

FAA Safety

BRIEFING

July/August 2016

Your source for general aviation news and information

Student Pilot's Guide ^{Part} *III*

Airman Certification Standards and You



ABCs of ACS p. 10

Here's My Advice – Tips from Top CFIs p. 14

Junkyard Dog or Factory Fresh – Choosing a Trainer p. 20



Federal Aviation
Administration

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20

The July/August 2016 issue of *FAA Safety Briefing* focuses on the world of student pilots and airmen-in-training. Building on our previous student pilot-themed editions in 2012 and 2014, this issue provides tips and resources for success in initial pilot certification. It also explores the new Airman Certification Standards (ACS) which begins rolling out this summer. The ACS lists the standards for what an applicant needs to *know, consider, and do* in order to pass both the knowledge test and the practical test for a certificate or rating.

Cover photo by Jessica Ambits



8



10



28

Features

- 8 Perfect Picks for Potential Pilots** What Every Student Pilot Needs
by Sabrina Woods
- 10 The ABCs of ACS** A Better Certification System for Future Pilots
by Susan Parson
- 14 Here's My Advice** Pilot Tips from Top CFIs
by Susan Parson
- 20 Junkyard Dog or Factory Fresh** Choosing the Right Trainer for You
by William Dubois
- 24 Mandate Mythbusting Part II** Separating Fact from Fiction for ADS-B 2020 Equipment Requirements
by Tom Hoffmann
- 28 I Want to Fly, So Why Do I Need to Go to the Doctor?** Medical Certification Basics
by James Williams
- 34 National GA Award Honorees** Top 2016 General Aviation Professionals Announced
by Jenny Furst

Departments

- 1 Jumpseat** – an executive policy perspective
- 2 ATIS** – GA news and current events
- 5 Aeromedical Advisory** – a checkup on all things aeromedical
- 6 Ask Medical Certification** – Q&A on medical certification issues
- 27 Checklist** – FAA resources and safety reminders
- 36 Nuts, Bolts, and Electronics** – GA maintenance issues
- 37 Angle of Attack** – GA safety strategies
- 38 Vertically Speaking** – safety issues for rotorcraft pilots
- 39 Flight Forum** – letters from the Safety Briefing mailbag
- 40 Postflight** – an editor's perspective
- Inside back cover FAA Faces** – FAA employee profile

Creating Compliance Capabilities

For more than three decades, the aviation community — and by that I mean the airlines, the general aviation community, the manufacturers, and the government — has expended enormous energy on identifying and eliminating the types of aviation accidents that once happened far too often. Working together, we have achieved a commercial air transportation safety record that is almost beyond compare with any other human activity.

We achieved that goal by moving beyond the “find, fix, and fly” approach we once used after an accident had already occurred. Instead, we have to find and fix safety problems long before they lead to accidents or incidents. We also recognized that rules alone are not enough. In order to improve safety, we have to make smarter system-level decisions that are based on data and risk analysis.

Compliance Philosophy Redux

That’s what the FAA’s Risk-Based Decision-Making strategic initiative is all about, and that’s why FAA Administrator Michael Huerta announced the Compliance Philosophy Order last October as the enabling guidance for the agency’s risk-based decision making approach to compliance. To recap:

- Compliance is expected and required of everyone who operates in the National Airspace System.
- Compliance means following the rules, plus taking proactive measures to find and fix problems, and manage or mitigate the risk created in the system.
- The greatest systemic safety risk comes from failures in either awareness or effective management of those risks. So the most important elements of compliance are the willingness and ability of airmen and organizations to take meaningful actions that maintain compliance.

That’s one of the many reasons the FAA has begun to replace the Practical Test Standards (PTS) with the new Airman Certification Standards (ACS) format. Developed in close collaboration with our partners in the aviation training community, the ACS is an enhanced version of the Practical Test Standards (PTS). By adding task-specific knowledge and risk management elements to each PTS skill task, the

ACS becomes the comprehensive set of standards for what an applicant needs to know, consider, and do to pass both the knowledge and practical tests for an airman certificate or rating.

How the ACS Enables Willingness and Ability

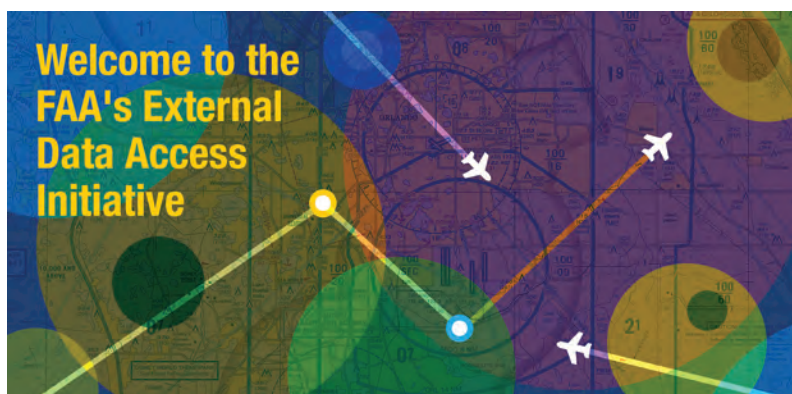
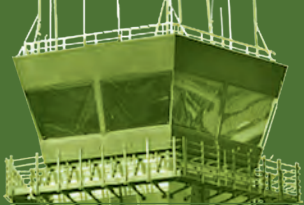
The ACS will improve airman training and testing in a number of ways, but I want to focus this column on the critical connection between the ACS and the FAA’s Compliance Philosophy.

As I just stated, the most important elements of compliance are the willingness and ability of airmen to take meaningful actions to maintain compliance. We expect those actions to include risk management. The PTS requires sound aeronautical decision-making and risk management as criteria for airman certification, and so does the ACS. But the ACS does a great deal more to develop an airman’s willingness and ability to take those meaningful actions. Here’s how.

It’s fair to say that “willingness” is associated with motivation. Educators in all fields know that people are most motivated — that is, most *willing* to learn and then to implement practices when they understand why it matters, and how such changes to behavior can help them. The ACS provides the necessary motivation for risk management because it presents this concept not as abstract words and phrases, but rather as specific behaviors to be practiced, or considerations to be applied, in connection with a specific aeronautical task. In other words, the ACS presents risk management in context, making it more relevant, more memorable, and more meaningful.

Now let’s look at “ability.” The ACS enhances pilots’ ability to comply because it tells them not just *what* to do (“use proactive risk management”), but also guides them on *how* to perform this safety-critical compliance task. In the ACS for Private Pilot Airplane, for instance, the “Maneuvering During Slow Flight” Task includes four specific risk management elements for the pilot to consider in performing this task. With reducing Loss of Control Inflight (LOC-I) still high on the NTSB’s “Most Wanted” list, the ACS approach to risk management is a welcome improvement.

Since a good pilot is always learning, you don’t have to be a student pilot to benefit from the ACS. Check it out — and use it to boost your own compliance capabilities.



Got Data?

Last spring the FAA launched an External Data Access initiative (EDAi) to increase and improve the public's access to FAA data. The intent of this initiative is to spur innovation, provide better opportunities for the development of new applications and services, and ultimately, advance the safety and efficiency of the aviation industry.

The initiative's first phase focuses on the release of data in the aeronautical domain, e.g., data used to create charts. Subsequent phases will evaluate the release of FAA data from other domains, such as safety, flight, etc.

Speaking at the Sun 'n Fun International Fly In and Expo in April with general aviation (GA) manufacturers and pilots, FAA Deputy Administrator Mike Whitaker said that "our goal is to help industry be in a position to create innovative products and technologies that improve safety and efficiency."

The initiative includes improved access to data such as airports, navigation aids, fixes, obstacles, holding, approaches, and Temporary Flight Restriction information. The agency also seeks to identify additional data resources that may be needed by the GA community.

We've got the data; you've got the fresh ideas. Let's bring them together. Take the online survey at <http://surveymonkey.com/r/GotData> to help the FAA get better aeronautical data into GA cockpits.

Reducing Radio Frequency Redundancy

For more than 50 years, pilots have used inflight radio frequencies to obtain weather briefings, file flight plans, and receive other services; however, with technology advances many pilots now use other ways to obtain these services, including satellite and

mobile platforms. As demand reduces, there is no longer the need to maintain the large network of frequencies we have today.

To increase efficiency, the FAA issued a notice of proposal in the Federal Register, online at <https://federalregister.gov/a/2016-09992>, to reduce the number of radio frequencies used by Flight Service Stations to communicate with aircraft inflight. The proposal excludes frequencies designated for emergency or military use and those in the state of Alaska.

The FAA maintains a network of more than 2,100 remote communications outlets (RCOs) throughout the continental United States (CONUS), Hawaii, and Puerto Rico. The frequency infrastructure requires modification to eliminate duplicate, overlapping and seldom used frequencies. In addition, since 2005, requests for flight services delivered by a Flight Service specialist show a decrease of more than 83 percent across the CONUS, and inflight radio calls have decreased by 80 percent.

The FAA contracted MITRE to study the areas covered by RCO and VOR frequencies for removal without significantly affecting the area of coverage. The study concluded that removal of 666 frequencies would still provide 99-100 percent coverage at 5,000 feet; 98-100 percent coverage at 3,000 feet; and 93-100 percent coverage at 1,000 feet. The savings in maintenance costs alone is approximately \$2.5 million annually. Go to <http://1.usa.gov/1T1uR8v> to see a list of affected frequencies and a MITRE briefing on the effects of radio reduction by area.

NPRM to Provide Regulatory Relief to GA Pilots

In a Notice of Proposed Rulemaking (NPRM) issued on May 12, 2016, the FAA aims to provide some regulatory relief for pilots in several areas of general aviation training and certification. Among the proposed changes is an increase in the allowed use of aviation training devices with regard to instrument training and instrument recency experience requirements. This rulemaking also addresses changing technologies by accommodating the use of technically advanced airplanes as an alternative to the older complex single engine airplanes for the commercial pilot experience requirements. Additionally, the NPRM would broaden the opportunities for military instructors to obtain civilian ratings

based on military experience, would expand opportunities for logging pilot time, and would remove a burden from sport pilot instructors by permitting them to serve as safety pilots. A grid summarizing all the proposed changes and the effected regulation parts is included with the NPRM.

“These rules embrace technology, reduce cost, provide greater recognition to flight experience, and support the aviation industry as a whole,” says Marcel Bernard, Aviation Safety Inspector with the FAA’s General Aviation and Commercial Division and lead contact for the NPRM. “These proposals make sense and facilitate recommendations we’ve received from the aviation community.”

To view the proposed rule as well as provide comments (comment period open until Aug. 10, 2016), go to <https://federalregister.gov/a/2016-10168>.

New Rule Increases Allowed Use of ATDs for Pilot Training

The FAA issued a final rule that permits a person to log a maximum of 20 hours of aeronautical experience acquired in an approved aviation training device (ATD) toward the requirements for an instrument rating. Under part 61, students can now log up to 10 hours in basic aviation training devices (BATDs), and up to 20 hours in advanced aviation training devices (AATDs), with the combined total not to exceed 20 hours. The rule also increases allowances for part 141 programs, where students can now get up to 25 percent of creditable time in BATDs

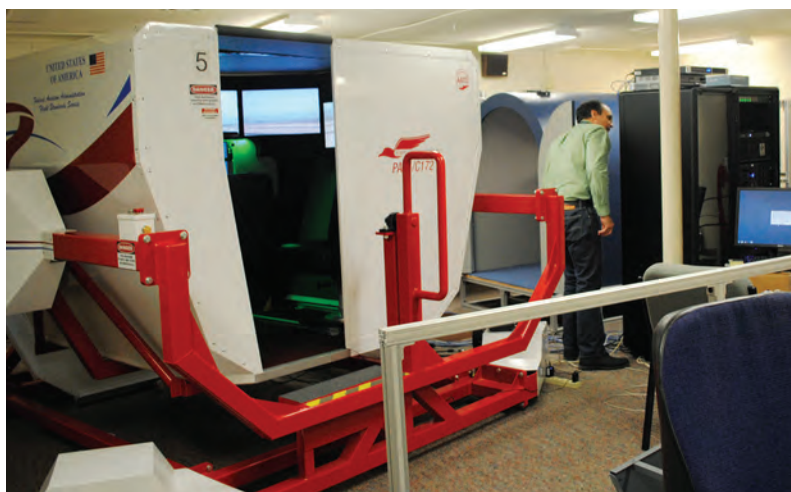


Photo by Tom Hoffmann

Advanced Aviation Training Devices, like the one shown here, may now be used for up to 20 hours of Aeronautical experience during training.

and 40 percent of creditable time for AATDs (not to exceed 40 percent total time) for the instrument rating. In addition, the rule also removes the requirement to wear a view limiting device while training in an ATD. To view more details on the rule, go to <https://federalregister.gov/a/2016-08388>.

NTSB Hosts Loss of Control Seminar

On May 14, 2016, at their training facility in Ashburn, Va., the National Transportation Safety Board (NTSB) held a safety seminar designed to highlight the lessons learned from its investigations of general aviation accidents involving loss of control. NTSB Member Dr. Earl Weener started the conversation by addressing the fact that loss of control accidents make up about 40 percent of all GA fatal accidents, and that the trend is staying stubbornly fixed. Following Dr. Weener were presentations by AOPA’s

Safety Enhancement Topics

July: Transition Training Understanding the need for transition training when moving on to a new or different type of aircraft.



August: Fly the Aircraft First A pilot’s primary duty is to always aviate first.



Please visit www.faa.gov/news/safety_briefing for more information on these and other topics.



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Photo by Sabrina Woods



FAA's Carl Johnson discusses general aviation risk mitigation strategies at NTSB seminar.

Air Safety Institute, and the General Aviation Joint Steering Committee's Vice Chair, George Perry; Carl Johnson, Assistant Division Manager from the FAA's General Aviation and Commercial Division; and NTSB Lead Investigator Paul Cox. Together, the group highlighted the significant steps that regulators, aviation advocates, and industry have taken in improving aviation safety, and offered insight about what it means to build a culture of safety.

Reducing GA accidents remains a priority and attending seminars such as this is just one way a pilot can get involved and keep the safety discussion going. This seminar was the eighth in a series of NTSB safety seminars focused on GA accidents but in case you missed it, there will be more — some of which are streamed live. Check this website <http://go.usa.gov/cS5kQ> to see when new seminars are posted. Sign up early, sign up often.

FAA Offers ADS-B Rebate

Starting this Fall, the FAA is offering a monetary incentive to help owners of general aviation aircraft equip with the required avionics that comply with the ADS-B Out rule that will take effect Jan. 1, 2020. The agency will offer a \$500 rebate to eligible aircraft owners. Go to faa.gov/go/rebate for more information.



Correcting the Wrong Idea

Pilots sometimes get the wrong idea when it comes to medication use. One of the most frequent questions we get at the Office of Aerospace Medicine is; Why don't you have a list of approved and disqualifying medications? There are actually a few reasons why such a list is problematic at best. From our perspective, first and foremost, is that an individual's underlying medical condition is our primary focus, with the medication coming second. That means that we care far more about what you're treating than how you're treating it.

This point leads to our second issue: medications can be used for different purposes.

