

FAA Safety

BRIEFING

May/June 2013

Your source for general aviation news and information



Flying Green

*Environmental
Advances in
General Aviation*



**Federal Aviation
Administration**

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The May/June 2013 issue of *FAA Safety Briefing* focuses on environmental advances in general aviation. Articles explore ways we can “fly green” through new technology and by following environmentally sound practices.



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In the Green

The much-publicized budget situation in Washington requires me to spend a lot of time these days thinking about managing green ... as in, working with my fellow FAA managers to figure out how we can stretch every greenback and use our post-sequestration resources for maximum effect.

Nobody likes the situation but, being an inveterate seeker of silver linings, I believe that tough times and tough choices can lead to positive outcomes. Here's what I mean. One of the common human characteristics is the tendency to avoid choices that require us to change what we are doing. We tend to put our operations and our activities on autopilot and turn our attention to other things, too often letting ourselves become blithely unaware that changing circumstances require us to change course.

Changing course can mean a change of destination, but not always. Tough times require us to refocus on the fundamentals of our mission, and to redirect our efforts and our activities accordingly. Sometimes, changing course is the only way to get back on track to reach the intended destination. Here at the FAA, *Destination 2025* is the vision that, appropriately enough, defines the agency's direction and destination in terms of the future of our nation's air transportation system. You can review the entire document on the FAA's website (<http://go.usa.gov/TaDQ>), and I hope you will.

Sustaining Our Future

The "flying green" focus for this issue of FAA Safety Briefing magazine is consistent with one of the core elements in the FAA's *Destination 2025* vision: the need to evolve our aviation system in a way that will sustain our future. And that's another example of how we sometimes need to change course in order to stay on track to the desired destination. Anyone who flies, whether as a pilot or a passenger, has a unique vantage point on the environmental impacts — both good and bad — that we humans have on planet Earth. From the pilot's vantage point, I've been privileged to view scenes of incredible beauty throughout the world and around this great country. Unfortunately, I have also seen evidence of environmental devastation and destruction. I suspect you probably have your own mental album with examples of both Earth's natural beauty and the environmental blunders that threaten its survival.

That's why we all have a role in protecting and preserving the incredible splendor of our world. As the *Destination 2025* vision statement notes, the FAA seeks to advance aviation in an environmentally responsible and energy efficient manner. That means that we as an agency will seek ways to minimize noise and emission impacts on communities, reduce aviation's carbon footprint, invest in new technology, foster sustainable alternative fuels research, and advance other innovations that promote environmentally friendly operations.

You will find plenty of information in this issue on specific steps the FAA is taking to promote "flying green," as well as tips that you can use to make your own aviation operations friendly to the environment — and friendly to our non-flying friends and neighbors. For everyone's benefit, I urge you to read and heed these suggestions, important not only to sustaining our future on this planet, but also to sustaining the future of aviation.

Being an inveterate seeker of silver linings, I believe that tough times and tough choices can lead to positive outcomes.

Changing course is sometimes the only way to get back on track to reach the intended destination.

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GA Chapter Debuts in Annual NextGen Plan

As of press time, the 2013 edition of the NextGen Implementation Plan (NGIP) is scheduled to be available for download by late April/early May. Published annually, the NGIP serves as the agency's primary outreach document for keeping stakeholders up to date about how NextGen is transforming the National Airspace System. And this year the NGIP includes something new: a chapter focused specifically on the general aviation (GA) community.

The NGIP is available as a downloadable e-book or PDF. The move from print to online distribution follows cost saving trends in government and industry, and enables the inclusion of links to additional information on the NextGen website.

The GA chapter covers the benefits of Wide Area Augmentation System (WAAS) enabled approach procedures, including more than 3,000 published Localizer Performance with Vertical Guidance (LPV) procedures and more than 400 Localizer Performance (LP) procedures. See <http://tinyurl.com/2yvw3y> for maps depicting the location of LPV and LP procedures across the country, as well as links to lists of LPV and LP approach procedures and the airports they serve in the United States.

The GA material also covers the latest information on Automatic Dependent Surveillance–Broadcast (ADS-B) and an update on the creation of the FAA's Fuels Program Office, which is examining the issue of unleaded fuel for piston-powered aircraft.

GA readers will also find value in other chapters of the NGIP, which provide updates on NextGen progress and plans for the years ahead. For example, Appendix A describes the technologies required for an

operator or airport to implement NextGen capability. FAA provides guidance for operators in satisfying these requirements through advisory circulars and technical standard orders.

Download the most current NextGen information the agency has to offer by visiting www.faa.gov/nextgen/implementation/plan.

Awards Honor Life-Saving Efforts

In early March, the National Air Traffic Controllers Association (NATCA) awarded a dozen FAA controllers with the Archie League Medal of Safety for their quick and composed reactions to life-threatening situations.

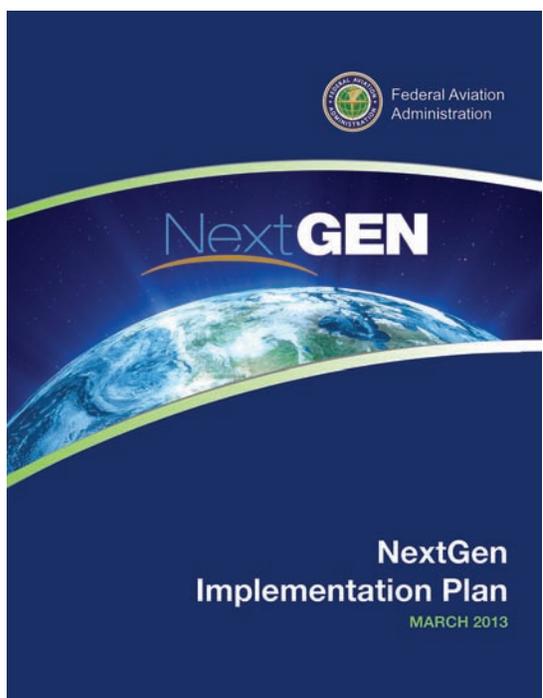
"Without their willingness to jump right in to resolve complex situations, offer a reassuring voice to those on the frequency, and coordinate their efforts with other controllers, this group of dedicated professionals wouldn't be as successful as they are today at maintaining the safety of the National Airspace System," stated NATCA on its website.

Named after the first air traffic controller, the Archie League Medal of Safety awards program highlights a variety of "saves" — some of which involve a team of controllers working together and others being the result of one controller's efforts. For more information as well as audio highlights of each award winner, go to www.natca.org/archie_league_awards.aspx.

FAA Releases Annual Forecast Numbers

The FAA released its *Annual Aerospace Forecast* report March 6, 2013, which provides a thorough examination of current and future trends in air transportation for the next 20 years. The comprehensive report looks at all aspects of aviation, including the numbers of flights, commercial airline passenger totals, aircraft fleet size, private flying, and international travel. The FAA uses the forecast to determine how best to devote its workforce and resources, and the aviation community also uses the forecast for planning and investments.

According to the report, the GA fleet is forecast to increase from 220,670 aircraft in 2012 to 246,375 in 2033, growing an average of 0.5 percent a year. GA hours flown are forecast to increase from 24.6 million in 2012 to 33.6 million in 2033, an annual growth of 1.5 percent. And while fixed-wing turbine aircraft and rotorcraft are expected to grow 2.8 percent and



2.7 percent per year respectively, fixed-wing piston aircraft are predicted to decline at a rate of 0.3 percent per year.

“Forecast numbers may change from year to year, but the fact remains that we must modernize,” said FAA Administrator Michael Huerta during a speech at the event. “The cost of not transforming our system is greater than the cost of the actual upgrades.”

A fact sheet is available to provide a snapshot of the report’s projections at <http://go.usa.gov/Ta8x>.

