Logistics!” On my quest to keep decent records, I searched the market for an affordable e-Logbook solution but along the course I got a little frustrated. It became obvious that commercial versions may have subtle shortcomings, not to mention that it may not always be user friendly. I decided to create my own “poor-man’s” e-Logbook using MS Excel. Creating my own e-Logbook was challenging and time consuming, however the outcome, while not perfect, satisfied all my needs and it is now a solid unofficial supplement to my paper logbook.

Just a note, however. Even user-friendly, commercial apps, web-based solutions or free software may not always keep pilots out of trouble. For example, while regaining currency, night time logs may include takeoffs (and landings) that happened within 30 minutes of the official sunrise (or sunset). Of course, they will count as night takeoffs or land-

ings when tallied automatically, but they could also mislead someone to think that they are current if they so happen to have three of each within the preceding 90 days. The same could be true for all elements that require someone to be the “sole manipulator” of controls, etc. Unless the prospective pilot exercises due diligence to validate how the specific app or software works it could entrap folks into inadvertent technical violations.

— George

Student Pilot Requirements

In your recent [May/June 2016] issue of FAA Safety Briefing, you mentioned the new student pilot requirements. However, you did not provide information on having the student applicant register by using the FAA website and having the CFI be registered to confirm this. Was this an oversight or will it be covered in the next issue?

— S.W.

Thanks for your question. While we did provide a brief overview of the changes in the May/June 2016 issue, our intention was to expand on it in the following (July/August) issue, just as you stated. The article, “New Student Pilot Certificate Process” on page 31 of the July/August 2016 issue provides greater detail on the application process for both student pilots and CFIs.

FAA Safety Briefing welcomes comments. We may edit letters for style and/or length. If we have more than one letter on a topic, we will select a representative letter to publish. Because of publishing schedule, responses may not appear for several issues. While we do not print anonymous letters, we will withhold names or send personal replies upon request. If you have a concern with an immediate FAA operational issue, contact your local Flight Standards District Office or air traffic facility. Send letters to: Editor, *FAA Safety Briefing*, AFS-850, 55 M Street, SE, Washington, DC 20003-3522, or e-mail SafetyBriefing@faa.gov.

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Lighting the Path

Our chief want in life is somebody who will make us do what we can.

— Ralph Waldo Emerson

Aviation is a big world. Even if you have a sharply focused aviation goal, it's not always easy to discern what you need to learn, much less how best to go about it. Whether you are freshly certificated, in training, or just beginning to think about the many avenues to aviation, there is great value in having a mentor to help illuminate the many pathways and possibilities.

I could have used one. My journey along the aviation learning path was something like the voyage of Homer's title character in the epic poem, *The Odyssey*: I stumbled through a long and winding voyage of aeronautical discovery. You may be doing the same thing.

One of the greatest values of mentors is the ability to see ahead what others cannot see and to help them navigate a course to their destination.

— John C. Maxwell

That's where a mentor comes in. Like the original Mentor, a character in *The Odyssey*, a modern-day mentor is a trusted advisor who provides one-to-one support, encouragement, and advice. In the more recent years of my aeronautical learning journey, several pilots have unknowingly mentored me through their day-to-day actions. One taught me the ropes of long cross-country planning. Another demonstrated the basic principles of crew coordination. Through flying GA aircraft around the country with still another pilot, I finally learned to evaluate weather.

Mentoring is a brain to pick, an ear to listen, and a push in the right direction.

— John Crosby

One of the mentor's most important functions is to transfer experience by sharing events and outcomes that can help a less-experienced colleague learn faster and make fewer mistakes along the way. Both the medical and the teaching professions have structured programs to provide supervised real-world training for recent graduates, and a good aviation mentor can similarly help with the transition from the training environment.

Though it shares some characteristics with the aviator's favorite sport — hangar flying — a mentor's transfer of experience is a more structured and thoughtful effort aimed at helping the less-experienced pilot apply knowledge, skills, and attitudes gained via the instructional process to individual real-world situations. A good mentor must therefore know not only how to impart relevant “there-I-was” stories, but also how to listen to the mentored pilot's concerns, formulate questions to address them, and tactfully offer feedback.

I've learned a lot from mentors who were instrumental in shaping me, and I want to share what I've learned.