Let's look at a seemingly simple example, aspirin. Should aspirin be disqualifying? For most people, probably not. But it depends on what you're treating with that aspirin. For a mild headache, no problem. But aspirin used for heart issues is perhaps disqualifying. That's why a categorical list of approved and disqualifying medications is not a great idea.

Some medications can be defined as disqualifying regardless of what they are used to treat. The most common offender on this list is diphenhydramine (Benadryl). No matter why you are taking Benadryl, you should not be flying while you're using it. And you should refrain from flying for at least 60 hours after your last dose, as studies show that next day impairment levels from diphenhydramine are similar to having alcohol in your system.

Need a third reason? With the number of medications introduced every year, any list would be partial at best.

How Do I Know?

There are a few resources we can recommend for airmen regarding the acceptability of certain medications for use before or during a flight. Our primary resource for aviation users is the Don't Issue/Don't Fly (DI/DF) list from our Aviation Medical Examiner's (AME) Guide. The AME Guide is written for physicians, but it is publicly accessible.

The DI/DF list actually includes two lists of medications. The first, *Don't Issue*, is a list of medications that tell an AME not to issue a medical certificate. If you are taking any of the medications listed here, you should not be flying. The second section, *Don't Fly*, is a list of medications that airmen should avoid taking

while flying. You can find the DI/DF list at: <http://go.usa.gov/cupVh>.

Beyond the DI/DF list, you should always check the label of any medication, prescription or over the counter (OTC) drug, for potential side effects. If you see a warning like "may cause drowsiness," or "be careful when driving a motor vehicle or operating machinery," take heed. Even if it says "until you know how the medication affects you," you should probably consider the medication disqualifying.

It's also important to consider what might happen if the medication you're taking wears off during your flight. For example, if you are dealing with congestion due to allergies, you could have serious issues if your decongestant stops working mid-flight.

What Else Can I Use?

The AME guide is your best resource, but since it's written for physicians, it may not be as friendly to laymen as we would like. To give pilots better information about how medication affects performance, we are working under the auspices of the GA Joint Steering Committee (GAJSC) to provide a pilot-friendly training resource. While it will be based on the DI/DF list, this document will be written in plain language, and it will include information on how pilots should be "self-certifying" before flight. It's not a complete product yet, but we hope it will be available later this year or early next year. I'm very proud of the work we've done to make this resource possible, and I think you will find it helpful in clearing up the confusion about medication and flying.

An individual's underlying medical condition is our primary focus. We care far more about what you're treating than how you're treating it.

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

Don't Issue/Don't Fly (DI/DF) list
<http://go.usa.gov/cupVh>



Ask Medical Certification

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

Q1. I have a 4 cm x 3.6 cm x 3.5 cm, exophytic soft tissue mass (Gastrointestinal stromal tumor, spindle cell type) arising from the anterior wall of the second portion of the duodenum. The lesion in the second portion of the duodenum is separate from the pancreas head. No associated duodenal obstruction. The lesion abuts the subhepatic surface of liver segment V and caudal aspect of the gallbladder as well as the hepatic flexure of the colon without gross invasion. Mild mass effect onto the right anterior renal pelvic wall without gross invasion.

I started a 3-year regiment of Gleevec one month ago. I have absolutely no side effects from the Gleevec and am feeling great. I will have a CAT scan in two months to determine the results of the Gleevec. My plan is to wait until the CAT scan in two months and if the mass is shrinking as expected, I'll ask the FAA to approve me for my 3rd class medical.

If the mass is found to be shrinking, what are my chances of getting my 3rd class back before the removal of the shrunken mass and how long might it take for the approval?

A1. From the information you provided, it appears your chances are quite good, and your timeline appears reasonable. As long as you remain at minimal risk of sudden or subtle incapacitation either from the condition itself or from the medication, we could consider a special issuance. Once all the necessary medical documentation is received, the average processing time (April 2016) is 39 days.

Q2. If both eyes have loss in the upper right quadrant, is that a permanent disqualification? I know that one-eyed pilots have all four quadrants, with some blocked by the airman's nose. My loss is spared from about 45 degrees to the right, out

to the right periphery. From the center to the 45 degree mark, I only have the central 'reading' vision. This has been stable for over 25 years. If a waiver is possible, I would like to try to get the medical back.

A2. A special issuance could be considered in your case; however, we would need additional information to include, at a minimum, a thorough status report from your treating eye doctor, and visual field tests such as Humphry or Goldman. You may also need a special medical flight test. Your AME can assist you in the process.

Q3. What size kidney stone, if embedded in the kidney, is allowed for a 3rd class medical cert?

A3. We have recently revised our policy on kidney stones and I would refer you to www.faa.gov/go/caci, then select retained kidney stones. This worksheet describes what information you should bring to your aviation medical examiner (AME) and specifies when an AME may issue an unrestricted medical certificate to an airman with a retained kidney stone. Size is no longer a criterion for either unrestricted or special issuance.

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 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 licensed 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.

Fly with us on Twitter



@FAASafetyBrief



FAA Safety Center Forums

July 25 – July 31, 2016

	0830 – 0945	1000 – 1115	1130 – 1245	1300 – 1415	1430 – 1545	1600 – 1645
Monday July 25	An Entirely New Look at Fuel Exhaustion Scott Philiben CIES, Inc. GL0068993	Update from FAA Chief Counsel Mike McKinley FAA GL0068994	Center IFR Operations Steve McGreevy / Guy Lieser FAA GL0068995	FAA Medical Service, What's New? Gregory Pinnell, MD Airdocs Aeromedical Services GL0068996	Runway Safety Challenge Andy Miller GL0068998	Top Ten Reasons Airplanes Crash Pat Hempen FAA GL0068999
Tuesday July 26	Ditching and Water Survival Robert Shafer USCG GL0069001	A Managed Risk Approach to Collision Avoidance Robert J McCabe TYM2FLY, LLC GL0069004	Colorado Mountain Flying Safety Bill Standerfer Colorado Pilots Assn. GL0069007	Anatomy of a Typical GA Accident Investigation Jeff Guzzetti FAA GL0069013	FAA Medical Update Dr. Michael Berry FAA GL0069014	TFRs and Interceptors: How to Avoid an Escort Lt. Col. McMillin NORAD GL0069015
Wednesday July 27	ADS-B for GA: It's Time to Equip Panel: FAA, AOPA, and EAA GL0069018	When the Engine Goes Silent Larry Bothe Cherry Hills Aviation GL0069019	Law Enforcement Use of UAS Alan Frazier UND GL0069020	How to Avoid Unwanted Adventure John and Martha King King Schools GL0069021	Surviving Inadvertent IMC Eric Basile UND GL0069025	"No Radio" Procedures Steve McGreevy / Guy Lieser FAA GL0069026
Thursday July 28	Update of Recent Notable Aircraft Accidents Jeff Guzzetti FAA GL0069043	General Aviation Awards CFI of the Year AT of the Year FAA Team Rep of the Year GL0069043	Meet the Administrator @ the EAA Pavilion *No Session* GL0069046	It Takes "CAIR" to Fly Safely Greg Feith AviationSpeakers.com GL0069046	FAA Medical Update Dr. James Frazer FAA GL0069047	Attitude Toward Fatigue: NTSB Top Ten Killer Rogers Shaw FAA / CAMI GL0069048
Friday July 29	Shot Peening for the Aircraft Builder Dave Barkley Electronics, Inc. GL0069049	The VOR Minimum Operational Network Vince Massimini FAA VOR MON GL0069050	How to Talk to ATC Heather McNevin FAA GL0069051	Pilot Error, Truth or Dare Rex J. Alexander HeliExperts Int., LLC GL0069053	Check Ride Tips From the Examiner Wayne Phillips FAA GL0069056	Aircraft Upset Recovery – What You Need to Know John Dyne Bad Attitude-Aviator Training GL0069057
Saturday July 30	Take-offs & Landings: Preventing an Accident Woody Minar FAA Team Rep. GL0069059	Making Airspace Visible Peg Ballou Ballou Skies Aviation GL0069060	Introducing the Airmen Certification Standards Susan Parson FAA GL0069062	Those Daring Aviators in their Flying Machines Greg Feith AviationSpeakers.com GL0069063	Airborne Nexrad Radar – Review and Update Dr. David Strahle GL0069064	ADM and CRM Saved a Part 121 Flight Derwin Hammond FAA Team Rep. GL0069066
Sunday July 31	<p>Aviation Safety Videos Shown All Day Long – Come Join Your Fellow Pilots For a Movie or Two! (Times listed here are approximate start times)</p> <p>8:30 – 9:07, Evaluating Judgment & Decision making skills. GL0069075 9:15 – 9:36, Safety Management Systems (SMS). GL0069076 9:45 – 10:03, Heads Up, Hold Short, Fly Right. GL0069077 10:15 – 10:35, Listen Up, Read Back, Fly Right. GL0069078 10:45 – 11:08, Face to Face, Eye to Eye. GL0069079</p> <p>11:15 – 11:48, Was That for Us? GL0069080 12:00 – 12:23, Helicopters: A Day in The Life. GL0069081 12:30 – 12:52, Aeronautical Decision Making (ADM). GL0069083 1:00 – 1:31, Situational Awareness. GL0069084</p>					

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FAA Forum & FAA Exhibit Hall Opens Daily at 8:30 a.m.
Schedule is subject to change; for updates check the QR
code to the right or go to: <https://goo.gl/ikDfP1>.





Photos by Tom Hoffmann

SABRINA WOODS

Perfect Picks *for* Potential Pilots

* *What Every Student Pilot Needs* *

So! You want to get your ticket to go slip the surly bonds. You've done most of the hard prep work already: you've picked your preferred training path (part 61 vs. part 141); found a compatible, knowledgeable instructor; and selected the aircraft you envision yourself flying. Now it is time to fill in the glorious, accessory-infused details. It is time to pick out what you need to perfectly complement your piloting pursuits.

Hitting the Books

As with most educational undertakings, there is an element of good old fashioned book learning required in getting your wings. With that in mind, your first picks for your aviation information arsenal should be the FAA's *Airplane Flying Handbook*, the *Pilot's Handbook of Aeronautical Knowledge*, a current version of the *Aeronautical Information Manual*, the current regulations for Title 14 and in particular 14 CFR parts 61 and 91, and the new *Private Pilot – Airman Certification Standards*.

These publications are available online (see "Learn More") however a lot can be said for obtaining a print copy of the materials to be able to refer to at a moment's notice. Trust me when I say you will be getting *very* well acquainted with key passages in each of the texts so obtain them earlier rather than later. Round out your mini library by gathering the aeronautical charts you will be using for the regions you will fly in, and a copy of an operating handbook for the make and model of the airplane you are flying.

Above all, the single most important "book" you will want to select and meticulously maintain is your

logbook — it is THE visual record of your training. For some great insight into electronic versus paper logs, check out Susan Parson's "eLogbook Logistics" in the May/June edition of *FAA Safety Briefing* (<http://go.usa.gov/cumV3>).

Carry All in Your Carry-On

You are going to need a good flight bag to carry all of your goodies and you will want to make sure it is large enough to keep everything well contained, and it helps if it is specifically designed to suit an aviator's needs (i.e., headset pocket, kneeboard strap, sunglass holder, etc.). Obtaining your private pilot's certificate can be an expensive affair and admittedly, there are quite a few places where bargain shopping is totally warranted. This is not one of those times. It needs to be durable and rugged enough to keep up with you as you pack on the hours.

Inside that flight bag you should stock a ready supply of pens and pencils, pertinent checklists, a knee or clipboard, an aviation flashlight with green and red inserts, and a fuel tester. Complete this list with a small survival kit including waterproof matches, a personal locator beacon, fresh water, nonperishable food, a good knife, and a small cache of first aid supplies — you just never know when you might need these things.

Old School ...

Considering that technology, however wonderful, has this funny little exasperating way of failing (and often when you need it most), it never hurts to have some old school tools in your bag. This

includes a pad of paper for writing down those ATC clearances, a plotter, printed copies of the flightplan and weather forms you will need to organize and prep your flights, and the good ole “whiz wheel” (E6B). The metal version of the E6B computer might be just short of “gone with the dinosaur,” but it is still a valuable tool to acquire and use proficiently enough so that when your favorite app abruptly stops, you can keep going.

... With an (App)reciation for the New

As you advance/progress in your training, some other optional tools can really help to enhance your situational awareness. A great tablet loaded with electronic flight bag (EFB) software including weather, flight planning, navigation, weight and balance, and checklist apps can be a blessing for the aspiring aviator. EFB reduces paper clutter (and weight — bonus!), items are kept up-to-date with a simple double-tap of the surface, weather and other pertinent pilot communications are more timely, and performance and training are easily logged and managed.

More advanced supplementary devices and apps used in aiding situational awareness during later stages of your flight training include Traffic Information Service – Broadcast (TIS-B) and Flight Information System – Broadcast (FIS-B) (usable so long as the aircraft is equipped with the appropriate transponder), and GPS. Having a separate handheld GPS and a portable radio is also a great idea in case your electronics go kaput for whatever reason.

Rocking “the Look”

Next up is cultivating your personal aviator “look.” Iconic *Top Gun* screenshots aside, a great pair of sunglasses will help keep the harsh morning sun glare down and protect those peepers. Make sure they are UV protected and carefully consider the tint before selecting to ensure you can maintain good visual in all forms of daylight (see “Learn More”).

While I admit I am totally enamored with any and all devices that included a noise-canceling function, your first headset probably doesn’t need to include this pricey feature. File this under “nice to” have versus “have to” have. What you *will* need is a good headset that is comfortable to wear and use while affording you the ability to clearly communicate with your instructor and with air traffic control. If you do splurge a bit and go for the noise-canceling variety, make sure you do a “test run” to ensure you can hear and react to any and all warnings or cockpit alerts properly (see “Learn More”).

Last, a watch that has a compass and timer function can serve multiple purposes besides just telling the time and can save you a little bit of cash over the often costlier options.

A State of Bliss

Learning to fly is exciting and challenging stuff. Document your progress by sharing, tweeting, or Instagramming it all with the help of a small portable camera. Check out “Flying Photo-bombs” in the May/June 2016 edition of *FAA Safety Briefing* (<http://go.usa.gov/cumV3>) to learn more about how to safely incorporate this bit of technology into your student pilot experience.

To quote one of my favorite *Pink Floyd* songs appropriately named “Learning to Fly”:

*Above the planet on a wing and a prayer,
My grubby halo, a vapor trail in the empty air,
Across the clouds I see my shadow fly
Out of the corner of my watering eye*

*A dream unthreatened by the morning light
Could blow this soul right through the roof of
the night*

*There’s no sensation to compare with this
Suspended animation, a state of bliss ...*

Armed with grit, determination, and a few perfect picks, you are ready to go prospective pilot. Best wishes for safe and happy flying! ✈️

Sabrina Woods is an associate editor for FAA Safety Briefing. She spent 12 years as an aircraft maintenance officer and an aviation mishap investigator in the Air Force.