FAA Launches Phase Two of GA Airports Study

The FAA is now in the second phase of its GA study issued last spring, *General Aviation Airports: A National Asset*, to further define the role of GA airports. In the original study, the FAA captured the critical and diverse roles of the nation’s 2,952 GA airports, which resulted in four new categories — national, regional, local, and basic. However, while completing the study, the FAA learned that more than 497 airports did not clearly fit into any of the categories. Therefore, the agency committed to resume its work with airport sponsors, state aeronautic divisions, and industry to gather additional information on these airports.

The categories are a tool to help the FAA and state aeronautical agencies make more consistent planning decisions for the nation’s GA airports. They reflect the current aviation activity at GA airports, such as the number and type of based aircraft, the number of passenger enplanements, and the type of flights. Airports in the national category give communities access to national and international markets. Regional airports connect communities to statewide and interstate markets. Local airports provide access to intrastate and interstate markets. Finally, basic airports link communities with the national airport system and support GA activities.

The first study revealed the many functions the majority of GA airports provide, such as medical, search and rescue, disaster relief, aerial firefighting, law enforcement, remote community access, commercial and industrial activity, flight instruction, and air cargo. The FAA is currently working with state partners, the individual airports, and the GA community to better define an appropriate category for them. The FAA expects to have new information on these airports this coming December. See Appendix B (B-3) for list of the 497 airports not classified at [faa.gov/airports/planning_capacity/ga_study/..](http://faa.gov/airports/planning_capacity/ga_study/)

NOTAMS Available on FAA Mobile

In an effort to improve access to FAA information and regulations, the agency recently enabled the ability to view Notices to Airmen (NOTAMS) on mobile devices. Visit faa.gov/mobile on your mobile device and you will see the option to look up NOTAMS by airport code.

NOTAMS are just one of the many resources available to users on FAA Mobile. The mobile page offers instant access to some of the most popular features of faa.gov, including: N-number inquiry, U.S. airport status and delays, Advisory Circular lookup, Flight Standards District Office (FSDO) lookup, wildlife strike reporting, news and updates, and laser strike reporting.

FAA Mobile is not a mobile app; you do not have to buy or download it from an online store. Rather, it is a set of pages optimized for viewing on mobile devices as opposed to traditional-sized workstations and laptops.

Flight Instructor List for Experimental Aircraft

Have you been considering buying or transitioning to a new type of experimental aircraft, maybe an RV-6 or a Kitfox Super Sport? If so, you’ll want to get training first. And thanks to the Experimental Aircraft Association (EAA), where to find such training just got easier.

Last December, the EAA posted a list of certificated flight instructors authorized by an FAA letter of deviation authority (LODA) to offer training in certain experimental aircraft. The list is a response to a request made in a 2012 NTSB report, which showed that experimental amateur-built aircraft have a fatal accident rate three to four times higher than the rest of the GA fleet. The FAA, EAA, and NTSB all **strongly recommend** that builders and new owners of experimental aircraft undertake a thorough transition training program before flying their own aircraft solo for the first time (during Phase I testing or otherwise). Proper transition training is an essential first step toward safe operation of experimental aircraft and a key element in the continuing effort to improve aviation safety.

The screenshot shows the FAA Mobile interface for NOTAMS search results. At the top, it says 'Federal Aviation Administration' and 'Mobile'. Below that, it reads 'NOTAMS Search Results' and '28 Active NOTAMS for "DCA"'. Three NOTAMs are listed:

- IDCA 01/345** [TFR]
AIRSPACE TFR SEE FDC 1/1155 0/8326 ZDC 99.7.
WIE UNTIL UFN. CREATED: 23 JAN 00:00 2011
- IDCA 02/335**
OBST TOWER UNKN (90 AGL)OVR BOF UNLGTD (ASR UNKN). WIE UNTIL 11 MAR 01:03 2013.
CREATED: 25 FEB 01:09 2013
- IDCA 02/346**
OBST TOWER 1051 (689 AGL) 8.7 W LGTS OTS (ASR 1017638). WIE UNTIL 12 MAR 20:12 2013.
CREATED: 25 FEB 20:14 2013



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More than 80 instructors, organized by state, are included on the EAA's list, available at www.eaa.org/govt/loda.asp. Most of the instructors have both email and phone number contacts listed.

Meet James Viola, the New General Aviation and Commercial Division Manager



Photo courtesy of James Viola

It's official! The FAA has selected James Viola to be the new manager of Flight Standards' General Aviation and Commercial Division, known internally as AFS-800. A native of Dunmore, Pa., Viola served 27 years in the Army, completing his career as chief of current operations for Army Aviation at the Pentagon. He began his FAA career at the Herndon, Va., Flight Standards District Office (FSDO) where he was hired as an operations aviation safety inspector for both airplanes and helicopters. He quickly advanced to a supervisory role and became the front line manager for a Part 121 air carrier certificate management team. In 2011 Viola transferred to AFS-800 as the branch manager for airman training and certification, and became deputy division manager the following year.

In addition to his vast military helicopter experience, he also pursued a civil aviation career, earning his ATP and CFI-I for airplanes and helicopters. He is the proud owner of Grumman *Tiger* and is an active member of the American Yankee Association for Grumman airplanes. Viola was also part of the Oct. 3, 1993 U.S. operation in Mogadishu, Somalia, and served as military adviser on the movie, "Black Hawk Down," a dramatic re-enactment of that military mission.

"I am thrilled to be working with GA community in my new role, and look forward to the responsibility of helping to improve aviation safety," said Viola.

Going for Green

FAA's Mission to Protect the Environment



It's quite natural to have the word safety come to mind when considering the prime directive of the FAA. And while there's no doubting the importance of safety in the agency's day-to-day operations, equally engrained in the FAA's mission, vision, and defining values is a strong commitment to promoting efficiency and environmental responsibility. After all, the FAA's mission is to provide the safest and most efficient aviation system in the world.

To find evidence of this, look no further than the FAA's *Destination 2025 Plan*, a high-level roadmap designed to help the agency achieve its goals of transforming the nation's aviation system. A review of the plan quickly reveals a clear pattern of environmental consciousness within its steps towards providing safe, swift, and efficient operations in all facets of aviation.

Among the plan's key aspirations is to sustain our future by "advancing aviation in an environmentally responsible and energy efficient manner." Many advances have been made in the past, but there remains a compelling need to move forward in this area in order to manage and reduce the environmental impacts of aviation. Areas of particular interest include noise, air quality, water quality, energy, and global climate. *Destination 2025* contains specific strategies and performance metrics for 2018 that are specific to these areas. They include:

- Reducing the population exposed to significant aircraft noise around airports to less than 300,000 persons
- Providing a replacement fuel for leaded avgas
- Improving NAS energy efficiency (fuel burned per miles flown) by at least two percent annually
- Placing aviation emissions on a path to lessen its health impact by 50 percent and provide carbon neutral growth

The Green Team

One of the key components to staying on track with these metrics is the FAA's Office of Environment and Energy (abbreviated AEE in FAA-speak). Located on the ninth floor of FAA's Washington, D.C., headquarters building, the small team of roughly 40 employees works diligently on ways to

tackle the complex environmental challenges facing the aviation industry.

"Maintaining a balance between the strict standards of environmental protection efforts and fostering the growth of the aviation industry is one of our biggest challenges," said AEE Deputy Director Curtis Holsclaw.

"We also work with problems that often require multiple and diverse solutions involving innovations in technology, operations, planning, and sustainability."

To help AEE meet its goals, the team relies on a five pillar integrated approach that is key to promoting an increase in both mobility and efficiency. Among the five action items in this approach is to improve the FAA's scientific understanding of the impacts of aviation as well as develop improved tools for environmental analysis.