— Herbie Hancock

If you are an experienced pilot, you can contribute by *being* a mentor to others. Perhaps the single most important thing you can do, as a mentor, is to model good practices. My primary flight instructor, who also took me through an instrument rating and my commercial plus and flight instructor certificates, imparted knowledge, skills, and a professional attitude not just through what he said. Though his official role was “teacher” rather than “mentor,” his greatest long-term influence arose from how he consistently modeled good practices.

Another mentor role is to help less-experienced aviators establish and work toward aeronautical advancement goals. By offering a sounding board, a fresh perspective, and simple encouragement to help build confidence, the mentor can play a vital role.

The delicate balance of mentoring someone is not creating them in your own image, but giving them the opportunity to create themselves.

— Steven Spielberg

In noting the “delicate balance” of mentoring, Spielberg echoes the eloquent advice Khalil Gibran offers in *The Prophet*: the teacher/mentor “gives not of his wisdom but rather of his faith and his lovingness ... If he is indeed wise he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind.”

Susan Parson (susan.parson@faa.gov, or @aviatrix for Twitter fans) is editor of FAA Safety Briefing. She is an active general aviation pilot and flight instructor.

FAA Faces

Barbara Adams

Management and Program Analyst, Air Carrier Training Systems and Voluntary Safety Programs Branch



The variety of aviation careers is no mystery to Barbara Adams, whose family members include pilots, mechanics, flight attendants, military aviators, and ramp supervisors. “There was always a conversation about aviation at family gatherings,” she explains. In the eighth grade, she realized that she too had the zest for aviation, deciding that she wanted to be a pilot.

Barbara followed the typical aspiring airline pilot route after high school by earning a bachelor’s degree in aviation management, and flight instructing to build the hours to qualify for an airline job. To gain multi-engine time, she played chicken with thunderstorms — but not in the way you might be thinking. “Because I love weather so much, I also spent a summer flying near — definitely not in — thunderstorms to seed the clouds over North Dakota for hail suppression and rain enhancement,” Barbara said.

After graduating from the University of North Dakota, Barbara was hired to fly a British Aerospace Jetstream 41 turboprop for Atlantic Coast Airlines, operating under the United Express banner. When that airline became the start-up, Independence Air, she flew the Bombardier CRJ200 regional jet. There is always a risk with a start-up airline, though, and she was eventually furloughed and the low-cost carrier went out of business before she could be called back.

Convinced that airline flying wasn’t the right career match for her, Barbara found a position with the Aircraft Owners and Pilots Association (AOPA) where she absorbed another side of aviation. “I had flown in all kinds of airspace, and in and out of airports around the country, but I never really paid attention to the issues surrounding airports and the advocacy work these organizations do.

“I provided information for other pilots, but I learned even more from them,” she observes.

Barbara first came to the FAA as a contractor at the agency’s Safety Hotline. When the FAA resumed control of hotline operations from the contractor, she secured a position with the FAA.

From there, she moved around the agency with responsibilities ranging from responding to NTSB safety recommendations, rulemaking, answering inquiries from Congress, the Government Accountability Office (GAO), and the Office of the Inspector General (OIG), and developing experimental aircraft airworthiness policy.

“I soaked up as much information as I could from all the people I had the pleasure to work with in each of those offices,” she notes. “These varying experiences helped me see that my passion was in training.”

Barbara now works in the FAA’s Air Carrier Training Systems and Voluntary Safety Programs Branch, which is part of the Flight Standards Service. The branch manages national standards, policies, and procedures relating to training and qualification of pilots, flight attendants, and dispatchers under 14 CFR parts 121, 135, and 142 and the related voluntary safety programs. Barbara and her colleagues work closely with the General Aviation and Commercial Division on training issues that affect airline, air carrier, and GA pilots, and her varied experience has made her a key member of the FAA’s Airman Certification Standards (ACS) development team.

“There isn’t one set path to a career in aviation,” Barbara observes. “Do your homework, and find out as much as you can about the area of aviation you are most interested in.”

Barbara’s parting words are geared to inspire the younger generation. “If you are involved in the aviation community, then please help introduce aviation and all it has to offer to our young people.”

“There isn’t one set path to a career in aviation. Do your homework, and find out as much as you can about the area of aviation you are most interested in.”

Paul Ciano is an assistant editor and the social media lead for FAA Safety Briefing. He is a U.S. Air Force veteran, and a rated aircrew member and public affairs officer with the Civil Air Patrol.



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