Learn More

Private Pilot – Airman Certificate Standards (draft):

<http://go.usa.gov/cuc3j>

Airplane Flying Handbook

<http://go.usa.gov/cuc35>

Pilot’s Handbook of Aeronautical Knowledge

<http://go.usa.gov/cuc3V>

FAA Regulations

www.faa.gov/regulations_policies/faa_regulations/

AIM

www.faa.gov/air_traffic/publications/media/AIM.pdf

Pilot Safety Brochure on Sunglasses

<http://go.usa.gov/cujF9>

InFO 07001 on Noise-Canceling Headsets

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



SUSAN PARSON

The ABCs of the ACS

A Better Certification System for Future Pilots

The early summer of 1991 found me studying hard for what everyone back then called “the written” — the knowledge test for my private pilot certificate. Ground school had already frustrated me. Far too often, the instructor had introduced a topic with a “you won’t really need to use this after you pass ‘the written’” disclaimer.

As I slogged my way through practice test questions, for the life of me I couldn’t fathom why I had to make multiple interpolations across several badly-rendered charts, with the result being a two-knot wind velocity difference at altitudes I could not possibly reach in a general aviation (GA) airplane. And don’t get me started on the formula

The ACS lists the standards for what an applicant needs to know, consider, and do in order to pass both the knowledge test and the practical test for a certificate or rating.

for using a fixed-card Automatic Direction Finder (ADF) to fly to the Non-Directional Beacon (NDB). Even then, fixed-card ADF had mostly gone the

way of the horse-and-buggy. Besides, it was another of those subjects my ground school instructor said I would never actually need after the test.

The knowledge test prep process for subsequent certificates and ratings was no different. I suffered through silly and stultifying study of things that, by

then, I knew first-hand that I would never need in real-world flying. I found myself parroting the “you-don’t-really-need-to-know-*this*” line to my own ground school students. And, by then, I had also acquired all kinds of far more necessary knowledge that was never presented or required for the test.

So, yes. You could say I had a quarrel with the “the written” as it was constructed.

It Took a Team

I was hardly alone. So when the opportunity arose in 2011 for the FAA to team up with experts in the aviation community to fix this problem, there was no shortage of eager volunteers. Since then, the FAA has worked with several diverse and highly-qualified groups of aviation industry experts to find a better way. The team includes advocacy groups, instructor organizations, academia, courseware providers, manufacturers, parts 61, 121, 141, and 142 training providers, and some very knowledgeable individuals, along with FAA employees from a variety of specialties and policy divisions.

By the time you read this article, the first fruits of this five-year effort — the Airman Certification Standards (ACS) for the Private Pilot-Airplane certificate and the Instrument Rating for airplane — will have replaced the corresponding Practical Test

Standards (PTS) documents. Much material on the ACS has been published by the FAA and our industry partners over the past few months. But for those just starting down the path to pilothood, here's a quick ACS primer taken from the FAA's Frequently Asked Questions on the ACS available here: www.faa.gov/training_testing/testing/acs/.

What is the ACS?

The Airman Certification Standards (ACS) is fundamentally an enhanced version of the Practical Test Standards (PTS). It adds task-specific knowledge and risk management elements to each PTS Area of Operation and Task. The result is a comprehensive document that integrates the standards for what an applicant needs to *know*, *consider*, and *do* in order to pass both the knowledge test and the practical test for a certificate or rating, and to operate safely in the NAS.

Where did the ACS knowledge elements come from?

The ACS knowledge task elements reflect the subjects previously defined by the FAA Test Guides (FAA-G-8082 documents) and covered in the Knowledge Test.

Where did the risk management elements come from?

The ACS risk management task elements come from the Risk Management, Aeronautical Decision-Making, and Special Emphasis items in the PTS Introduction. Incorporating them into a task allows evaluators to see an applicant's judgment and decision making in the context of actual flight operations.

Where did the skill elements come from?

The ACS skill task elements come from the Practical Test Standards. Aside from some editorial clean-up and consolidation of redundant tasks (such as combining Runway Incursion Avoidance with Taxiing), the skill demonstration and acceptable tolerances in the ACS are the same as they've always been.

Why is the FAA making this change?

The ACS started as an effort to fix the airman knowledge tests, which included too many questions that were outdated or irrelevant to operation in today's NAS. The industry/FAA team concluded that we could not effectively fix the knowledge test without taking a systematic approach to the airman certification system. The ACS is the result. The FAA is adopting this approach because it:



- Offers a comprehensive presentation of the standards for what an applicant needs to know, consider, and do to pass both the knowledge and practical tests for a certificate or rating, and to operate safely in the NAS.
- Connects specific, appropriate knowledge and risk management elements to specific skills.
- Uses the risk management section in each ACS Area of Operation to translate special emphasis items and abstract terms like “aeronautical decision-making” into specific behaviors relevant to each task.
- Eliminates “bloat” by consolidating duplicative or overlapping tasks in the existing Practical Test Standards (PTS).
- Enables the FAA to create and maintain a clear link between the regulations, knowledge/risk management/skill performance standards, guidance, and test materials.

Isn't the real problem related to deficient stick-and-rudder skills?

Most accidents have multiple causes. According to the AOPA Air Safety Institute, the three leading general aviation (GA) fatal accident factors are maneuvering flight, continued VFR into IMC, and loss of control on takeoff. These factors all imply some degree of deficiency in the pilot's knowledge, risk management, and skill abilities. Even the world's best stick-and-rudder pilot is at risk for loss of control if he or she has an

inadvertent flight into IMC because of deficiencies in weather knowledge or risk management ability. Safety is not served by emphasizing just one of these three abilities. Each supports the others.

What are the letters and numbers beside each ACS task element?

The ACS assigns a unique code to each knowledge, risk management, and skill task element. These codes provide the means to correlate the tasks in the ACS with guidance and testing, and to keep them aligned going forward. As soon as the technical capability comes online, the ACS codes will be printed on the Airman Knowledge Test Report in lieu of “PLT” Learning Statement Codes (LSC).

How does the ACS improve the knowledge test?

The FAA has used the ACS to review/revise existing Private Pilot Airplane and Instrument Rating Airplane knowledge test questions and ensure they are aligned with the standard the ACS defines for knowledge, skill, and risk management elements. Questions that do not match an ACS-defined task element have been eliminated from all active form tests and from the corresponding knowledge test question banks. The FAA will use the ACS to make similar improvements to other knowledge tests and for developing new knowledge test questions.

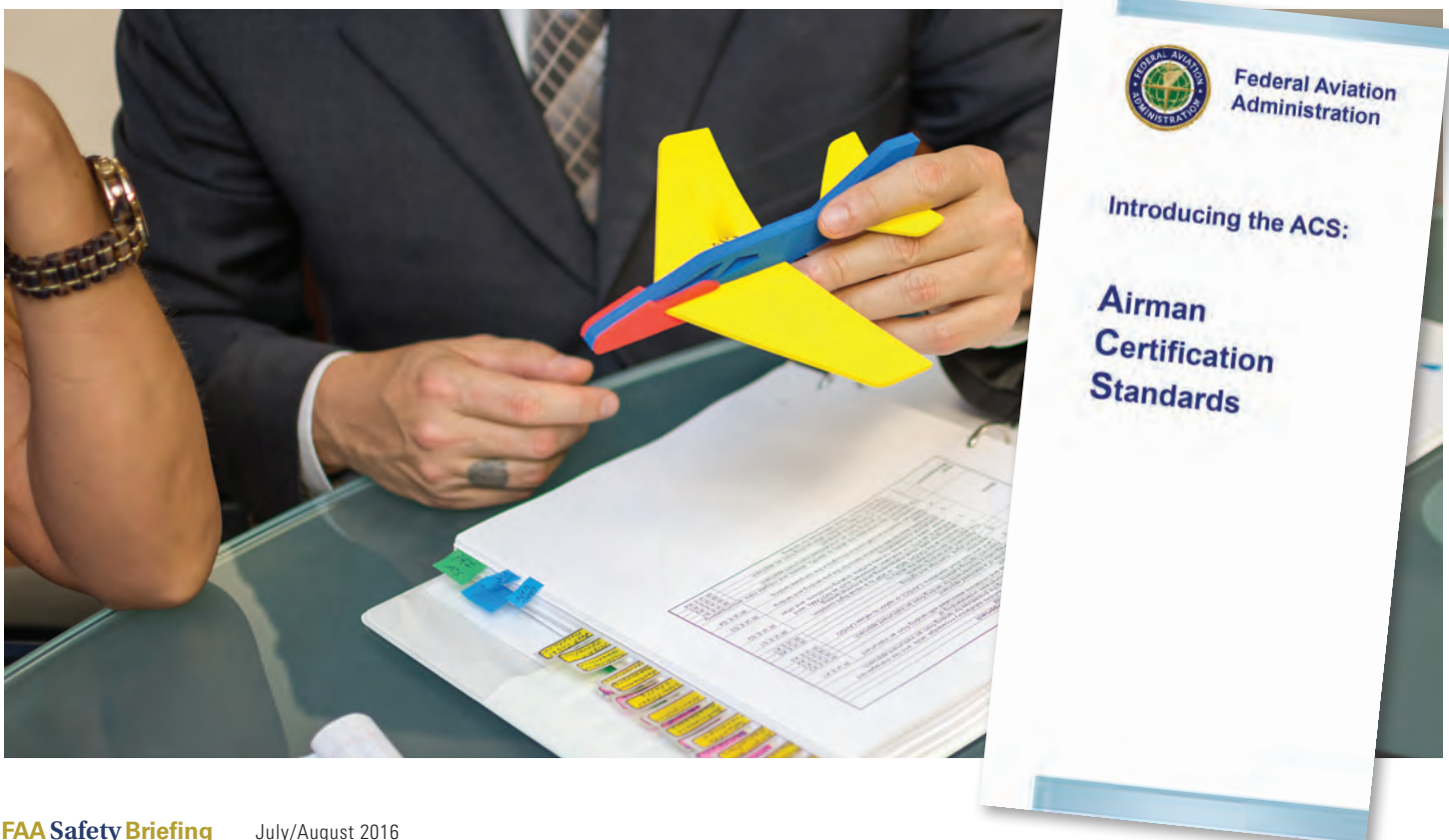
How does the ACS change the practical test?

The ACS does not change the length or the overall conduct of the practical test. It does give evaluators a better tool for use in developing a plan of action for both the oral and the flight portions of the test. When it becomes possible to print ACS codes on the Airman Knowledge Test Report, the ACS will make it much easier for DPEs to retest missed knowledge test subjects. The long-term expectation is that ACS-enabled improvements to the knowledge test will increase the DPE’s confidence in both the meaning of the applicant’s knowledge test score and the quality of the instructor’s preparation. These improvements promise to make the practical test more efficient than it is today.

How do you know the ACS will work?

Development of the ACS benefits from extensive industry involvement, including several rounds of public comment (via the Federal Register) to refine the early drafts and nearly 18 months of prototype activity in high-volume training areas like Orlando and, for the Instrument Rating, the nation’s “IFR capital” in Seattle. Prototype participants included all types of students and several flight training environments. The goal was to determine that the ACS could be successfully used for teaching, training, and testing in environments ranging from academic

Photo by Chris Morris



flight schools, fixed-base operator flight training, stand-alone flight schools, and independent flight instructors in rental or customer aircraft. None of the participants or representatives reported the need to modify their curricula to use the ACS. There were no reports of increased training time, unsatisfactory lessons, or overall training cost. DPE surveys indicated that the ACS did enable a more efficient practical test.

How do I use the ACS?

The ACS is the single source document listing the standards for both the knowledge test and the practical test. It provides a clear, easy-to-use “flight plan” for the material the FAA expects an applicant to know (knowledge), consider (risk management), and do (skill) to qualify for an airman certificate or rating. Applicants will also use the ACS to develop an understanding of how knowledge, risk management, and skill elements work together for safe performance of each Task. Applicants, instructors, and evaluators should be sure to carefully read the ACS introduction and appendices to understand how it all works together.

Will the ACS make my training harder?

Not at all. In fact, applicants who have been training properly all along are likely to find the FAA knowledge test easier. Instead of having to “learn” or memorize information that isn’t relevant to knowledge and skills actually needed for operation in today’s National Airspace System (e.g., the now-deleted questions on ADF/NDB) the test consists of questions coded via the appropriate ACS to specific Areas of Operation/Tasks. You will not see any exact match for sample questions you may have studied, but if you have used the ACS to prepare, you should be able to respond correctly to the knowledge test questions.

How will I use the ACS to prepare for the practical test?

You will use the skill standards in the ACS just as you use the performance values and metrics in the PTS today. Because the ACS also includes the material the FAA expects you to know (knowledge) and consider (risk management) in the context of each task, it will help you better prepare for the ground portion of the practical test.

What happened to the special emphasis items?


The ACS incorporates Special Emphasis items in the risk management section of the appropriate Area of Operation/Task. It also provides specific risk man-

agement and ADM procedures and behaviors associated with the Task. It thus allows the teaching, training, and testing of an applicant’s judgment and decision making in the context of actual flight operations.

When are you going to expand the ACS to other certificates and ratings?

The ACS for the Private Pilot-Airplane certificate and Instrument-Airplane rating replaced the corresponding PTS in June 2016. We hope to release the ACS for Commercial Pilot, Instructor, and Airline Transport Pilot certificates in the next twelve to eighteen months.

In December 2015, the FAA added the Aircraft Mechanic Certificate

with Airframe and/or Powerplant ratings to the ACS Working Group’s charter, with work to be completed by December 2017. After that, we will consult with our industry partners to establish priorities and plans for the next stages of ACS development and implementation. 

The ACS does not change the length or the overall conduct of the practical test. It does give evaluators a better tool for use in developing a plan of action for both the oral and the flight portions of the test.

Susan Parson (susan.parson@faa.gov, or @avi8rix for Twitter fans) is editor of FAA Safety Briefing. She is an active general aviation pilot and flight instructor.

Learn More

The FAA website’s Airman Testing page (www.faa.gov/training_testing/testing/acs) is the “go-to” place for ACS information. In addition to the ACS FAQs, it includes:

- ACS for the Private Pilot Airplane certificate and the Instrument Airplane rating
- ACS informational brochure
- PowerPoint presentation on the ACS
- Sample knowledge tests with ACS codes
- What’s New in Airman Testing (info on knowledge test changes)

An “Understanding the ACS” course (ALC-449) that offers WINGS credit is now available in the course catalog on

www.FAASafety.gov

The April 20 AirplaneGeeks podcast includes an interview on the ACS with one of the FAA’s ACS team leaders:
<http://AirplaneGeeks.com/397>

ACS Focus Team E-mail:

9-AVS-ACS-Focus-Team@faa.gov

Here's My Advice...

Editor's Note: To support this aviation training-focused issue of FAA Safety Briefing, we invited every CFI of the Year since 2000 to offer tips to pilots in training and their instructors. We could almost fill the entire magazine with the enthusiastic responses we got. Here's the short version — see if you can spot some consistent points.

Bob Hepp – 2016



- Choose your school and instructor wisely. The skills you will learn will determine the safety of you and your passengers. Do not make your decision based on cheap rental rates.
- Look at the instructional program. The more structure the better.
- Ask for a written set of procedures for all of the maneuvers you will be expected to perform.
- Arrange your schedule and finances to fly two to four times a week.
- Do your homework. You will maximize your satisfaction and minimize your time, cost, and frustration by coming to each lesson prepared.
- Don't let the "pre-solo slump" get you down.
- Become part of the safety decision chain as early as possible. Learn how to evaluate weather, weight and balance, and maintenance data.
- If something doesn't feel right, either do something to feel better about it, or don't fly.
- The checkride is a check of your performance compared to the PTS (soon to be ACS). Make sure you can consistently perform to all of those standards before your checkride.
- Learning to fly is a life-changing endeavor. Enjoy it!