"The FAA is going forward in areas where we have the most confidence, while continuing to develop methods and tools for measuring other areas, like aircraft emissions," said Holsclaw. "Aviation accounts for only two to three percent of the world's emissions. However, aviation is the only segment releasing

Maintaining a balance between the strict standards of environmental protection efforts and fostering the growth of the aviation industry is one of our biggest challenges.



Photo by Tom Hoffmann

**FAA Office of Environment and Energy
Deputy Director Curtis Holsclaw**



particulates at high altitude. The full scope of side effects, like contrails for instance, is still unknown and being studied.”

Modeling the Way

Holsclaw believes the development of better analysis tools will also help make sense of all the interdependencies and tradeoffs that exist with different solutions. One way the FAA will be able to step up its analysis capability and study these relationships more closely is with its new in-house environmental modeling lab. “Although still very new, the lab will allow us to develop and use the tools we need to assess aviation environmental impacts and advise our policy and regulatory decision-making processes, both domestically and internationally,” said Holsclaw.

One of the exciting elements of AEE’s five pillar plan is the development of new aircraft technologies, including quieter, cleaner, and more efficient engine and airframe designs. The FAA works closely with aviation industry experts including those in NASA and the Department of Defense to develop these technologies. The FAA also works with several aviation manufacturers in its Continuous Lower Energy, Emissions, and Noise (CLEEN) program. Launched in 2010, CLEEN seeks to develop technologies that will reduce emissions and fuel burn, enable alternative fuel use, and expedite their integration into current and future aircraft.

Of course, no discussion of efficient aviation technologies would be complete without mentioning the many benefits of NextGen, the FAA’s vehicle for transforming the NAS to a satellite-based system. “On an operational front, NextGen is already helping us to achieve our goals,” said Holsclaw. One of those goals is to be carbon neutral by 2020, when compared to the 2005 level. “There is still a gap to achieve that, but we’re looking to fill it with a mix of options including

technology, operations, and alternative fuels.”

Another important focus item for AEE is aircraft noise, which is one area in which the public should be able to hear noticeable change in the near future. “The influence of new noise standards should be more apparent as operation patterns change to concentrate routes away from heavily populated areas,” said Holsclaw.

Generally Speaking

Although the AEE’s work deals primarily with air carrier operations, there are some general aviation specific areas that have received much attention, namely the development of a safe alternative to leaded aviation gas. AEE works regularly with the FAA’s new Fuels Program Office, as well as other agencies and industry experts, to tackle this issue and have a proposed solution by 2018.

The complicated and unforgiving nature of aviation demands careful attention to safety. However, we can’t overlook its impact on environment. Armed with a comprehensive strategy and a dedicated staff, the FAA remains poised to “go for green” and continue to advance aviation in an environmentally responsible and energy efficient manner. ✈️

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

Learn More

Destination 2025 Plan

www.faa.gov/about/plans_reports/media/Destination2025.pdf

FAA’s Aviation Environmental and Energy Policy Statement

<http://go.usa.gov/Ta9P>

GA SAFETY ON THE GO



Download the e-Reader File



faa.gov/news/safety_briefing



Lessons Learned from the MedXPress Transition

It has been a few months since we made the use of MedXPress mandatory for all pilots. The transition was fairly smooth, and MedXPress has made the medical application process much more efficient than the old paper system. However, we did experience some “growing pains.” I thought it might be helpful to share some of the lessons we have learned, and to let you know that we are working hard to make this system as efficient and effective as possible.

Lesson One

In January 2013, we received a call from an aviation medical examiner (AME) who said that he had an airman in his office who was completing his MedXPress application using the AME’s computer. The airman was attempting to enter the date of his most recent exam which had been accomplished in January of 2012. However, each time the airman entered the exam date, he got an error message stating that he could not enter a future date for a previous exam. Needless to say, the airman and the AME were very frustrated. It turns out that the AME had installed his computer in 2004 and never updated the system clock. Consequently, the system would not let the airman enter a date that it “thought” was eight years into the future. Remember to keep your system’s clock up to date.

Lesson Two

We received calls stating that the aerospace medical certification subsystem (AMCS) would not retrieve an application when a confirmation number was entered. Remember that MedXPress keeps applications for only 60 days unless the AME receives the confirmation number. It’s great to avoid procrastination and last-minute scrambling that can lead to errors, but working too far in advance creates a different problem.

Lesson Three

We’ve heard quite a bit from airmen fearful of mistakenly entering incorrect information — anything from the wrong date for a doctor’s visit or a visit you completely forgot to report. You submit the form, print a copy for your records, and then you see the mistake. No need to worry. Your AME can edit almost everything on the form during your visit. The only exception is block 20, which involves the National Drivers Registry statement.

Lesson Four

Several applicants have asked us why the system does not automatically repopulate the history information on subsequent exams. They have also complained about having to remember exact dates from previous health professional visits. MedXPress was first designed so that it would repopulate the history. However, we had to eliminate this feature for legal reasons.

We realize it can be challenging to remember everything in your medical history, especially when it comes to the specific detail the FAA requires for certain conditions. That’s why it’s a good practice to keep a copy of your previous application on hand when you are completing a new one, as it will help you complete the medical history questions. This habit will help you provide consistent medical history information and jog your memory if there is an item to add or change.

And in case you are wondering, we are considering automation upgrades that will auto-populate information that will never change, such as when you had a tonsillectomy at age eight. In the meantime, estimated dates are perfectly acceptable.

Like any system, MedXPress will continue to evolve and improve. We hope you already find it quick and easy to use, but please let us know if you encounter any issues that might be systemic. Also, please encourage your AME to share any issues encountered when using the system — we can’t fix it if we haven’t found out about it. We want MedXPress to be as user friendly as possible, so help us help you.

Frederick Tilton, M.D., M.P.H., received both an M.S. and an M.D. degree from the University of New Mexico and an M.P.H. from the University of Texas. During a 26-year career with the U.S. Air Force, Tilton logged more than 4,000 hours as a command pilot and senior flight surgeon flying a variety of aircraft. He currently flies the Cessna Citation 560 XL.

Fast-track Your Medical Certificate

With FAA MedXPress, you can get your medical certificate faster than ever before.

Here's how: Before your appointment with your Aviation Medical Examiner (AME) simply go online to FAA MedXPress at <https://medxpress.faa.gov/> and electronically complete FAA Form 8500-8. Information entered into MedXPress will be available to your AME to review prior to and at the time of your medical examination, if you provide a confirmation number.

With this online option you can complete FAA Form 8500-8 in the privacy and comfort of your home and submit it before your appointment.

The service is free and can be found at:

<https://medxpress.faa.gov/>



ATTENTION:
As of Oct. 1, 2012, pilots
must use MedXpress
to apply for a Medical
Certificate.





Ask Medical Certification

COURTNEY SCOTT, D.O.
MANAGER, AEROSPACE MEDICAL
CERTIFICATION DIVISION

Q1. What effect does a PTSD disability rating from the VA have on an airman's medical status?

A1. The Veterans Administration's requirement to make this determination is substantially different than the FAA's requirement to ensure that PTSD does not interfere with safe flying. Consequently, the VA uses its own set of rules for disability determination, which do not necessarily reflect the functional requirements for safe flying. The FAA reviews every case on an individual basis. There are several aspects of PTSD, which could potentially interfere with the safe performance of pilot duties. The FAA uses the VA disability rating as just one indicator that the individual has some level of impairment that we need more information about. We attempt to put the entire picture together in making our determination.

Q2. I have always been extremely conservative with my use of medications while engaged in aviation operations, seeking clearance from my AME regarding every medication that has come into my use. Is there an FAA clearing house of medication information that is available to the general pilot public? Over-the-counter medications have their own warnings, but these effects may be exacerbated in flight.

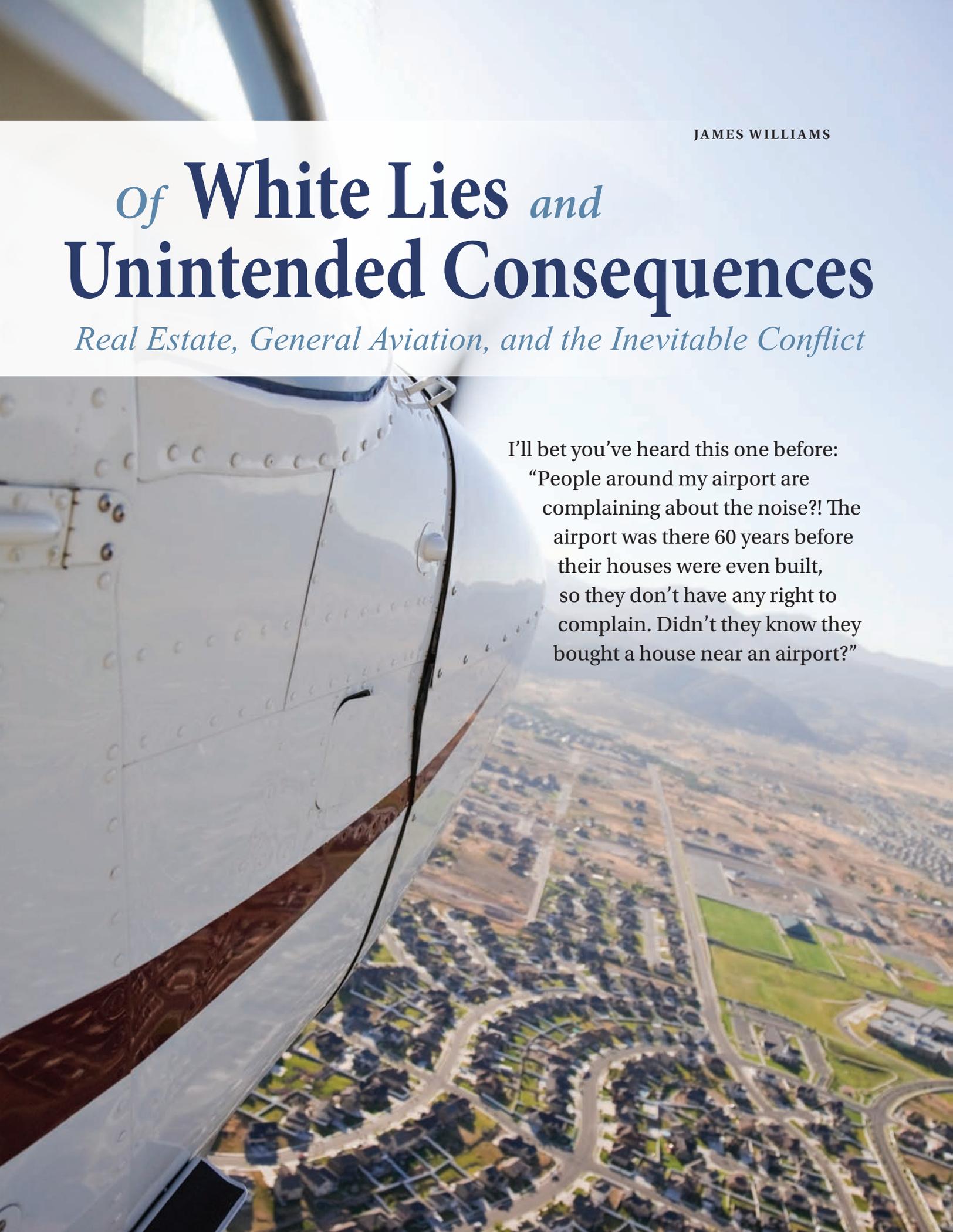
A2. You are absolutely correct that medications may produce different effects in the flying environment than on the ground. The conditions for which they are taken also may act differently in the air. Therefore, your practice of discussing any medication use with your AME is the safest approach. The FAA does publish a pamphlet, "Medications and Flying" (OK05-0005), which addresses these general principles. Because of the many factors that influence medication use, the FAA does not publish a "safe list" or other medication information for the flying public. In 2005, the Federal Air Surgeon's bulletin stated that: "Considering the issues related to the underlying conditions for which medications are used, drug reactions, medication dosages, and sheer number of medications ... (it is) unlikely a source document could be developed and accurately maintained. ..." General information is easily obtained from online sources or your pharmacist.

Q3. While the residual effects of alcohol are well known, less is widely known about the effects of marijuana. For example, is second hand marijuana smoke absorbed into the bloodstream as readily as second hand smoke? What's the residence time of it in human fatty tissues? Does its detectable presence continue to adversely affect cognitive ability and judgment long after actual use?

A3. As a general statement, it is clear that marijuana use is incompatible with flying safety. The specific questions you asked defy simple answers. Second hand smoke, whether it be tobacco or marijuana, is a complex mixture of substances. There is some data that 3-5 times as much tar and carbon monoxide is absorbed second hand from marijuana as from tobacco smoke. Marijuana itself (THC) is not absorbed in significant amounts second hand. Heavy doses, experimentally produced in a confined space over a prolonged period of time, were required to produce detectable levels of marijuana metabolites in the blood and urine. The residence time in fatty tissue can be 30 days or longer depending on body habits, dosage, and individual metabolism. "Detectable presence" depends on the test one is using. Blood tests are better than urine tests for determining potential impairment, and confirmatory tests provide more useful information about the presence of substances than screening tests. Depending on dosage and many individual factors such as age, frequency of use, other illnesses or medications, and what task is being measured, the duration of adverse cognitive effects may vary from hours to days. The most significant cognitive impairments from acute marijuana exposure are thought to last 4-6 hours.

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.

Courtney Scott, D.O., M.P.H., is the Manager of Aerospace Medical Certification Division in Oklahoma City, Okla. He is board certified in aerospace medicine and has extensive practice experience in civilian, and both military and non-military government settings.



JAMES WILLIAMS

Of White Lies *and* Unintended Consequences

Real Estate, General Aviation, and the Inevitable Conflict

I'll bet you've heard this one before:

"People around my airport are complaining about the noise?! The airport was there 60 years before their houses were even built, so they don't have any right to complain. Didn't they know they bought a house near an airport?"

You may have even uttered those words yourself. But the situation isn't nearly as simple as we'd like to make it sound in our self-righteous rhetoric. Life rarely is.

These circumstances will play out repeatedly every year. As our cities and suburbs expand, they are rapidly encroaching on airports. Those airports, once surrounded by cattle or industrial areas, now face far more discriminating neighbors. And when you add sales pressures and perhaps a few less-than-scrupulous real estate agents to the mix, you end up with a recipe for a conflict in which both sides feel morally superior. In many cases, people who bought these homes did so on the premise that "nobody really flies into that airport," or, "they're going to close that airport in the next couple of years." So imagine their surprise when the first nice spring flying day arrives and they feel as if they are being bombarded by the entire 8th Air Force.

So what do they do? They call local officials and complain. Then maybe they start looking at how they would go about closing that infernal nuisance. They sometimes cloak their arguments in safety, as in, "one of those little airplanes is going to fall out of the sky onto my house." While that is possible, it's extremely unlikely. For many, the core issue is noise.

So what do we do? The simplest strategy is to fall into the familiar "airport was here first" refrain and dig in for a long and exhausting fight. But to what end? All that accomplishes is to embitter both sides and possibly provoke an expensive legal battle whose outcome is far from certain.

The other option is to make the shared environment a happier one. There are two parts to this much more positive strategy.

Be a Better Neighbor

This is the part we can most directly control. There are a number of ways we, as pilots, can work to reduce the aircraft noise footprint over sensitive areas. Reducing the aircraft noise signature shows good faith to our neighbors and demonstrates that we are willing to try resolving conflict cooperatively, rather than through adversarial processes. Here are several simple steps to being a better neighbor.