Mary Schu – 2015

- For every hour you fly, spend at least three hours on the ground studying. Flying is the easy and fun part, but knowledge will play a big role in the safe and successful outcome of each flight. Look at the ACS and get a good idea of expectations well in advance.
- Budgeting the time and money in advance to complete training keeps the cost and the frustration down. Flying three times a week reduces the cost by about 25 percent.
- Approach training with a comprehensive "story problem" — think of the information in terms of how it would apply to a real life flying situation.
- CFIs should make ground and flight training FUN! Vary the places you go. Challenge your learners to contests of skill, and encourage interesting homework assignments. Occasionally just fly for fun — don't cause anyone to forget the sheer enjoyment of being in the air. Sometimes I throw in an ILS, or fly into a busy airspace airport at night to let a private pilot experience the excitement of ATC, big airplanes, and lots of lights.
- CFIs need to correctly demonstrate maneuvers, take-offs, and landings. A picture is worth a thousand words. It keeps the CFI's skills sharp and gives a struggling learner a chance to relax and absorb the information without the distraction of trying to do it at the same time.

Choose your school and instructor wisely. The skills you will learn will determine the safety of you and your passengers. Do not make your decision based on cheap rental rates.

Howard Wolvington – 2014

- Students need to understand airworthiness requirements. Spend some quality time with a CFI to understand the regulations at an application or correlation level of learning.
- If you are a CFI, don't dispatch an airplane for a training flight without full compliance with the requirements as stated in 14 CFR section 91.213(d) — and make sure your students understand them.
- To support training on this subject, I have created a presentation available to any CFI or student: <http://flywithhoward.com/wp-content/uploads/2015/06/Understanding-Airworthiness.ppsx>



Dean Eichholz – 2013

- I often see weakness in takeoffs and landings at both the private and commercial levels. Learn to fly a stabilized approach on final until touchdown by practicing key skills in the practice area.
- Spend time in the practice area perfecting the skills for stabilized glide path, angle of attack control (including stalls and recoveries), and ground reference maneuvers to eliminate the “common errors” and make your landings consistent and professional from the beginning.
- Acquire and use the references listed in the PTS or ACS. For takeoffs, landings and go-arounds, these include the Pilot's Handbook of Aeronautical Knowledge, the Airplane Flying Handbook, and the Pilot's Operating Handbook.



Judy Phelps – 2011

- Choosing the right instructor is key to the flight training experience. It's okay to change instructors if you're not compatible with your CFI. Remember, you're the customer!
- Your flight training should have structure. Your instructor should use a syllabus, and when you walk out the door you should know what you're going to be doing on your next lesson.
- Everyone learns at a different pace. Don't compare yourself to others in terms of progress.
- When preparing for the practical test, remember that you are doing more than just passing a test. You are building skills you will use well after your checkride.
- Once you get your certificate, keep practicing! Flying skills deteriorate if we don't use them. A good pilot is always practicing and learning.



Jeffrey Robert Moss – 2010

- Take the time to learn a memorized flow. Airline pilots spend up to three days in front of a cockpit poster getting the flows right because they expedite SOPs, increase safety, and help pilots to learn the “switchology.”
- Be sure to always back up each flow with a checklist that now will serve to function as a CHECK list.

Arlynn McMahan – 2009

- Make flight lessons a “standing appointment.” Get into a same day and time routine, like a college class.
- Morning lessons are more productive — cooler with fewer thunderstorms and less turbulence.
- Don't cancel lessons unless it's absolutely necessary, and don't let your instructor cancel. You have this time allocated, so be assertive in using it for something productive. Start a list of things you could accomplish when weather or aircraft maintenance get in the way.

- Don't be afraid to use/make your own tools. You might need a seat cushion to better see over the instrument panel. If you need to add notes or items to your checklist, do it. If a "cheat sheet" helps you to be comfortable talking on the radio, make one.

Be on time and be prepared for every lesson. Most of learning to fly is between the ears, not between the clouds.

- If it's not properly recorded, it didn't happen. Take the time to read and understand what the instructor is recording in your logbook, which is your official, permanent, and legal record of flight and ground training. Take personal responsibility for your records so that if your instructor is no longer available, your next instructor is equipped to move you forward.

Max Trescott – 2008



- Be intellectually curious — especially about things that have the potential to kill you!
- Your goal is mastery of the aircraft. Strive to learn as much as possible about an aircraft and how to remain safe in it. You won't be able to *Google* critical information fast enough when you're flying the aircraft.
- Passing the checkride means that you've met the standard to qualify for a pilot certificate. That doesn't mean that you've learned enough.
- Supplement your flight training through reading and attending safety seminars whenever possible. Flying with a different flight instructor is also a learning opportunity.
- Make sure you're having fun while learning to fly. If it seems like work and you're not having fun, figure out why.
- When you get your pilot certificate, take other people flying and share the fun!

Mike Gaffney – 2007



- Find an instructor who instructs because he or she loves to help people learn. Ask for a new instructor if yours demonstrates less than a professional, caring attitude.
- Understand the big picture of your training program, and periodically compare where you are in relation to the end goal. Expect your instructor to begin each lesson by discussing what you will accomplish, and to end with a review that gives you feedback on what you did. It should also preview what you need to do to prepare for the next lesson.
- Your training should include scenarios that help you envision conditions other than those you experience at your local airport.
- Flight simulation provides an excellent opportunity to practice the finer points of procedural flying in a friendlier environment.
- Learn to fly with as little control input as possible. Use your fingertips and trim, small power adjustments, and subtle control movements for more precise aircraft control.
- Be consistent. For example, deploy flaps and landing gear at specific points.
- Rudder is your best friend during takeoffs and landings and when dealing with wind drift.
- Keep a healthy, positive attitude. Arrive early, study pertinent material, and ask questions while they are fresh in your mind. Watch and talk to other pilots to help gain perspective.
- Replay the lesson in a comfortable chair after your lesson is over. Imagine each step. Rehearse reaching for flaps and trim, power, and moving the controls. Make flash cards to help you master airspeeds, runway lengths, radio frequencies, and other flight details.
- Relax, enjoy yourself, and develop confidence.

Doug Stewart – 2004

- If your instructor is not using a syllabus, or has not shared that syllabus with you, find a new instructor!
- Regardless of whether you are a student pilot on your first solo flight around the pattern, or an instrument pilot flying in hard IMC, it is critical to stay ahead of the airplane. You should always be able to answer four questions: (1) Where am I? (2) Where am I going? (3) What will I have to do when I get there? (4) What can I be doing now to prepare?
- Don't be in a hurry. The worst thing a pilot can do is to be in a hurry.
- On every takeoff, regardless of whether the runway is 1,200 feet or 12,000 feet, make sure you know where you should lift off. If you are past that point and still on the ground, ABORT the takeoff.
- Learning to fly can be very challenging, but it should also be FUN. Make sure it is!

Your instructor should use a syllabus, and when you walk out the door you should know what you're going to be doing on your next lesson.

Kirby Ortega – 2002

- Rehearse your lines for the oral part of your practical test. If you are an instructor, be sure to discuss the material likely to be asked during the oral and give the applicant an opportunity to answer. As a DPE, I am looking for answers that are concise, accurate, and that demonstrate knowledge of that subject. For example:
 - DPE - "What type of airplane can you fly with your new certificate?"
 - Applicant - "Any single engine land airplane that is not: a high performance or complex airplane, equipped with conventional gear, or is capable of pressurized flight above 25,000 feet."
- Continue to rehearse answers with other pilots and while at home, even with the cat.

Phil Poyner – 2001

- First and foremost: Have fun! Learning to fly is one of the most exciting, stimulating, memorable, and difficult things you will ever do.
- Embrace the process. You usually will learn more from the challenges and setbacks than from the clear sailing.
- Always get a clear study assignment for the next scheduled session. Have your instructor give you an alternative set of plans — one for a "go day" and one for a "no-go day."
- Most of learning to fly is between the ears, not between the clouds.
- Be on time and be prepared for every lesson. That's a two-way street. Insist that your instructor be on time and prepared for each lesson also. Always insist on a preflight brief to review any uncertainties that you have about the flight.
- Each instructor/student relationship is unique. If things aren't working with your instructor, first see if you can work it out. If not, don't hesitate to ask for a different instructor. An instructor who is a true professional will put your needs first. However, ...
- Remember that different doesn't mean better — it just means different.
- It's okay to take advantage of truly unique training opportunities that occasionally arise. However, the training syllabus is designed to be used like the plans for a brick building: you build layer by layer. You can't place a brick on the fourth row when only the first two rows are complete.



Greg Brown – 2000



- Here's the secret to better steep turns: once established, make only pitch changes. Do not turn the yoke left or right (except to correct for turbulence) or unnecessarily move the rudder. Apply this technique, and you'll be delighted at how much easier the whole maneuver is.
- What is a perfect landing, anyway? What you're actually striving for to qualify your landings for solo is not so much consistently "perfect" landings, but rather, consistently "controlled and safe" landings. So, if you balloon and correct, or drift and correct, or choose to go around from a bad approach, and each results in a safe and controlled landing, that is a worthy performance.
- To make better landings, establish a "stabilized approach" well before touchdown. Fly your landing pattern the same way every time. Establish and trim for the proper airspeed on final approach. Correct your final approach path long before touchdown. Stabilizing your normal airspeed and approach path well before reaching the runway makes flaring easier and more consistent. Since flare is largely judged through peripheral vision, looking down the runway gives you the "big picture" required for good landings.
- To master crosswind landings, establish a "stabilized" approach to landing. On final, use rudder solely to align the airplane's nose with the runway. Use the ailerons solely to adjust lateral position to keep the plane on the (extended) runway centerline. Use elevator solely to control pitch and to flare.
- To handle emergency landings, select a suitable field as close as possible to directly underneath you. Circle down over the approach end. Every time you're abeam your touchdown spot, ask yourself, "Is this the time to fly downwind to base and land? Or do I need another turn to lose more altitude?" When abeam the touchdown point, picture a string extending from the nose through the rest of downwind, base, and final to desired touchdown point. Evaluate and control the length of that "string" throughout the approach. ✈️

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Next**GEN**

Junkyard Dog



Photos by Tom Hoffmann

WILLIAM E. DUBOIS

or

Factory Fresh



Choosing the Right Trainer for You

It was a sad airplane. The paint was dull, faded to patchy pastels with hints of rust. It crouched low on the ramp, one wing distinctly lower than the other. Through the yellowed windscreen I could see the cracked, peeling dash and tattered seats.

Imagine my shock when a flight instructor and a young student walked up to the plane, opened the door, got out a checklist, and began a preflight. Wow, someone is actually paying to rent this junkyard dog! To be honest, I thought the plane was a derelict. Every airport has one or two planes tied to the ramp that have outlived their owners and been abandoned to the elements.

In retrospect, there was one visual clue that the plane hadn't last been tied down three decades ago and left to rot: The tires weren't flat and crumbled. Still, the experience left me thinking about the train-

ing fleet, and the wide range of planes available to choose from when it comes to what you can rent once you are ready to learn to fly.

Choices, Choices, Choices

If you're buying a car, a computer, or a smart phone, there are a host of options. The same is true of training planes. You don't have to rent the first plane presented to you. Shop around to find the plane that's right for you. If you don't like what you see at your local airport, check in with the neighboring airports. Sometimes going an extra mile or two more than pays for itself in customer satisfaction. It's your money, and frankly, you're going to spend a lot of it. But not to worry — trust me on this — it will be worth every penny. You'll never regret learning how to fly.

Still, how do you go about choosing the right plane for you? Well, first you need to understand your options. There are more than you might have realized.

High Wing vs. Low Wing

There are two basic types of planes in the world: Ones with the wings on the bottom where they belong, and ones built backwards with the wings on the top.

Of course I could be biased.

But seriously, the first airplane, the Wright Flyer, had wings both on the top and the bottom. In later decades when monoplanes dominated, designers had to choose where to put the single set of wings — on top of the fuselage or on the bottom.

The truth is that both designs fly fine, but the experience in the cockpit is quite a bit different. High-wing planes generally have a better view of the ground, at least to the sides, while low-wing planes provide a splendid view above and around. Visibility out the front, where it really matters, varies more with how the engine is placed, the design of the seats, and how short or tall you are, than where the wings are placed.

In ground reference maneuvers and landing operations, things look a lot different in high-wing planes vs. low-wing planes, so when you're first learning it's best to choose one style and stick with it. Later, you should take the other type for a test drive ... err ... test *flight*.

If you go online to read up on the subject, you'll be forgiven for mistaking wing placement for a religious debate, with pilots feeling more strongly about the subject than is strictly justified. The truth is that the differences between the two designs are a wash, with both styles having equal (and minor) advantages and disadvantages. In the end, it really comes down to what your gut tells you. You should fly a plane that looks, and feels, like a proper airplane — to you.

Of course there's more to airplane design than where the wings are located. ...

Trike or Tailwheel?

Just as there are two main wing designs, there are two main styles of landing gear. Pretty much every airplane out there has the main landing gear under the wings on each side, and a third wheel that might be on the nose under the engine, or might be all the way back under the tail. These two different configurations are called *tricycle gear*, or "trikes," and *tailwheel*, or "trail draggers."

Back in the day, which would have been right after World War II, the vast majority of general avia-

tion planes were tail draggers. Now the opposite is true. Why the change? Trikes are easier to learn how to land, and behave themselves better in the vast majority of modern landing situations, which is to say on pavement and in crosswinds. The tail dragger is harder to master and more prone to ground loops — a type of landing gone awry in which the plane spins like a top around its vertical axis during landing.

Even so, after nearly becoming extinct, tail draggers have made a comeback in recent years. It's partly nostalgic, partly aesthetic (they look cool) and partly because they're better suited to back country strips. So if camping and flying are your heavenly mix, the sooner you can start to learn in the squirrel-lier-to-land tailwheel plane, the better.

Still, there aren't too many tailwheel basic trainers anymore, so you may have to search far and wide. And you might have to master the basics in a trike before you get to your tailwheel training.

Most tailwheel training planes are also high-wing aircraft, but out in the wider fleet (especially in the experimental community) low-wing tail draggers are commonplace.

Paper or Plastic?

When shopping for a plane to rent, don't overlook Light Sport Aircraft, called LSAs. They have several advantages worth considering over traditional training aircraft. First, they tend to be newer, equipped with all the latest glass cockpit bells and whistles, and often have interiors that feel more like sports cars than old school buses. More importantly (perhaps) they are cheaper to rent. LSAs commonly cost 25 percent less to rent simply because they are more fuel-efficient than traditional trainers.

It's also worth mentioning that LSAs are more likely to be equipped with a fighter pilot style "stick" as the primary flight control, than the commercial airline style "yoke" seen in traditional training aircraft. Like high-wing vs. low-wing, stick vs. yoke is simply a matter of preference, and as with wings and landing gear, pilots tend to prefer one over the other. Learning to fly both is an important skill expander, but when you lie in bed at night day dreaming of flying, does your hand move an imaginary stick or an imaginary yoke?