First, follow any noise abatement procedures already in place at your airport or any other airport you visit. If a slight course deviation during departure or arrival can reduce your impact on the community, it is well worth the adjustment. If your airport doesn't have noise abatement procedures, ask the airport management to consider whether it

might be helpful to establish such protocols. Even slight lateral flight path adjustments can have notably positive impacts on noise sensitive neighbors. Bottom line: before you head out to the airport, check the remarks section of the airport/facility directory for noise abatement procedures, and make it a point to comply unless safety requires otherwise.

Second, think about your altitude. If part one of noise foot print reduction is making lateral adjustments (i.e., changing ground track), part two is attempting to make vertical adjustments. It is clear that aircraft generally create the greatest number of complaints during approach and departure, but since we have to take off and land, it may seem impossible to mitigate approach and departure noise. Though we can't eliminate it, we can reduce it by managing airspeed.

During your initial pilot training, you learned about "V-speeds" such as V_x (best angle of climb) and V_y (best rate of climb). Pilots typically use V_y as the preferred climb speed since it provides the best rate of climb. While it may sound as if V_y is the fastest way to gain altitude

and thus lessen noise impact, that's not the case. Remember that rate is distance (feet of altitude in this case) over time (minutes in this case). While flying at V_y enables the shortest time to a given altitude, it may actually increase both the magnitude and the duration of the noise footprint.

Now consider V_x . V_x enables the best angle of climb, which means it provides the greatest altitude gain over a given distance. Since the airport and its immediate surroundings can be considered insensitive to noise, why not use this area to maximum advantage? By thinking in terms of angle rather than rate of climb, we can increase the altitude gained before exiting airport property. That, in turn, means a lower noise signature on the ground because of the greater vertical separation from noise-sensitive neighbors.

Remember, however, that safety always comes first. While V_x will deliver the greatest climb rate for a given distance, it will likely take longer to reach a given altitude. Depending on the exact angle of the climb, forward visibility could be somewhat compromised. If you're in a tight pattern with an aircraft of dissimilar performance, a V_x climb might make it

Before you head out to the airport, check the remarks section of the Airport/Facility Directory for noise abatement procedures, and make it a point to comply unless safety requires otherwise.

difficult to track the aircraft you're following. And, of course, be mindful that V_x reduces your margin above the 1-g stalling speed. If you haven't done much flying at best-angle-of-climb, consider hiring an instructor to practice until you are completely comfortable with your ability to maintain control of the aircraft.

Another noise-friendly tactic is to reduce power and/or prop speed when it is possible and safe to do so. This technique applies particularly to those with constant speed props. Even a modest reduction in RPM can make a significant difference to your neighbors. As with the previous technique, though, never compromise safety of flight. But if any one of these tactics, or some combination of them, is safe and practical, please consider using them for the greater good.

Win Hearts and Minds

The next part in the strategy is to build a community at the airport and reach out to your neighbors. Gather your fellow aviators and work to improve your airport's public image. Whether it's through targeted events like an airport open house, or more general events like a Young Eagles day, finding a reason to invite and involve the community with airport activities is a positive step.

Most people fear what they don't know or understand, and many people today have little (or no) experience with GA. Drawing neighbors to the airport, whether for a BBQ, a flight, or just to walk around (with proper safety precautions, of course), demystifies the GA environment. Your neighbors can connect a human being — one they know and like — to “those little airplanes,” and sometimes that is enough to change the heretofore hostile mindset. Airport users can also use such occasions to let the community know about noise reduction efforts, and to educate neighbors on what they can safely do to effect a more positive change. Showing courtesy, care, and concern goes a lot farther than callous disregard. And it works both ways. By listening to the airport neighbors, pilots can gain a better understanding of, and appreciation for, their concerns about noise, safety, and perhaps other issues.

And, of course, building a community at the airport and inviting its neighbors to participate exposes more people to the joys of personal aviation. So, consider how a neighborhood “charm offensive” might pay dividends not just with the current generation, but also with the generations to come. 

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



Photo by James Williams



Photo by Paul Cianciolo

Passing the Emissions Test

A Look at FAA's Avgas Initiative

First thing in the morning I get up and pad downstairs to let the dogs out. Prior to washing up, I turn the heat up a notch to take out some of the chill that creeps into the house overnight. I head to the shower and wait until the water gets nice and steamy before stepping in. After getting dressed, brushed, and coiffed, I head down again to get a pot of water boiling to make my hard boiled eggs for breakfast (I like them hot). Once lunch and breakfast are packed and I am sufficiently prepped, I head out the door and onto the bus that will take me to the daily grind. Even though I rarely stop to think about it, in each one of the steps there was a catalyst that facilitated my desired outcome — and that is fuel.

Now your start to the day might be similar or totally different (maybe you prefer cold cereal), but let's face it: fuel, whether it be propane, natural gas, or automotive, runs our lives. And for some of us fortunate enough to be a part of the general aviation (GA) community, we can add aviation gasoline (avgas) to the mix. Different fuels are what make our world go around.

The Lifeblood of GA

Avgas is the lifeblood of the GA community and up until recently has remained relatively unregulated. Currently, more than 167,000 of the aircraft in the United States, and 230,000 worldwide, use 100 low lead (100LL) avgas. Unfortunately, this particular fuel has the additive tetraethyl lead (TEL), an anti-knock mixture used since the 1920s. To chemists, TEL is a compound comprised of lead and alkyl groups that have been mixed with gasoline in order to boost the octane rating of petrol. To the consumer, TEL has served to prevent uncontrolled combustion known as “knocking” within high-powered engines, thus preventing engine failures. To the environmentalists, the TEL additive in fuel means lead emissions — and in the late 1990s it was beginning to manifest in soil and air samples at a rate that posed a significant health risk to the population.

According to the Centers for Disease Control and Prevention (CDC), lead emissions can settle in soil and in our water supply, which can lead to heavy metal poisoning. It can alter behavior patterns and

mental development. It can lead to hearing problems, slow body growth, cause anemia and seizures, and can result in kidney damage. If this isn't bad enough, children are particularly susceptible. It is nasty stuff to deal with especially when there might be other alternatives out there.

Getting the Lead Out

The Environmental Protection Agency (EPA) agrees and TEL was phased out of automobile fuels in the 20th century. In its place, other more environmentally friendly additives were substituted, and the automotive industry quickly changed its process by manufacturing cars that used the unleaded fuel. Aviation engines were excluded at that time because there was (is) no safe unleaded alternative for avgas, due to the high octane requirements of GA aircraft. However, now the EPA is re-evaluating the hazards posed by lead in avgas as it is currently responsible for up to half of the airborne lead emissions in the United States.

Finding an alternative additive or fuel that still maintains a high level of reliability has proved to be a daunting task. The compound must be stable and sustainable. It must maintain other safety qualities such as vapor pressure, hot and cold starting capability, corrosiveness, and storage stability. It must not pose a risk to the environment and, what is probably the most important aspect to the consumer, it must

be economically feasible. New aircraft just aren't bought and sold like new vehicles, and no one wants to see an older piston engine aircraft suddenly worth less money simply because a new avgas is incompatible with it. In addition, fuel is already a valuable commodity with increasing oil prices driving the overall costs. Consumers are concerned about the continued availability of avgas, as well as the price tag that comes with it.

In order to tackle these problems the FAA chartered the Unleaded Avgas Transition Aviation Rule-making Committee (UAT ARC) on Jan. 31, 2011.

ARC of the Covenant

The UAT ARC identified five key issues that would need to be addressed in the attempts to transition the aviation community to unleaded fuel:

1. An unleaded replacement fuel that meets the needs of the entire fleet does not currently exist.
2. No program exists that can coordinate and facilitate the fleet-wide evaluation, certification, deployment, and impact of a fleet-wide replacement avgas.
3. No market-driven reason exists to move to a replacement fuel due to the limited size of the avgas market, diminishing demand, specialty nature of avgas, safety, liability, and the investment expense involved in a comprehensive approval and deployment process.
4. No FAA policy or test procedures exist to enable fleet-wide assessment and certification of a replacement unleaded fuel.
5. There is no standardized method for communicating to the industry and consumers the impacts posed by a newly proposed fuel.

Tackling the first three of the five key issues is a test program being worked by the newly minted Fuels Program Office (AIR-20), and the William J Hughes Technical Center in Atlantic City, N.J. In order to facilitate the rapid incorporation of a new fuel into society, a primary goal of the test program is to be able to apply the data garnered from tests directly into FAA design approval. The outcome of this rather radical approach will change the list of previously approved fuels, and can be in the form of a supplemental type certificate (STC). To achieve this will require a delicate balance. The general aviation industry is anxious to have as many candidates as possible identified;



Photo by James Williams

however, the money, time, and energy required to test these candidates will likely limit the prospects to only the most feasible.

Furthermore, someone would have to act as a mouthpiece for the entire undertaking in an effort to ensure all avenues of communication are open and the process is transparent. This brings us to the Piston Aviation Fuels Initiative (PAFI).

The Go-Between

Based on issue five and its subsequent recommendation from the ARC, the PAFI steering group was formed to act as a liaison for the test group, the industry, and the consumer. Members of the group include the FAA, AOPA, EAA, the National Business Aviation Association, American Petroleum Institute, and the National Air Transport Association. Their goal is to act as the primary support system for identifying unleaded fuel candidates and for getting those candidates vetted through the certification process for use in the industry.

In the creation of these two groups, each activity, milestone, resource, and funding requirement for success has been considered and the focus remains on the realization that how they proceed and what they come up with will have significant impact on the health and welfare of general aviation within the national airspace system (NAS). Don't know the affect GA has on the NAS? Check out the following information taken directly from the UAT ARC final report:

General Aviation Facts

- Piston engine aircraft account for 73 percent of the U.S. GA fleet.
- Over two-thirds of all the hours flown by GA aircraft are for business purposes.
- GA is the primary training ground for most commercial airline pilots.
- In the United States, GA aircraft fly almost 24 million hours and carry 166 million passengers annually.
- 225 million gallons of aviation gasoline were produced within the United States in 2010, reflecting almost \$1.3 billion in revenue.



The impact is considerable and it is easy to see why the sense of urgency is high. So where are we now?

Solicitations and Solutions

To get the ball rolling, the FAA will issue a Broad Agency Announcement designed to solicit candidate fuels. This should happen sometime time in mid-2013. Those wishing to be considered must submit a data package consisting of their fuel property, performance, and production data to be examined by a technical advisory group. From these the FAA will pick several of the best candidates who then must provide a small sample of the fuel for "first article" testing. Once that sample has been evaluated, the FAA will pick two of the candidates to provide an even larger sample to send to the technical center for testing on actual engines and aircraft. Once this has been completed and the center has confirmed the product, the FAA will provide fuel test data reports to the fuel producer to support fuel specification development and FAA approval.

During this whole process, the Fuels Certification Branch will be in on every step, so that when it comes time to certify the fuel, there will be no surprises and it can transition into use with relative ease. The goal of these efforts is to achieve a quality, lead-free, safe fuel that most engines and aircraft can hopefully use without any additional modification. In other words, a different fuel to make our world go around. 

Sabrina Woods is an assistant editor for the FAA Safety Briefing. Contributing to this article was Karen Lucke, Fuels Program Branch manager.

A New Office is Born ... **Welcome Fuels Program Office!**

KAREN LUCKE

For anyone who knows about how an aviation rulemaking committee (ARC) works, you are probably aware that the people assembled — a mix of industry and government parties — are asked to provide a recommendation for rules or policy to address a specific issue. What *isn't* typical is for industry to ask a government party to form a new office, and yet that is exactly what the Unleaded Avgas Transition Aviation Rulemaking Committee (UAT ARC) asked of the FAA.

The UAT ARC produced a total of 19 recommendations to address a goal — to facilitate the transition to a fleet-wide replacement for avgas. Among the key recommendations was a proposal for the FAA to “establish a centralized certification office with sufficient resources to support unleaded aviation gasoline projects.” As a result the Fuels Program Office (AIR-20), with the responsibility for providing technical expertise and strategic direction in the planning, management, and coordination of activities related to aviation fuels, was born.

So ... who are we and what do we actually do?

Who are we?

AIR-20 is a small, virtual office devoted to fuels programs. We are the advocate and focal point for regulations, policies, and certification programs for fuel related activities and are responsible for addressing the UAT ARC recommendations to meet the 2018 goal of having an unleaded replacement fuel that can be used by most general aviation aircraft. The office is comprised of a manager, the aviation fuels senior technical specialist (STS), and a Fuels Program Branch (AIR-21).

What do we do?

The simple description is that AIR-21 is responsible for the approval of new avgas alternatives, but what we actually do is a little more complicated. AIR-21 has been tasked with issuing design approvals for alternative avgas that is unleaded. The ultimate goal is to identify a fuel that everyone who currently has an aircraft, airplane, or rotorcraft that has been approved to use 100LL (low lead) can put into the tank and, with no further ado, fly off happily into the sunset.

For the moment, the perfect solution continues to elude us, so some are seeking fuels that either reduce or take out the lead and can be used in a select portion of the general aviation fleet. Because the type of fuel used is defined as a limitation on existing design approvals, companies who desire to make a different type of fuel need to obtain a design approval to do so. Third party companies, or “modifiers,” who do not hold an approval for the original aircraft or engine must seek supplemental type certificates (STCs) to allow for the use of an alternate fuel. These applicants will work with the Fuels Program Branch for those approvals.

AIR-21 will also be involved with those who are interested in amending their type certificate (for an engine or aircraft) to use an alternate fuel. Having a centralized certification office will level the playing field and ensure the same safety standards for all applicants, as well as highlight the need for new policies to help others who want to gain approval for alternate fuels. In short, the Fuels Program Branch will have a role in all approvals for alternate avgas.

The FAA has also created a new position, titled the Aviation Fuels STS, located in AIR-20. This specialist works with key stakeholders on the identification and deployment of alternative fuels via the Commercial Aviation Alternative Fuels Initiative (CAAFI), which “seeks to enhance energy security and environmental sustainability for aviation through alternative jet fuels.” As a technical specialist for the Office of Aviation Safety, as well as AIR, the STS can provide input and key technical support to certification activities managed anywhere in the United States.

AIR-20 is working in full partnership with industry to monitor the development of alternative fuels and to transition the GA fleet to a new type of fuel. As a new, young (as organizations go) entity in the FAA, we are very excited about the prospect of identifying a solution to a problem that has faced our industry for the past few decades.

Karen Lucke is the manager of the Fuels Program Branch. She has been with the FAA's Aircraft Certification Service for 24 years, where she has worked as an ACO engineer, an instructor at the FAA Academy, and a manager in the Aircraft Engineering Division.

Fly Friendly

A Little Effort Goes a Long Way

My iPhone alarm starts chirping at a painfully early hour on weekdays and, since I don't usually manage to shut down the computer as early as I should each night, I crave every second of shut-eye I can get. So you can imagine how frustrating it is when the last of my pre-alarm slumber is rudely and utterly obliterated by the WHUMP-WHUMP-WHUMP of news and traffic helicopters circling ... and circling ... and circling my neighborhood, which is located near a busy commuter highway. I wouldn't mind if they merely passed over. But I do mind the incredibly annoying, sometimes deafening, and, to my mind, downright rude behavior of aviators who give no thought to the disturbance they are creating for everyone else.