You might do well to choose a trainer that suits your fantasies.

Of course, there are a few downsides to LSAs, too. They only seat two people, but this is a non-issue for flight training, and because many LSAs are made of lightweight composites and plastics rather than

metal, they have lighter wing loading which can make them more susceptible to turbulence.

The sky is not as calm a place as it looks from the ground. It's a fluid medium full of whirls and eddies and currents. Flying an LSA lets you feel every bump in the road that heavier traditional trainers tend to shake off more readily.

One quick word on those fancy glass cockpits most of the LSAs feature. Some people will argue that it's better to learn to fly in a more traditional platform to hone basic airmanship skills before "graduating" to glass cockpits. These same people, however, don't argue that we should be learning in planes that have to be hand-propped and come with only an airspeed indicator and a compass in the cockpit (which would surely be the best way to develop true airmanship). In truth, there is little difference when it comes to learning to fly, so I say, learn to fly in what you think you will use in the long run.

The No Gas/No Wings Options

No, I'm not talking electric planes, although in the future they are likely to be commonplace. Today, the best bang for the buck for the budget conscious is to fly a plane without an engine. As sailplanes don't need gas, their rental rates can be half that of traditional training planes. You can learn to fly, and get certificated, without ever starting a motor. After you have a glider pilot certificate, you can add a powered rating later if you want to, and the glider-first crowd is less afraid of engine failures.

On the other end of the cost spectrum, flying with no wings whatsoever is probably the most expensive option. Helicopters are costly to rent, but

provide an unrivalled view of the world, plus the flexibility of being able to land pretty much anywhere. They're also a hoot to fly.

Rags to Riches

Regardless of the type of plane you choose — high or low wing, trike or tail dragger, LSA or traditional, one without a motor or one without wings — there's one last thing to consider, and that is; Do you want to fly that junkyard dog? Frankly, the condition of some of our training fleet leaves something to be desired, but there's a full range of rental aircraft out there, ranging from factory fresh to aged antiques. Choose first based on the plane that suits your soul. Then consider condition.

If you're happy flying scrappy to learn, it can save you some money. That's OK. After all, we're mainly talking aesthetics here, as rental aircraft maintenance is highly regulated. Just because a plane looks sad doesn't mean it's dangerous. But if your heart sinks before each flight as you walk across the ramp toward your trainer, you need to find another place to spend your hard-earned money.

Which leads me nicely into the subject of refurb.

Recently (thankfully) there's a new trend in training aircraft, and that is taking older, worn-out but solid training birds and refurbishing them to near-new standards. If you can picture a thirty-year-old airplane with new car smell, you get the idea. Called "reimagined," "refurbished," or "remanufactured," these are planes that have been stripped to the bare bones and put back together afresh. They have rebuilt engines, repainted skins, new interiors, and updated avionics. But since they cost *waaaaaay* less for flight



Photo by Tom Hoffmann



Photo by James Williams

High and low wing airplanes are both great training options, but when you're first learning, it's best to pick one style and stick with it.



Another decision to make on your training platform is the arrangement of your landing gear wheels. Both have advantages but the tricycle gear configuration is more common than the conventional (tail dragger) configuration shown here.

schools and clubs to purchase than brand new airplanes do, rental costs are much less. Yet your experience as a pilot is virtually indistinguishable.

Wait ... Why Rent When You Can Buy?

Let's pretend for a moment that you just won the Mega Super Powerball ultimate lottery. You now have more money than the Queen of England, Robert Downey Jr., and Bill Gates combined. You can buy any airplane in the world, so why on Earth would you want to rent one?

Because until you actually learn to fly, you won't know what you want, much less what you need. And to be honest, you don't need to be royalty, Ironman, or the owner of a software empire to own a plane. There are plenty of used airplanes that cost no more than a typical car; sometimes much less, so airplane ownership is not always out of your reach.

But while you're still learning, you should rent.

The Choice is Yours

So what plane to choose? In the long run, there's no reason to have a monogamous relationship with an airplane until you are an airplane owner. (And even then airplanes aren't the jealous sorts.) As you progress, you'll be a better pilot if you try your hands

on as many different aircraft as you can; but when you are first learning, it's a good idea to master the basic skill set in one type of airplane, and better still in a single tail number, as you'd be surprised how differently even "identical" airplanes fly.

Choose the kind of plane that speaks to your soul. You need to look inside yourself and know what you want before you make that first phone call to a flight school or club, or before you make that first drive to the airport.

That's how you choose the right trainer for you.

William E. Dubois is an aviation writer whose work has appeared at one time or another in practically every aviation publication. He is a commercial pilot and ground instructor, has a degree in aviation, holds a world speed record, and flies as an air racer in the Sport Air Racing League. He blogs his personal flying adventures at www.PlaneTales.net

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MANDATE MYTH-BUSTING

Separating Fact from Fiction

for

ADS-B 2020 Equipage Requirements

Part 2 of 2

As of the publication date of this issue, there will only be **42** months remaining before the FAA's ADS-B Out equipage deadline set for January 1, 2020. And yet, as this deadline fast approaches, there are still many aircraft owners who are unsure, undecided, or just confused about what equipment they may or may not need to comply.

To help shed light on some common ADS-B misconceptions, the *FAA Safety Briefing* staff sat down with two of FAA's leading experts in the area of ADS-B equipage: James Marks from the Aircraft Maintenance Division's Avionics branch, and Alex Rodriguez of the Aircraft Certification Service's Communications and Surveillance Technologies section. Together they were able to tackle some important questions and debunk many of the myths about ADS-B equipment choices, specifications, and installation procedures. The following is part two of a two part series designed to clear up some of the confusion of the ADS-B Out requirement and get folks on the proper path toward compliance. For part one, see the May/June 2016 issue of *FAA Safety Briefing* at <http://go.usa.gov/cumV3>.

What guidance/policy documents should I review before I purchase and/or install ADS-B Out?

Some of the technical documents you'll want to reference include Advisory Circular (AC) 20-165B (Airworthiness Approval), AC 90-114A, Change 1 (ADS-B Operations), Technical Standard Orders C154c (UAT) and C166b (1090), and the Aeronautical Information Manual (AIM) Chapter 4, Section 5 – Surveillance Systems. Title 14 Code of Federal Regulations (14 CFR) sections 91.225 and 91.227 also contain all the details of the 2020 ADS-B Out mandate. Links to all of these and more can be found on the Equip ADS-B resource page at www.faa.gov/nextgen/equipadsb/resources/.

For additional background, have a look at the NextGen Office's library of ADS-B related articles and resources at www.faa.gov/nextgen/library.

What are some questions I should ask the repair shop I'm considering using to perform the install?

Most folks already have an avionics shop they go to so that might be a good starting point in your installation search. One thing you might want to check is if that shop is an approved dealer for the ADS-B Out unit you choose. You can check directly with the manufacturer for approved shops in your area. It also helps to know what the upgrade path of your existing GPS and transponder is. Your GPS might be good for navigation, but is it good enough to upgrade for ADS-B? If not, maybe an integrated unit is a good solution. Knowing your existing equipment will help you to ask the right questions.

Some owners are also taking advantage of the aircraft down time to have additional work done, like an ADS-B In or localizer performance with vertical guidance (LPV) system. Other owners are considering ADS-B installation during their next annual inspection. This will still likely involve work being done independently on two different tracks, but it might help decrease downtime and costs as access to certain parts of the aircraft will be easier. Finally, be sure to plan ahead; talk to your installation shop and set an appointment early so you're in the queue.

Will there be any kind of scheduled maintenance or calibration requirements for my system? Will I be able to accomplish them without the aid of a technician?

ADS-B equipment is an "on condition" product and does not impose any additional tests or checks. There is no scheduled maintenance that is required (except for what your manufacturer may

require) and there is no regulation for inspection intervals or operational checks. However, the FAA does continuously monitor the performance of all ADS-B equipped aircraft flying in the United States and we encourage all owners to verify their system meets the requirements of 14 CFR section 91.227. Owners can verify their ADS-B system performance for free via an email request to the FAA at 9-AWA-AFS-300-ADSB-AvionicsCheck@faa.gov. Include your aircraft N-number, ADS-B transmitter make and model number, and the position source (GPS) make and model number. With that information, the FAA will provide an ADS-B performance report highlighting any areas that fail to meet required performance levels or avionics configuration settings that are incorrect for the aircraft. Expect to see a publically accessible online version of this performance report tool soon.

What are the common errors or problems that you're seeing with some installations? How is the FAA involved in correcting and/or preventing these errors?

As mentioned earlier, we do monitor post-installation performance and identify aircraft with ADS-B systems that fail to meet required standards. We maintain a list of common installation and configuration errors that can cause performance problems after an ADS-B system is installed. These errors are also categorized by risk. Some are low risk errors, like an incorrectly configured onboard parameter, while others are considered a higher risk, like position jump errors, since that error is potentially being seen by ATC and other aircraft. The FAA is working with operators, manufacturers, and installers on eliminating common ADS-B installation errors. Here is a list of some of the most common issues we've seen so far:

- Missing barometric pressure altitude
- Air/Ground determination issues
- Flight ID issues including missing flight ID 3-letter identifier
- Modes S address (ICAO address) errors
- Invalid Mode 3/A code
- Incorrect emitter category
- "Position jumping" errors

Installation shops should have the necessary test equipment to verify system performance and proper configuration on the ground before they give the aircraft back to the owner. However, we encourage aircraft owners and repair shops to verify system performance by requesting an ADS-B Performance Report from the FAA following initial installation or maintenance on an existing installation. This will

help ensure the owner or install shop doesn't receive a call or notification letter from the FAA when a problem missed during ground testing is detected by FAA monitoring.

Myth: The specs for ADS-In/Out are only going to change making anything I buy now obsolete and out of compliance.

In terms of the requirements for the 2020 ADS-Out mandate, those are not going to change. Moving forward, there may be enhancements to the ADS-B avionics standards, but any new standards will need to be backward compatible with the existing standards and FAA will not change the ADS-B Out mandate. And even if FAA releases subsequent versions of the ADS-B TSOs, the language in the existing rule would still be the minimum that's required.

How can ADS-B Out system installations be approved?

Initial ADS-B Out system pairings (transmitter/GPS) must be approved for installation using the Type Certificate (TC), Amended TC (ATC), or Supplemental Type Certificate (STC) process. Consult your Aircraft Certification Office to determine the appropriate approval process for these initial installations. Once the performance of the initial pairing has been established, the FAA considers follow-on installations of the same pairing to be approved.

Approved pairings can be installed under the Field Approval process, or if certain conditions are met, installed without further approval from the FAA. Reference AVS Policy Memo, Installation Approval of ADS-B OUT Systems, dated March 2, 2016, for additional information (<http://go.usa.gov/cuayw>).

Is there any advantage to having a dual frequency (1090 and UAT) system?

With regard to ADS-B Out, there won't really be any operational advantages to have a dual-frequency system. Some operators want a dual link ADS-B Out system to ensure that they are "seen" by all ADS-B-In receivers in remote areas that may not be within the coverage of FAA's ADS-B ground stations. Some people also don't want to deal with any of the airspace limitations that exist for UAT. The internationally agreed standard for ADS-B is 1090ES and not UAT. With regard to ADS-B In equipment, which is not required to meet the 2020 mandate, there are some operational differences between the two links pilots should be aware of. ADS-B Flight Information Service (FIS-B) that provides information on weather, pilot reports, and special use airspace (among other things), is only available over the UAT frequency and not on 1090. Another important distinction: If your aircraft is outside the range of an ADS-B radio station, which translates traffic

information between the two links, you will not see anyone on the other frequency unless you receive ADS-B In on both frequencies.

Can you describe the TIS-B changes that went into effect this year? How does it affect someone looking to equip their aircraft or who may have already done so?

In 2013, the FAA learned that there were a significant number of operators using non-compliant ADS-B Out equipment to enable reception of TIS-B (traffic) services. This caused a safety concern since these aircraft using uncertified ADS-B Out were essentially “invisible” to other aircraft with TSO-certified ADS-B-In systems and the uncertified ADS-B Out information was unusable to air traffic control. To rectify this, the FAA in early 2016 put in place changes that allow TSO-certified ADS-B-In systems to see aircraft using uncertified ADS-B Out equipment. The change also removed the incentive for those who choose to equip with uncertified or otherwise non-compliant ADS-B Out by confining the transmission of TIS-B services strictly to those aircraft that meet the minimum performance requirements of TSO-C199 (Traffic Awareness Beacon System). TSO-C199 essentially defines the minimum acceptable level of performance for airborne ADS-B transmitters in the United States.

Unfortunately, there are cases of operators who are unaware that their system is non-compliant

and which may have appeared problem-free after installation. We’re actively trying to reach out to people who may be in this situation so they can get it resolved. That is another reason we encourage people to email us for a free performance check.

How long does a typical ADS-B Out installation take for a small piston GA aircraft?

The time can vary based on installation complexity and the capability of particular shops, but on average a typical installation will take approximately two days if you have an existing GPS, and about three to five days if you need both GPS and an ADS-B transmitter installed.

What about Experimental/Amateur-Built (E/AB) aircraft? Do they need to meet the performance requirements of 14 CFR 91.225/27? Does their equipment need to be certified?

There is nothing in the regulations that prevent owners of E/AB aircraft from installing a non-certified ADS-B system. What we do have is policy on how they have to configure that system so it doesn’t transmit parameters that would allow data from that aircraft to be improperly displayed to an air traffic controller or to the pilots of other ADS-B In equipped aircraft. If they are not flying in air-space requiring ADS-B, they can have non-certified equipment that doesn’t meet rule performance requirements, but we’ve defined the specific avion-

ics settings that they must transmit. If they are in air-space requiring ADS-B as defined in 14 CFR 91.225, they must meet rule performance requirements, regardless of the aircraft type [unless they meet the exceptions defined in 14 CFR 91.225(e)]. Updates to AC 90-114A, Change 1 (<http://go.usa.gov/cuaXw>) address what light sport aircraft and E/AB operators will need to do to bring their systems to within certified standards. ✈

Your Checklist For On-Time Departure With ADS-B

- 1. Research the equipment you need based on where you fly
- 2. Find an installer to discuss your needs
- 3. Schedule your installation
- 4. ADS-B Equipped Cleared for takeoff!

faa.gov/go/equipadsb

2020

NextGEN

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

The Right Stuff

As the Airman Certification Standards (ACS) project has evolved over the past five years, I have occasionally heard long-time flight instructors (CFIs) or designated pilot examiners (DPEs) tell me how much they like the ACS as a guide for teaching and training. But ... then comes the comment that, well, the Practical Test Standards (PTS) — and now the ACS — is supposed to be a TESTING standard, not a TRAINING standard. Next comes the concern that the ACS will promote “teaching to the test.”

Two Sides of the Same Coin

Such comments have always puzzled me. Call me simplistic, but aren't teaching and testing *supposed* to match up? At the most fundamental level, testing and training are opposite sides of the same proverbial coin. Testing is intended to measure whether, as well as to what extent, the test-taker has mastered the knowledge or skills presented through teaching and training. Since testing almost inevitably involves sampling, the content of a test also provides an indication of what the test-giver considers to be the most important things a person should know or be able to do.