Think about that for a moment. If a bleeds-blue-fuel aviation enthusiast like me can be so annoyed, even angered, by misplaced aircraft noise, imagine how poorly it plays to the non-flying general public. That's one of the reasons we encounter so many negative, even hostile, attitudes toward GA these days. I hope you'll agree that we have enough challenges without creating problems that we can avoid entirely with just a bit of thought. Here are a couple of simple things we can all do.

SHHow Consideration

Nowadays, many of the airports that GA pilots call home are surrounded by other people's actual homes — lots of them. When I first started flying, my home airport in northern Virginia was bounded on all sides by open fields. No longer. Several housing developments now occupy that once-empty space, and other open areas are gradually filling in. We pilots can huff and puff all we want to about how the airport was here first, and how “those people *knew*” that buying property near an airport would mean tolerating a certain amount of noise. The huffing and puffing might make us feel better, but it's pointless if “those people” complain to elected officials who would happily see the airport closed and consigned to “other economic uses.”

There's a limit to what we can safely do to mitigate noise, but it is incumbent upon all of us to do as much as we can do to reduce the noise impact on our neighbors. If there are residential developments near your airport, it's a good bet that airport man-

agement has, so to speak, “heard” from them and worked out some kind of noise mitigation plan. Such a plan could include non-standard traffic patterns, designation of a calm wind runway that reduces traffic over more congested areas, and other such measures. Take the time to learn what noise mitigation measures exist at the airports you use, and add those measures to your checklist.

Another important way to fly friendly is to avoid prolonged maneuvering over any given area. That silo may be perfect for practicing turns around a point, but the folks in the farmhouse next to it may not consider their neighborhood to be as “uncongested” as it appears to you. That also applies to operating near environmentally sensitive areas (e.g., wildlife preserves) that are marked as such on sectional charts.

Dump the Dumping

Even before the prospect of EPA fines was a major consideration, it always bugged me to throw fuel on the ramp after sumping the tanks. I was one of the earliest adapters of the GATS jar fuel tester, whose screen allows you to safely pour sampled fuel (minus the water) back into the tank. It may cost more than the traditional fuel testers, but the very modest cost of an environmentally friendly fuel sampler is far less than the cost to the environment — not to mention the cost to your budget if you should incur an EPA fine for fuel dumping.

Another option is to use the fuel collection receptacles that are fast becoming a standard feature on ramps all over the country. If you can't safely return sampled fuel to the tank, step to the nearest fuel collection container and pour it in. And if your airport lacks such containers, take a moment to speak to the FBO or airport management about installing them ASAP.

For more suggestions on flying friendly, check out the “Environmental Issues” section of the Aviator's Model Code of Conduct, available free of charge from www.secureav.com. Doing your part to keep the planet green, clean, and quiet is more than a good idea. It's simply the right thing to do!

Susan Parson (susan.parson@faa.gov, or @avi8nrx for Twitter fans) is editor of FAA Safety Briefing. She is an active general aviation pilot and flight instructor.

TOM HOFFMANN

Plugged In!

The Future of Electric-Powered Aircraft

It doesn't seem that long ago when the thought of an all-electric powered car zooming down the highway was reserved only for those with vivid imaginations. The obstacles to practicality just seemed too burdensome to overcome while remaining at a price point that would still attract consumers.



Photo courtesy of e-volo

Today, although the industry is still evolving — and admittedly advances are still needed — there is a growing list of highway-capable and reasonably-priced electric cars to choose from. The jury's still out on a few things, like long term battery reliability and appeasing the “range anxiety” for owners, but there is little doubt that the economic and environmental appeal of electric cars will continue to make inroads in the marketplace as battery technology and hybrid systems mature.

So why not with aircraft as well? Surely plugging in instead of fueling up would be music to a pilot's ears, particularly with the price of aviation fuel. As with most emerging technologies introduced into a highly regulated environment, it's foreseeable, but not without its challenges.

Electro-Analysis

“Electric propulsion for aircraft has the potential to be a real game-changer for general aviation,” said Thomas Gunnarson, a transportation industry analyst with the FAA's Aircraft Certification Service in Kansas City, Missouri. “We may be behind where the auto industry is on this now, but we're gaining ground quickly.”

Gunnarson is part of the Programs and Procedures Branch in the Small Airplane Directorate that specializes in studying innovative applications of technology to improve safety and reliability for general aviation. “We're looking at the total package that electric propulsion technology can bring us,” said Gunnarson. “Before it can be implemented, however, we must first determine if it is safe, economical, and practical in the aviation environment.”

Current FAA regulations do not yet address the specific design and airworthiness requirements of electric propulsion systems in aircraft. But thanks to the efforts of Gunnarson and others at the FAA, that is changing. An important first step was the formation of the F37 Light Sport Aircraft (LSA) Committee — a subgroup of the consensus standards leader ASTM International — to create standards for electric propulsion systems for LSA. The Small Airplane Directorate has also completed an internal regulatory analysis of what rules need to change to

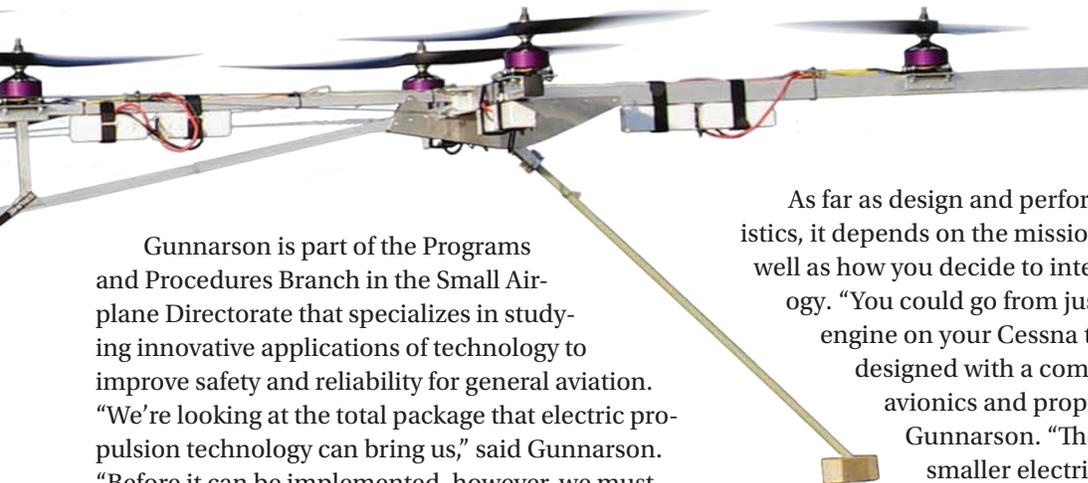
allow things to move forward. In addition to providing the basis for a good regulatory framework, the study also revealed several key factors for the team to consider when integrating this type of technology into aircraft, such as battery technology and performance limitations.

Due to lower costs and fewer regulatory barriers, LSA is the logical place to initially focus on applying this technology. Eventually, as the technology matures and more knowledge is gained, it may be possible to adapt it to type-certificated aircraft, provided the FAA can achieve safety expectations appropriate for the type of aircraft and its intended operations.

Not Your Father's Basic Trainer

So what exactly will an electric aircraft of the future look and feel like? At its core, the three main components of an electric propulsion system include:

- The motor (or motors) that provide power
- The motor controller that controls the application of the power
- Rechargeable batteries



As far as design and performance characteristics, it depends on the mission of the aircraft as well as how you decide to integrate the technology. “You could go from just swapping out the engine on your Cessna to having an aircraft designed with a completely integrated avionics and propulsion system,” said Gunnarson. “The use of lighter and smaller electric motors will provide more flexibility in how you design aircraft and could very well change the way we think about traditional flying.”