Those factors alone make testing a complex endeavor with many moving parts and balances to strike. It is not a good practice to test learners with questions or maneuvers tasks that are identical to what they have seen in the teaching and training environment. But nor does it make sense to test people on topics that are outside that scope, either in fundamental content or degree of complexity. So, as anyone who has ever tried can attest, it takes a lot of thought and work to develop tests that really measure the learner's mastery of the “right stuff.”

Tying It All Together

Good learning starts with defining the “right stuff” to be taught and tested. And that's why the ACS is such an important improvement to both training and testing for airman certification.

As you know, the regulations list required areas of aeronautical knowledge and flight proficiency for each airman certificate and rating. The FAA developed the PTS to define the skill performance metrics — that is, the “right stuff” — for each Area of Operation and Task. Until the advent of the ACS, though, there was no corresponding set of defined knowledge test standards (KTS) metrics to define the “right stuff” for aeronautical knowledge.

The lack of a KTS to define and standardize aeronautical knowledge resulted in test questions that were disconnected from the knowledge and skills needed for safe operation in today's National Airspace System

(NAS). If you have previously taken a knowledge test, taught ground school, or tested applicants for a certificate or rating,

you probably encountered questions that were out-of-date, such as the many questions on “fixed card ADF” navigation. Others were overly complicated, requiring multiple interpolations to calculate impossibly (and unnecessarily) precise performance values. And some were simply irrelevant.

Because of questions like these, training for the knowledge test involved too little guidance on things that really *are* useful and important for a pilot to know, and too much rote memorization of things you would never use.

That brings me to the issue of “teaching to the test.” If the training program is focused on what truly constitutes the “right stuff,” and the test is both properly aligned with the material being trained and constructed to test mastery of concepts rather than recall exact words and phrases, then teaching to the test is not such a bad thing. The process of teaching to the test is a problem when the testing process is so disconnected from the “right stuff” and from training that rote memorization is the only way to pass.

Thanks to years of careful thought and hard work by a number of dedicated people in the aviation industry and the FAA, the ACS defines the “right stuff” standards for both the knowledge test and the certification (practical) test. It demonstrates how knowledge, risk management, and skill are connected, and it provides the means to align training with testing. And that, as they say, is A Very Good Thing.

Good learning starts with defining the “right stuff” to be taught and tested. That's why the ACS is such an important improvement to airman certification training and testing.

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.

Learn More

FAA Airman Testing web page

www.faa.gov/training_testing/testing/



JAMES WILLIAMS

I Want to Fly

So Why Do I Need to Go to the Doctor?

Medical Certification Basics

Are you considering becoming a pilot? While the first steps on your new aviation adventure will likely include visits to local flight schools and maybe a pilot gear shop for the latest swag, a doctor's office visit should also be at the top of your list. This might seem a bit incongruous at first glance, but medical fitness is an essential and sometimes overlooked part of aviation. In this article we'll discuss what the aviation medical certification process is, how it works, and what you should know before you head into your medical exam. With the right information beforehand, the process can be a lot less daunting. And with the right Aviation Medical Examiner (AME) it can be a lot easier. We'll cover both of these areas, but first you need to determine if you even need a medical certificate, and if you do, which type.

What Class Are You In?

When you go for a medical exam you will have three classes of medical certificates to choose from: first, second, or third. The requirements for each class of medical can be found in Title 14 Code of Federal Regulations (14 CFR) part 67. See also "The Right Stuff" in the Jan/Feb 2013 issue of FAA Safety Briefing (www.faa.gov/news/safety_briefing/2013). Here's a summary:

First class has the most stringent requirements and the shortest life span, with second class being less restrictive, and third class even less so.

The medical exam is very similar for all three classes. Some of the key differences are the requirement for an electrocardiogram (EKG) for older airmen (once after turning 35 and on an annual basis after turning 40 for a first class) and vision standards (first and second class require vision correctable to 20/20 while third class only requires vision correctable to 20/40).

For most general aviation (GA) pilots, a third class medical is sufficient. Medical certificate requirements are tied to the privileges an airman wishes to exercise, and not necessarily explicit to the certificate they hold. For example, if an Airline Transport Pilot (ATP) plans to conduct commercial operations, he or she would be required to hold at least a second class medical, and for a 121 or 135 air carrier operation, a first class medical would be required to act as pilot in command (PIC). When exercising private or recreational pilot privileges (or when providing flight instruction under subpart H) only a third class medical privilege would be necessary.

Can I Fly Without a Medical?

In some cases, yes. 14 CFR section 61.23(b) explains that both glider and balloon pilots are not required to hold a medical. Another viable option for fixed-wing aficionados is the sport pilot certificate, which offers some latitude in medical requirements. You don't have to have an FAA-issued medical cer-

tificate to exercise sport pilot privileges, but you must hold and comply with any restrictions on a current driver's license. (For more on operations requiring either a medical certificate or U.S. driver's license, see 14 CFR section 61.23(c)). There is a caveat here though. If you've ever held an FAA medical certificate, it must not have been suspended, revoked, or denied. Also, if you've started an FAA medical exam, you must have had your medical issued; you can't stop in the middle of an exam if you don't like what you hear. But once you have a medical, you may allow it to expire and continue to operate under sport pilot rules so long as you hold a valid driver's license and don't know of any condition that would render you unsafe to operate an aircraft. For more information on the IMSAFE checklist for determining fitness for flight, see Aeromedical Advisory from our September/October 2014 issue (www.faa.gov/news/safety_briefing/2014).

What if I Can't Get a Medical?

If you don't think you can pass an initial pilot medical exam, don't give up just yet. One of the FAA's Office of Aerospace Medicine's top priorities is getting as many airmen into the sky as is safely possible. To that end, the FAA has aggressively pursued policies that will, with some safety mitigations, let an airman walk out of the AME's office with a medical certificate in hand, despite having a previously disqualifying condition(s). In fact, our last full year of data (2014) shows that 96 percent of airmen walked out of the AME's office in possession of a medical.

This is in large part due to the new Conditions AMEs Can Issue (CACI) policy. CACI allows AMEs to issue medical certificates for conditions that previously would have had to be denied or deferred to the FAA. So, with some additional information supplied by the airman, the AME simply follows the CACI procedure, which in many cases allows issuance of an unrestricted medical certificate on the spot. Currently there are 16 conditions that qualify for CACI. You can find the full list here: <http://go.usa.gov/cuEvF>. Federal Air Surgeon Dr. James Fraser has made it his goal to expand the CACI policy to as many conditions as is safely possible. For more information on CACI, stay tuned to the Aeromedical Advisory column in these pages. The last update was on page 5 of our July/August 2015 issue: www.faa.gov/news/safety_briefing/2015.

What if you don't have one of the listed CACI conditions? Another option is the Special Issuance (SI) process. The process is covered in more depth on page 2 of our January/February 2009 issue (www.faa.gov/news/safety_briefing/2009), but it relies on

additional requirements that enable the FAA to issue restricted medical certificates to airmen who would otherwise be disqualified. With the introduction of the AME Assisted Special Issuance (AASI), the process has become even more airman-friendly. Once you have completed your initial SI, and you meet the AASI criteria, your subsequent SIs may be issued by the AME, assuming you have all the required documentation. That means no more having to defer to the FAA for every exam; only the initial exam is deferred. This will save a significant amount of time in getting you certificated.

What is an AME and Where Do I Find One?

The AME is a doctor who is designated by the FAA's Office of Aerospace Medicine to provide airman exams and issue medical certificates. The AME is the medical equivalent of a Designated Pilot Examiner (DPE), who evaluates airmen and issues pilot certificates on behalf of the FAA.

The FAA administers both initial and recurrent training that keeps AMEs up to speed with policy and guidance changes. So effectively an AME is a doctor trained on FAA policy. While it is perfectly acceptable to use your AME as a primary care physician if they are so qualified, most pilots choose to have a separate primary care doctor and AME. This is because when the AME is conducting your exam, he or she is actually working for the FAA and not for you as they would normally do with a routine physical.

One of the FAA's Office of Aerospace Medicine's top priorities is getting as many airmen into the sky as is safely possible





Members of the FAA's Office of Aerospace Medicine attend events like Sun 'n Fun and AirVenture to answer any medical questions airmen might have. In most cases the staff can pull up an airmen's file to directly address any issues they have. (L-r) Dr. Richard Carter (Aeromedical Certification Division), Dr. Arnie Angelici (Deputy Southern Regional Flight Surgeon), Dr. Michael Berry (Deputy Federal Air Surgeon), Dr. Susan Northrup (Southern Regional Flight Surgeon)

The easiest way to find an AME is to go to the FAA website (www.faa.gov/licenses_certificates/medical_certification/) and click on "Locate an Aviation Medical Examiner." Simply picking the closest or most convenient AME might seem like the way to go, but Dr. Fraser suggests that "Your best bet is to approach AME selection in the same way you approach looking for a good investment: ask around!" That's because if you stay involved in aviation (in a capacity that requires a medical) you're going to need a good AME rather than a convenient one. For more information on finding the right AME, see "AMEing for Excellence" on page 9 of our Jan/Feb 2013 issue (www.faa.gov/news/safety_briefing/2013).

So I'm Done Once I Leave the Office, Right?

Not quite. Even though you may be in possession of a brand new medical certificate, you are responsible for making sure that you continue to meet the

standards of that certificate well after you leave the doctor's office. While no one is expecting you to be perfect in adhering to the standards in part


Your best bet is to approach AME selection in the same way you approach looking for a good investment: ask around!

67, you are expected to make sure you are ready for any given flight. Are you properly rested? Are you sick? Are you taking a medication that might interfere with your abilities?

The FAA understands that your medical condition can change over time. Given that, you are expected to ground yourself for any condition or medication consumed that might make you unable

to fly safely. For circumstances like a cold or the flu, this would simply mean not flying until after you've recovered. For more significant health issues, like a heart attack or major surgery, it's a good idea to talk to your AME about what you may have to report and how you should go about returning to flight status. Some conditions have waiting periods before an airman can reapply. A good AME can help you figure out what tests or reports need to be done to make the FAA process go more smoothly.

Another issue to pay attention to is medications and the waiting period after you stop taking them. Even common over the counter (OTC) drugs like diphenhydramine (Benadryl) can be potentially disqualifying. For more information on the use of medication see *Aeromedical Advisory* in this issue. While it varies from medication to medication, a good rule of thumb is to wait at least five times the dosing interval of the medication. So if you have a medication you are directed to take every six hours, you should wait at least 30 hours (5 x 6) after your last dose.

While it sounds like a lot, the medical certification process is actually pretty easy for most people. In review: Figure out what medical class you want; find an AME; upload your information into MedXPress; go to your exam. For 96 percent of airmen, that's the end of it. Armed with the right information and a good AME, you should have no problem joining the ranks of medical certificate holding airmen. 

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

JAMES WILLIAMS

New Student Pilot Certificate Process

On April 1 of this year, the FAA made a significant change for people starting out on their pathway to pilothood. Prior to this change, most student pilot certificates were issued as a part of the initial medical exam. As the certificates changed from paper to plastic and more vetting was required for pilot certificates, change was essential. Consequently, the FAA developed a rule that would meet new requirements while keeping the process relatively easy for prospective pilots. An added benefit to the student pilot is that the new plastic certificate no longer expires. Also instructors may now simply place student pilot endorsements in the student's logbook like all other endorsements.

So Who Can Issue a Student Pilot Certificate?

In keeping with this concept, the FAA has designated several individuals or organizations who can help with issuance. The first, and perhaps most obvious, is an FAA Aviation Safety Inspector or Aviation Safety Technician. The FAA has also allowed Certificated Flight Instructors (CFIs) and Designated Pilot Examiners (DPEs) to enter the application into the Integrated Airmen Certification and/or Rating Application (IACRA) or file the paper FAA Form 8710-1. A CFI must be registered in IACRA as a "recommending instructor" in order to accept an application for a Student Pilot certificate. Still another option is an Airman Certification Representative (ACR) associated with a Title 14 Code of Federal Regulations (14 CFR) part 141 pilot school.


What Does the Instructor Do?

The CFI, DPE, or ACR is responsible for making sure that the applicant meets the eligibility requirements laid out in 14 CFR section 61.83, as well as verify the applicant's identity. The instructor is also responsible for verifying that the applicant is English proficient. The FAA recommends using Advisory Circular (AC) 60-28 and the International Civil Aviation Organization

(ICAO) website to prepare for this process. If the applicant has a known medical issue that would require a limitation on the Student Pilot certificate, that applicant should be referred to the jurisdictional FSDO.

What Happens Next?

Once the application is submitted, the FAA's Civil Aviation Registry must process the application within three weeks. That counts the time from when the FAA receives the application to when the plastic certificate goes in the mail. As you are required to have the certificate in your possession to solo, we recommend getting your application in at least a month before you expect to solo. In many cases the process can go faster, but that is dependent on the number of certificate applications at the registry.

One last thing to remember: previously, the student pilot certificate was combined with your initial medical certificate in most cases. Now that there is a separate plastic certificate, you will still need to make sure you also have a current medical certificate before you solo if the operation requires one. 

The FAA developed a rule that would meet new requirements while keeping the process relatively easy for prospective pilots.

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

Learn More

Part 61 Subpart C Student Pilot

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

Advisory Circular 60-28A English Language Skill Standards Required by 14 CFR Parts 61,63, and 65

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

Advisory Circular 61-65F Certification: Pilots and Flight and Ground Instructors

<http://go.usa.gov/cJr6x>

ALYCIA WILLIAMS

NORSEE Policy Refreshes Certification Strategy



Photo courtesy of Garmin

Enhancements like modern avionics can add situational awareness to older aircraft.

Alleviating real and perceived challenges to incorporating safety advancements in the fixed-wing and rotorcraft general aviation (GA) fleet was at the heart of a recently signed policy allowing the approval of Non-Required Safety Enhancing Equipment (NORSEE) (<http://go.usa.gov/cuuJd>). On March 31, 2016, the FAA Aircraft Certification Service's (AIR) Design, Manufacturing, & Airworthiness Division (AIR-100) signed the statement to facilitate approvals of NORSEE for all product types.

AIR-100 expanded on the Angle of Attack (AOA) policy (<http://go.usa.gov/cuuJW>) issued on February 5, 2014 as the basis for establishing one policy that was scalable and adjustable to accommodate and encourage the installation of new technology and safety enhancements into part 23, 27, and 29 aircraft. This policy will reduce equipment costs by allowing the applicants the flexibility to select various industry standards that suit their product, as long as it meets the minimum design requirements established by the FAA.

"We are not trying to bypass the existing certification processes or the current level of FAA oversight," said Anthony Vilante, an aerospace engineer in AIR's Certification Branch (AIR-111). "We want to standardize the approval process specific to NORSEE. We believe NORSEE will bring enhancement to our existing safety standards established by our certification processes."

The new policy is the result of collaboration over the past year and a half with AIR-100, the Rotorcraft Directorate, and the Small Airplane Directorates. FAA also took into consideration some of the recommendations from GA Joint Steering Committee in regards to Safety Enhancing Equipment. The policy addresses directives outlined in Section 312 of the FAA Modernization and Reform Act of 2012 requiring the FAA to work with industry to allow the installation of safety-enhancing equipment on GA aircraft.

Equipment approved as NORSEE has a variety of uses including: increasing overall situational awareness; providing additional information other than the aircraft primary system; providing independent warning, cautionary, or advisory indications; and providing additional occupant safety protection.

Most NORSEE categories fall under the avionics, electronic instrument, and display categories. However, mechanical and other NORSEE categories can use the same methodology and evaluation approach outlined in the policy. Some types of equipment that may be considered NORSEE include traffic advisory systems, terrain advisory (such as a terrain awareness and warning systems [TAWs]), attitude indicators, extinguishing systems (such as a fire extinguisher), and stability and control (such as an autopilot or stability augmentation systems).

NORSEE approval under this policy is not an approval for installation on the aircraft. The equipment becomes eligible for installation on the aircraft after approval. There may be a situation in which installation of the equipment on the aircraft requires modifications that are considered a major change to type design, or major alteration to the aircraft. In these cases the applicant is required to pursue appropriate certification path (such as a supplemental type certificate), or field approval process, regardless of the "non-required" designation.

The initial implementation will begin with one Aircraft Certification Office (ACO) as the focal office for NORSEE approvals and eventually will expand to other ACOs, allowing applicants to apply through their geographical location. ✈️

Alycia Williams is a communications specialist with the FAA's Aircraft Certification Service in Washington, DC. Since joining the FAA in 2014 she has become immersed in the world of aviation and has embraced her role in helping to educate others about the agency's certification process.

General Aviation Fleet Modernization

Real and perceived barriers in current FAA regulations and policies pose challenges for the general aviation (GA) community to incorporate safety advancements. The Aircraft Certification Service (AIR) is developing and implementing solutions to break down those barriers, facilitate GA fleet modernization, address loss of control (LOC) and controlled flight into terrain (CFIT) accidents, and promote safety.

FOCUS AREAS for EXISTING FLEET (Retrofit):

Reorganizing Part 23 will facilitate the incorporation of new technologies on future fleet designs. For the current fleet, AIR is applying safety continuum principals and making risk-based decisions to support faster and easier incorporation of the safety features below.



Propulsion Enhancements

Benefits: Improves reliability, ease of maintenance & operation, reduces workload, helps prevent engine failure accidents.

ADS-B In/Out

Benefits: Improves traffic & situational awareness, provides weather display in the cockpit.

Angle Of Attack (AoA)

Benefits: Increases pilot awareness and helps prevent LOC accidents. (<http://go.usa.gov/cuJPe>)

Autopilot & Envelope Protection Systems

Benefits: Reduces workload, helps prevent LOC and CFIT accidents.

Engine Monitoring systems

Benefits: Allows better engine management, decreases maintenance costs, helps prevent engine failure accidents.

Fuel Gauge Systems

Benefits: Provides low fuel warning, helps prevent fuel exhaustion accidents.

Attitude Indicators

Benefits: Allows instrument replacement, improves reliability, lowers maintenance costs, helps prevent LOC accidents. (<http://go.usa.gov/cSPjF>)

Non-Required Safety Enhancing Equipment (NORSEE)

Benefits: Facilitates approvals, reduces equipment costs by removing excessive design assurance, supports modernization, reduces unnecessary regulatory barriers. (<http://go.usa.gov/cuJPw>)

Advanced Flight Displays (PFD/MFD)

Benefits: Intuitive, integrated information for pilot, improves situational awareness, replaces obsolete equipment, helps prevent LOC and CFIT accidents.

Future (R&D) Efforts:

Advanced Autopilots (Refuse to Crash)

Benefits: Reduces workload and pilot error, helps prevent LOC and CFIT accidents.

Future Automation

Benefits: Increases safety, simplifies operations and enables future flight and transportation concepts.



Announcing the 2016 National GA Award Honorees

Every year for more than 50 years, the General Aviation Awards program and the FAA have recognized aviation professionals for their contributions to GA in the fields of flight instruction, aviation maintenance/avionics, and safety.

The FAA will present the recipients of this year's awards with individual plaques in July during EAA AirVenture 2016 in Oshkosh, Wisc., and their names will be added to the large perpetual plaque located in the lobby of the EAA AirVenture Museum. Also included in the prize packages for each National Honoree is an all-expenses-paid trip to Oshkosh to attend the awards presentation and other special GA Awards activities.

Nominations and applications for the 2017 General Aviation Awards will be accepted starting July 1, 2016. If you are acquainted with a CFI, AMT, Avionics Tech, or FAAS Team Rep whom you think might be deserving of an award at the local, regional, or national level, we encourage you to nominate him or her. If you are an aviation professional with a distinguished career in one of these categories, we encourage you to apply. For more information about nominating or applying, please go to: www.generalaviationawards.com/nominations

2016 National Certificated Flight Instructor of the Year

Robert James Hepp of Fairfax Station, Virginia has been



named the 2016 National Certificated Flight Instructor of the Year. Bob owns and operates Aviation Adventures LLC, the largest non-university Part 141 flight school in the Mid-Atlantic region, utilizing 46 airplanes (16 of them company-owned) in four locations. Bob has been

a pioneer in the use of simulators and advanced flight training devices and has incorporated them into the school's training programs.

Bob's company established and operates the aviation program at George Mason University, and was selected by Liberty University as the first of now over 40 Flight Training Affiliates in its nationwide aviation program. Bob developed the Rusty Pilot Program and worked with AOPA to bring that program to a nationwide audience of pilots. Bob also won AOPA's Outstanding Flight Instructor of the Year award in both 2013 and 2014, and his school and instructors are repeat winners of AOPA's Flight Training Excellence Awards. It can be truly said that Bob is a CFI's CFI.

Despite his duties managing the business and overseeing nearly 50 instructors and staff at Aviation Adventures, Bob has remained an active CFI for three decades with more than 14,000 hours of dual instruction given and providing instruction from pre-solo to CFI, Airline Transport Pilot (ATP), and type ratings. During the past five years, Bob personally endorsed more than 150 pilots for certificates, ratings, type ratings and privileges. In addition, he flies about 220 hours/year as a contract pilot on Citation Jets, mostly single-pilot. He has flown more than 40 types of single-engine aircraft, nine types of twins, light sport aircraft, and T-6 and P-51 warbirds. He holds ATP, CFI, CFII, MEI, and AGI certificates, and type ratings for the Airbus 320, Citation 500 and 525S, and Jetstream 4100.

Bob received a B.S. degree in Computer Science from Bowling Green State University, and an MBA from Boston University. He graduated from the U.S. Army Command & General Staff College. He served in the Army for 21 years as a field artillery officer, retiring in 1998 at the rank of Lieutenant Colonel. In 1989, while still on active duty, he started Aviation Adventures with a single Cessna 172 and himself as its sole instructor. The rest is history.

nightowl@aviationadventures.com.

2016 National Aviation Technician of the Year

Adrian Allen Eichhorn of McClean, Virginia, has been named the 2016 National Aviation Technician of the Year. Anytime he's not flying Airbus 320s for JetBlue, you'll probably find him in his hangar at Manassas Regional Airport working on a Bonanza.

Adrian inherited his intense passion for aviation from his father, a decorated U.S. Army pilot who served in both WWII and the Korean War. After graduating from Michigan Technical University with a degree in Civil Engineering, Adrian

embarked upon a distinguished but terrestrial 21-year career with the Corps of Engineers, retiring in 2000 as a Lieutenant Colonel. While stationed in Korea, he began flying lessons at a military flying club and then was transferred to San Francisco where he earned his private, instrument, commercial, ATP, CFI, and AGI certificates and ratings.

It was in San Francisco that Adrian first became interested in aviation maintenance, performing owner-assisted 100-hour inspections under the tutelage of an A&P mechanic



who also happened to be one of his flight students. When the Army transferred him to a position on the Army Staff at the Pentagon, Adrian wound up purchasing a P35 Bonanza. He personally overhauled the aircraft's Continental engine, installed a new avionics stack and interior, and replaced most

of the sheet metal on the wings and fuselage, earning his A&P and Inspection Authorization (IA) in the process. Adrian's latest Bonanza project is a solo round-the-world flight, to be completed prior to AirVenture 2016.

When Adrian retired from the Army in 2000, he took on a series of prestigious pilot jobs, including flying a Challenger 604 for the Washington Redskins and flying the Gulfstream IV "N1" for the FAA Administrator and Secretary of Transportation. He is also type rated in the Gulfstream II, III, 200, Cessna 560 Excel, and Aero Vodochody L39. His passion remains focused on piston GA maintenance however; he conducts numerous owner-assisted annual inspections for other

Bonanza and Baron owners, has inspected and approved more than 60 major alterations, has conducted over 40 pre-purchase inspections and has developed and obtained STCs for landing and wingtip recognition lights for Bonanzas, Debonairs, Barons and Travel Airs.

Adrian's outreach and authoring accomplishments include helping develop the maintenance training portion of the original Beechcraft Pilot Proficiency Program, providing maintenance instruction to owners and pilots throughout the United States, and authoring more than 60 articles in publications such as *FAA Safety Briefing* and *American Bonanza Society (ABS) Magazine*.

Adrian has served as a FAA Team Representative for nearly 20 years, giving dozens of safety presentations at airports throughout the greater Washington DC area and at numerous major general aviation events across the nation. Adrian also received the National Aviation Safety Counselor of the Year in 2001 and was honored by the Washington DC FSDO with the Superior Contribution to Safety (2004) and Flight Instructor of the Year award (2011).

adrian.eichhorn@mac.com.

2016 National FAA Safety Team Representative of the Year

Richard Lawrence Martindell of San Diego, California, has been named the 2016 National FAA Safety Team Representative of the Year. Rich is employed by King Schools as Vice President, Course Content and Experience. In this capacity, he works directly with the King Schools' Professional Pilot courses and supervises the work of four CFIs and a graphic



artist for all the company's aviation courses. Those courses include Sport, Private, Instrument, Commercial and ATP ground school; Sport, Private, Instrument and Commercial practical test preparation; Flight Instructor refresher courses for fixed wing and helicopter; and numerous topical flight training courses. Rich is also the Wings Program coordinator for King Schools, where he validated 1,500 requests for Wings credit in the past 12 months.

Rich formerly served as a USAF fighter pilot and instructor, where he logged 1,000 hours in both the F-4 and the F-15. He retired with the rank of Lieutenant Colonel, having earned the Distinguished Flying Cross, five Meritorious Service Medals, eleven Air Medals, and three Combat Readiness Medals. He flew 323 combat sorties in the F-4 in Thailand, and has been stationed at several bases, domestic and international.

As Lead Representative of the FAA Safety Team in San Diego, Rich has worked with and trained most of the other district Lead Reps. He often speaks throughout the region at EAA chapters, flight schools, flying clubs, and airport businesses. His connections with other prominent airmen in the area have helped him set up seminars and meetings for several hundred airmen in the local area. Rich excels in teaching leading-edge aviation topics from ADS-B to UAS to the redesign of the Multiplex Airspace System in Southern California. He writes newsletter articles and maintains an online blog titled "Let's Go Flying."

Rich is a member of the San Diego Airports Aviation Advisory Committee. He regularly teaches Private Pilot ground school courses for the San Diego Air & Space Museum at the General Atomics Aeronautical Systems campus. He is an active pilot and instrument flight instructor. He is also a trained aviation accident investigator, and is frequently called upon as a subject matter expert by local media to comment on aviation mishaps.

Rich holds ATP, CFII, and AGI certificates. He earned a Bachelor of Science degree in Transportation and Public Utilities from the University of Arizona, and an MBA from Golden Gate University. He is also a graduate of the Safety Program Management and Aircraft Accident Investigation programs at the University of Southern California.

rich.martindell@earthlink.net.



Coming Soon: Airman Certification Standards — the AMT Edition

Just a quick refresher: in order to become a certificated aircraft mechanic in the United States, you must be at least 18 years old and able to read, write, speak, and understand English. Next, you must complete 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 an FAA-Approved Aviation Maintenance Technician School. Lastly, you must pass a written, oral and practical test in three areas (general, airframe, powerplant) to receive both the airframe and powerplant (A&P) certificate.

Regarding that last part, the Practical Test Standards (PTS) is changing in order to add task-specific knowledge and risk management elements to each task. The result of this “enhanced PTS” is the Airman Certification Standards (ACS), which is a comprehensive presentation of what an airman needs to *know* (knowledge), *consider* (risk management), and *do* (skill) to pass both the knowledge test and the certification (practical) test for an airman certificate or rating. By the time you read this article, anyone who is teaching, training, or testing for a private pilot certificate in the airplane category or an instrument rating (also in the airplane category) will be using the ACS in lieu of the PTS.

Super Team (the Sequel)

The FAA and the industry Aviation Rulemaking Advisory Committee’s Aviation Certification System Working Group (ARAC ACS WG), which has spent the last five years developing the ACS, will continue to refine the ACSs for other pilot and instructor certificates and ratings. But in an exciting development for the maintenance world, this team is also taking on the much-needed task of transforming the standards, training guidance, test management, and reference materials for Airframe & Powerplant certification testing.

To accomplish this herculean task, the ACS WG welcomed several new members with expertise in 14 CFR part 65 (Certification: Airmen other than Flight Crewmembers) and part 147 (Aviation Maintenance Technician Schools) to the team at its May face-to-face meeting. These industry experts — who all volunteer their time for this project — represent all

major segments of the aviation maintenance community. Over the next 18-24 months, these experts will work with their ACS WG colleagues and FAA subject matter experts to develop the ACS for the Aircraft Mechanic Certificate.

Gone the Way of the Mustang

The ACS matters because it sets the standards for certification of airmen. Standards drive the development and/or revision of guidance (e.g., FAA H-series handbooks) and, ultimately, knowledge test questions that align with both standards and guidance. While the FAA *does not* — indeed, *cannot* — share the development or revision of knowledge test questions with industry, the agency does rely on the ACS WG members’ expertise to develop the standards (i.e., the ACS for each certificate/rating). The FAA also relies on industry to revise the supporting handbooks and other guidance materials used for teaching and training.

The ACS — and the process that created it — is the key to updating standards, guidance, and test questions in a logical and systematic way. As anyone who has taken the Aircraft Mechanic knowledge test can verify, some questions were more appropriate to the era when the P-51 *Mustang* was dominating the skies. And as any training or practicing aviation maintenance technician (AMT) knows, aircraft maintenance is a fast moving, rapidly changing field that demands constant work to keep up with developments like “glass cockpit” avionics and composite materials. Given how critical aircraft maintenance is to safety, the airman certification system that trains, tests, and certifies AMTs has to do the same. The ACS format will help the FAA and its industry partners achieve that goal, by ensuring that future AMTs benefit from its integrated presentation of knowledge, risk management, and skill standards that are up-to-date and fully aligned with guidance materials and knowledge test questions.

The ACS Working Group is required to make its report and recommendations completed by December 2017, but actual improvements to guidance and test questions could start to happen sooner. Stay tuned!

Sabrina Woods is an associate editor for FAA Safety Briefing. She spent 12 years as an aircraft maintenance officer and an aviation mishap investigator in the Air Force.



Context is Everything

If you've read through the articles in this issue, you're certain to have heard about the many exciting benefits of the Airman Certification Standards (ACS), which is an industry-developed enhanced version of the Practical Test Standards (PTS). One of the improvements that the ACS brings to the table for airman training and testing is a better approach to mastering the long list of "special emphasis" items found in the introduction section of the PTS.

A perusal of this now swollen list of topics includes items like LAHSO (Land and Hold Short Operations), checklist usage, and runway incursion avoidance. While these topics are important in their own right, it's hard to see how these items warrant such individual and "special" attention. The list was arguably a convenient placeholder for flight safety topics that many times came from NTSB recommendations. Without the proper context, the inclusion of these items in the PTS in list format resulted in cursory or subjective treatment — and sometimes both.

Keep it in Context

To address the issue, the ACS Working Group decided to incorporate each special emphasis topic into the knowledge, skill, and/or risk management section of the appropriate Area of Operation and Task. According to FAA's General Aviation and Commercial Division Manager Jim Viola, this approach helps in several ways. "Integrating the item into a standards-based context enhances effective instruction and learning, and it guides development of appropriate guidance and test questions," says Viola. "Because most items in the PTS special emphasis list appear in multiple places in the ACS, it also increases the likelihood of meaningful exposure to any given topic." This approach also helps connect these issues to real-world operations and provides context that helps applicants, instructors, and evaluators understand *why* it is important.

LAHSO is a perfect example of how the ACS has made improvements in the way special emphasis items are handled. In the Private Pilot – Airplane PTS, LAHSO is nothing more than a line item mentioned in the Special Emphasis Areas section. The applicant and the evaluator are pretty much left to their own devices as to how, when, and where to integrate this topic into the testing process.

With the ACS, however, LAHSO is incorporated as both a knowledge and risk management element in four tasks in Area of Operation IV - *Takeoffs, Landings, and Go-arounds*. The ACS thus requires the applicant to demonstrate an understanding of LAHSO as well as identify, assess, and mitigate risks encompassing this landing restriction.

With the ACS, the knowledge, risk management, and skill elements for each task are evaluated through both the knowledge test and the practical test in an integrated way. Since the evaluator must assess at least one knowledge and one risk management element for each task, it's possible he or she will bring up LAHSO during the oral or practical portion of your test — especially if that happens to be a weak area on the knowledge test. Thanks to the knowledge test questions being mapped to ACS codes (which will soon replace the Learning State-ment Codes in the PTS), evaluators will now know exactly which area to target during the practical test.

Another way the ACS helps applicants learn more about special emphasis areas is its ability to better define some of the terms and concepts. Using the risk management section in each ACS Area of Operation helps to translate special emphasis items and abstract terms like "aeronautical decision-making" into specific behaviors relevant to each task. The ACS also provides specific references that provide the source material for these tasks.

And not to worry — if a future "special emphasis" topic should arise, there's a plan to prevent the same PTS placeholder situation. Any such items will be discussed among relevant FAA policy divisions and brought up at the quarterly ACS Working Group meetings. This will enable data-driven evaluation of the issue and determination on how best to incorporate the topic into the appropriate ACS task(s).

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

Learn More

FAA's Airmen Testing page

www.faa.gov/training_testing/testing/

Rotorcraft PTS Changes Include New Policy on Autorotations

The FAA published Change 2 to the Flight Instructor (CFI) Practical Test Standards (PTS) for Rotorcraft on June 1, 2016. The change is specific to the helicopter class rating and focuses on a change in the policy concerning the performance of the touchdown portion of the autorotation performed during the CFI practical test. The updated PTS can be found here: <http://go.usa.gov/cJhNT>

The PTS still requires that instructional knowledge of either a straight-in or a 180-degree autorotation be demonstrated by the applicant to the examiner. However, in lieu of demonstrating the touchdown portion of the autorotation during the practical test, an examiner may instead accept, at his or her discretion, a logbook endorsement from the pilot's instructor. The logbook endorsement, given by a current flight instructor who meets the requirements of 14 CFR section 61.195(h)(2), also must show that the CFI applicant has the required knowledge in autorotation tasks and has demonstrated competency in performing the touchdown portion of an autorotation as listed in the PTS. The following areas must be trained and documented in the endorsement, as evidence of instructional knowledge relating to the elements, common errors, performance, and correction of common errors related to autorotations.

Using the endorsement to meet the PTS requirements will allow for the CFI evaluation to

be completed safely even when elements such as adverse winds, high gross weight, and high density altitudes are present. This logbook endorsement may be accepted, at the discretion of the examiner, provided the practical test is not a retest as a result of the applicant failing the previous practical test for deficiencies in instructional knowledge pertaining to the elements, common errors, performance, or correction of common errors related to autorotations.

In the case of an applicant who is found deficient in these areas, the examiner must retest the applicant in the instructional knowledge. The applicant must provide a helicopter appropriate for performing autorotations if demonstration of this task is required during the retest.

The purpose of this recent change is to: (1.) Align the policy for helicopter CFI practical tests with airplane CFI practical tests for critical maneuvers; (2.) Allow the personnel who are most proficient at performing full touchdown autorotations (active CFIs) to certify an applicant's instructional knowledge and proficiency in this task; (3.) Make the helicopter CFI a more integral and accountable part of the applicant's training leading to a higher level of professionalism among CFIs; (4.) Greatly enhance safety during the CFI practical test.

The FAA, along with the U.S. Helicopter Safety Team (USHST), is focusing on reducing fatal helicopter accidents in the U.S. civil helicopter community. Through 2015, the total amount of accidents has decreased for the second year in a row and the helicopter accident rate has been cut by 26 percent compared to 2013. In addition, fatal accidents are down 43 percent overall and the fatal accident rate is down 50 percent compared to three years ago.

You may have noticed elsewhere in these pages that the FAA has begun to replace the PTS with the Airman Certification Standards (ACS). While there will be an ACS for rotorcraft, we do not yet have a timetable. In an effort to make the needed changes described here in a timely manner, the FAA updated the existing PTS.

Any questions regarding this new policy should be directed to the Airmen Certification and Training Branch at (202) 267-1100.

Photo by Tom Hoffmann



Shawn Hayes is an Aviation Safety Inspector assigned to the General Aviation and Commercial Division, Airman Certification and Training Branch.



Flight Forum

“Link”ed In

I downloaded the PDF version of *FAA Safety Briefing*. In it, you have references to other articles via QR codes, as well as web site locations, but not links. When I am reading a PDF, it's really hard to scan a QR code, and really painful to have to retype the location. Why not supply embedded links?

— Jack

Thanks for your question. The PDF version of the magazine we provide does include embedded web links. Due to a new process we use for Section 508 compliance, the linked areas are a bit smaller than they were in the past, but they are still there. You should see a small hand pointer with a “W” in the middle when scrolling over the links. Also, when QR codes are used, we almost always use them in concert with a URL in case folks don't have the scanner. We hope this helps!

Why No Pics?

A friend of mine recently gave me some back print issues of *FAA Safety Briefing*. As soon as I saw that I could download the e-reader file, I did so. Unfortunately, there are no illustrations. Is there some way to read these publications on my iPad with the illustrations included? I would be most willing to pay for the privilege.

— Dan

Thanks for your note and we are very happy to hear you are enjoying the magazine. Right now the only way to see all the photos in a “magazine” type layout is to download the PDF to your iPad. The e-reader format is strictly text with just a few images sprinkled in for reference. This is useful for the small file size and portability on non-iPad tablets. We are looking at new software so that we can incorporate more graphics in the future, and we also are looking into creating a magazine app which would eliminate all of these minor issues.

“Force” to be Reckoned With

Editor's note: The following letter has been edited due to space constraints.

Thanks for your “Forces of Flight” article (in March/April 2016 edition: www.faa.gov/news/safety_briefing/2016/media/MarApr2016.pdf) As is always the case, your writing style is easy to enjoy. There are a couple of points that jumped out at me, however.

The first was the myth of GA engine reliability. The NTSB's annual list of “defining events” for reportable and fatal accidents places powerplant malfunction (failure) second to CFIT in many years. Add to this the potential for a proportional representation of accidents of “unknown” cause, and the engine failure stats grow more alarming. If we sum all of the NTSB's defining events that equal an absence of thrust, it gives us an impressive number we should think about before every flight.

The second is, while I agree that the greatest risk from wake turbulence is from “larger” aircraft, problems can also result when encountering the wake of similar sized aircraft. The NTSB reports include accidents where landing aircraft in formation crashed from unanticipated turbulence. True this is less common than the LOC events caused by encountering large aircraft vortices, but it happens to even experienced, but unwary GA pilots who have the big plane - big problem idea burned into their brain.

— John

Thank you for the feedback. We are glad you enjoyed the article. The reference in the article wasn't intended to suggest that GA engines are completely bullet-proof and we apologize if the manner in which it was stated inferred otherwise. Sometimes the attempt to simplify for a broad audience can fall short. We appreciate your point in highlighting that engine issues are also (unfortunately) a prominent causal factor for GA fatal and non-fatal mishaps, and your observation that every pilot should constantly be mindful of engine health and, of course, always prepared for a powerplant failure. We also agree that wake turbulence of any sort has the potential to manifest into something more hazardous.

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 email SafetyBriefing@faa.gov.



Kudos to the Community

It was the summer of 2011. The FAA had decided to form a group of aviation community stakeholders to help the agency improve airman knowledge testing. We got approval to charter an Aviation Rulemaking Committee (ARC), the legally appropriate vehicle for getting stakeholder input. We made a list of the diverse constituencies who should participate.

And then I picked up the phone to see if the 15 people we had listed might be willing to help. In every case, I had scarcely finished my explanation of the project before the answer was some version of “Count me in — when do we start?”

Little did any of us know how it would evolve, or how long many of us would be together in this effort. Even as we progressed from the recommendations of the original ARC to a series of working groups established by the industry Aviation Rulemaking Advisory Committee (ARAC) a few of our participants honestly doubted that anything would *really* come of this project. One memorably opined that he did not expect to live long enough to see the Airman Certification Standards (ACS) actually take effect. But thanks to the tremendously dedicated efforts that this entire team has made, the transition from the Practical Test Standards (PTS) to the ACS is finally underway.

Heavy Lifting

The lion's share of the work on the Airman Certification Standards project — developing the ACS, refining documents in accordance with multiple rounds of public comment, reviewing FAA handbooks, developing and running the prototypes — has been accomplished by the industry participants at no cost to the government. Those participating in ARAC working groups do so entirely at their own expense. Member organizations provide meeting space for face-to-face meetings, and they have hosted the many weekly GoToMeeting telcons through which the nitty-gritty work really gets done.

Leveraging industry expertise to accomplish the ACS development work, review handbooks, and other such tasks is essential for several reasons. However, as much we like to fly and teach, there is no way that FAA employees can hope to stay as current as those who work in the aviation training industry every day. Our industry partners in the ACS project have helped not only with the massive task of creat-

ing the ACS, but also with the recommending how FAA handbooks should be revised to align with the ACS and stay fully up-to-date. In addition, their work has provided both the framework (i.e., the ACS) and the flexibility (i.e., freed-up resources) for the FAA to develop meaningful knowledge test questions.

Heavy Lifters

So who are these dedicated volunteers? Industry participants include representatives from advocacy organizations, instructor groups, academia, courseware developers, manufacturers, parts 61, 121, 141, 142 training providers, and knowledgeable individuals. Here's the full list of those who have participated in at least one of the ACS teams:

Aircraft Owners & Pilots Association; Airlines for America; Air Line Pilots Association (ALPA); AnywhereEducation Inc.; Aviation Accreditation Board International; Aviation Research Training & Services; Aviation Supplies & Academics; CAE; Cessna Pilot Centers; Coalition of Airline Pilots Associations; Embry-Riddle Aeronautical University; Flight Safety International; General Aviation Manufacturers Association; Gleim; Florida Institute of Technology; Jeppesen; King Schools; Liberty University; Mary Schu Aviation; National Air Transportation Association; National Association of Flight Instructors; National Business Aviation Association; Oxford Flying Club; Paul Alp, CFI; Polk State College; Redbird Simulations; Regional Air Cargo Carriers Association; Robert Stewart, CFI; Satcom Direct; Society of Aviation and Flight Educators; Sporty's Academy; University Aviation Association; University of North Dakota.

Next Steps

Much remains to be done: The June 2016 deployment of the ACS for the Private Pilot Airplane certificate and the Instrument-Airplane rating mostly marks the end of the beginning. But it is a huge milestone, one that will significantly benefit everyone who does aviation training, teaching, and testing from here on out. Kudos and heartfelt thanks to the many heavy-lifters who have made the ACS a reality.

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.

FAA Faces

Trey McClure

Aviation Safety Inspector, Airman Certification and Training Branch



It doesn't take much for an "airplane person" to discover an innate passion for flight. "The experience that sparked my interest in flying was when my dad took me to the international airport in Jackson, Mississippi, to drop off cargo for his job," explains FAA Aviation Safety Inspector Trey McClure. "Back then, we could walk out onto a terrace to watch airplanes coming and going. I was on my Dad's shoulders watching an airliner taxi out. The captain gave us a big wave — and I've been hooked ever since."

Trey studied commercial aviation at Delta State University right after high school. While there, he participated in a work-study program that involved moving and fueling the program's training aircraft. He also worked for an airline as a ramp/ticket agent.

"At that kind of small airport, all the agents did a little bit of everything: book flights, load bags, and on rare occasions deice the airplanes," he notes. "That was my first experience working with commercial aviation, and it encouraged me to keep moving toward an airline career."

Trey worked for the airline until he was furloughed right after 9/11. He later became the assistant chief flight instructor at Delta State and earned a master's in commercial aviation, which allowed him to also become an adjunct professor there.

"While working for the university and pursuing my master's, I got involved with the FAA Safety Team (FAASteam). It was a way to promote safety in the university's flight program as well as the local aviation community," Trey explains. "I volunteered to present safety seminars hosted by the university and later became a lead FAASteam Representative. This — along with FAA interaction as part of the 141 flight school — led to my increased interest in the FAA."

Now Trey works in the FAA's General Aviation and Commercial Division. His current duties include representing the division in work on the Airman Certification Standards (ACS) project. Trey also serves on the team responsible for small unmanned aircraft systems (sUAS) in Flight Standards. Both of these projects have a large and positive impact on the general aviation community.

"Since I've spent the majority of my career in flight training, I am excited about the work that has been done by the team on ACS. The ACS will help us eliminate some of the outdated topic areas and refocus the requirements on more recent knowledge, risk management, and skill topics." He further explains that the ACS "will integrate the knowledge test and risk management elements into the certification process in a holistic way, which will lead to increased preparedness of the applicant, more thorough training by the instructor, and a more complete certification testing experience."

"I also believe that UAS is the new frontier of aviation for my generation. We are seeing an incredible amount of public interest in sUAS operations and capabilities. Safe integration of UAS into the airspace will open a new avenue for the next generation of general aviation."

Trey believes that all pilots should listen more to the strong safety leaders in our communities, which is why the FAA includes industry leaders and experienced instructors in changes like the ACS. "We must use the opportunities we have to create a learning environment that can lead to safer skies."

In his spare time, Trey is involved in the local Madison, Miss., aviation community teaching safety seminars and working towards his lighter-than-air rating. He is also clearing some land to build a hangar on his property for a future airplane purchase.

Since I've spent the majority of my career in flight training, I am excited about the work that has been done by the Airman Certification Standards team.

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.



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