Take the e-volo Volocopter (shown left) for example. This vertical take-off and landing manned aircraft uses 18 small electric motors and is maneuvered by varying the thrust of each of these motors. Can you say Jetsons?!

Sheer Simplicity

In addition to the growing influx of ingenious new design concepts, there are also a number of benefits electric propulsion systems offer, many



Solar-powered aircraft, like the Solar Impulse shown here, may help raise awareness of electric flight and other renewable energies.

Photo courtesy of © Solar Impulse / Jean Revillard

focusing on simplicity of design, operation, and maintenance. For example, there's no more worrying about carburetor heat, fuel mixture settings, or fuel selectors for the engine. And with the motor shaft and propeller being the only two moving parts, there's an immediate reduction in failure points.

Increased cabin comfort is another benefit pilots may notice, thanks to a significant reduction in noise and vibration. The smooth torque of electric motors

or having them connect a laptop to your motor with a USB cable."

And let's not forget about another huge benefit and one of the main drivers behind electric propulsion technology: nearly zero emissions! No gas also means no more fuel drain samples seeping into the ground, no more fuel leaks to worry about, and no more 100LL fumes in the cockpit.

Warning: Batteries Low

Of course, with any new technology, there are also drawbacks and unknowns. This is particularly true with battery technology. Questions in this arena continue to loom, like how often batteries need replacement and whether their power-to-weight ratios will improve enough to be viable for more than just short hops. Recent issues with the Boeing 787 *Dreamliner* also brought to light the issue of battery volatility.

The good news is that battery technology is a rapidly advancing industry thanks in part to the ravenous appetite for larger, brighter, and longer lasting tablets and smart phones. The electric car industry is another key player in battery advancement, and both industries could stand to learn from each other. "Electric vehicle manufacturers would likely be very interested in the lighter and more efficient batteries designed for use in aircraft," said Wes Ryan, Programs and Procedures Branch manager for FAA's Small Airplane Directorate. Aircraft manufacturers

The use of lighter and smaller electric motors will provide more flexibility in how you design aircraft and could very well change the way we think about traditional flying

may allow them to operate at different speeds than traditional reciprocating engines, potentially reducing propeller noise, engine noise, and the overall decibel level of the aircraft passing overhead.

Maintenance with these types of aircraft would also be greatly simplified and inspection intervals and time between overhaul (TBO) could increase drastically. One reason for that is the use of "air bearings," which all but eliminate internal friction within the engine. And from a safety standpoint, the level of built-in system monitoring will be markedly more sophisticated.

"You're likely to have a system that monitors and records performance of your batteries and motor and be able to download it to a computer at any time," said Gunnarson. "Your next inspection may involve handing over a thumb drive to a mechanic,

would also benefit from safety lessons already well understood in the automotive market. “Working together with them may help reduce costs, improve safety features, and speed up development.”

Another important bellwether for future electric propulsion development is the booming unmanned aircraft system (UAS) market. They often use electric propulsion systems or combinations of gas-powered and electric motors, and have been successful with long-range missions for many years. The prominence of the unmanned aircraft market has also served as the springboard for onboard electric generation systems like those used by the U.S. Navy’s fleet of UAS flying with electricity-producing hydrogen power systems.

Another electric energy source for aviation that is on the rise and which has received some recent buzz in the news is solar power. You have probably heard about the planned U.S. transcontinental flight this summer by the *Solar Impulse*, a Swiss long-range solar powered aircraft. It remains to be seen, but the attention from this nearly 3,000-mile trip — without so much as a drop of fuel — could prove to be an important catalyst for raising awareness of electric flight and other renewable energies.

“Although solar technology isn’t commercially viable at this time, the concepts behind it are sound,” said Gunnarson. “If it ever gets really efficient, it could have a real positive effect on electric propulsion. For now, I’d say it’s only feasible as an adjunct to existing technology.”

Waiting for the “Green” Light

In the United States and abroad, experimental prototypes are pushing the envelope of electric propulsion to new limits in hopes of understanding more about its potential and capturing greater market appeal. Among some of today’s key players with commercial availability are Pipistrel’s *Taurus Electro G2* electric-powered motor glider, Yuneec International’s e430 twin seat LSA, and Lange Aviation’s *Antares 20E* self-launching sailplane. There’s also a growing variety of electric powered weight-shift control trikes, powered parachutes, and hang gliders surfacing in the market.

You may be able to check out some of these designs up close at air show events like AirVenture and Sun ‘n Fun, or at the annual AERO Friedrichshafen exhibit in Germany. The latter is also host to the e-flight expo that brings together regulators, researchers, and designers from around the world each year to help lay the path for greater acceptance

Pipistrel’s Taurus Electro G2 electric-powered motor glider.



Photo courtesy of Pipistrel

of electric-powered aircraft. Their last meeting on April 25 included the FAA, the European Aviation Safety Agency (EASA), and ASTM International as active participants. They discussed recent technology and product developments, emerging challenges and safety issues, and plans for how to logically sequence the steps necessary for a meaningful certification basis.

The Future of Electric

So are electric aircraft in our future? “It may take some time before it replaces traditional propulsion technology,” said Gunnarson, “but I do see electric power in our future.” There are a few items Gunnarson believes must come together before that can happen, however. Among them are an improved and matured battery technology and a clear consensus on the regulatory changes and standards required to safely integrate this change.

“We realize the exciting benefits electric propulsion brings to the aviation community as well as the environment. That is why we are committed to gaining the experience we need to create a clear and safe path towards making this technology a reality.”

I can almost feel the electricity in the air! 

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

Learn More

The Comparative Aircraft Flight Efficiency (CAFÉ) Foundation’s aviation news blog

<http://blog.cafefoundation.org/>



PAUL CIANCIOLO

Exploring Lifecycle of an Aircraft

Are you waiting for that electric or hybrid aircraft to come out so you can save money and not rely on avgas? Would you feel comfortable flying in a new “green” airplane? Rest assured that by the time it gets to you in the general aviation community, it will be safe to fly.

The FAA’s Aviation Safety organization (AVS), with its more than 7,400 employees, directs and manages the safety programs that focus on aviation safety in the interest of the American public and the millions of people who rely on the aviation industry for business, pleasure, and commerce.

Let’s take a look at how all the pieces of AVS work together during the lifecycle of an aircraft, which falls into three primary areas — standards, certification, and continued operational safety. The process of certifying an aircraft is complicated, but once it’s understood, one should feel confident that the next generation of aircraft will be safe to fly.

Standards

With certain limited exceptions, FAA’s Aviation Safety organization sets safety standards for the people, organizations, aircraft, and products that operate in the National Airspace System. The organization is responsible for the certification, production approval, and continued airworthiness of aircraft, and for the certification of pilots, mechanics, and others in safety-related positions. The many offices of AVS all work together in the process of settings standards.

FAA Aviation Safety Offices

- Flight Standards Service (AFS)
- Aircraft Certification Service (AIR)
- Aerospace Medicine (AAM)
- Air Traffic Safety Oversight Service (AOV)
- Accident Investigation and Prevention (AVP)
- Rulemaking (ARM)
- Quality, Integration & Executive Services (AQS)

Except for AVP, ARM, and AQS, the offices have an extensive local field presence. Also, AOV is the independent oversight of the air traffic control organization, not the actual controllers.

As an example, AFS sets the standards for an airman to be certificated as a pilot, for an operator to fly passengers, and for a school to train an aviation maintenance technician. ARM manages the rulemaking process. AIR administers safety standards governing the design, production, and airworthiness of aeronautical products. In addition, to ensure compliance with prescribed safety standards, AIR oversees design, production, and airworthiness certification programs, and issues Airworthiness Directives to correct an unsafe condi-

tion that exists in a product that is likely to develop in a product of the same type-design. AAM develops and implements the medical standards for airmen. And AOV is responsible for reviewing all changes to air traffic control procedures.

Certification

Broken down into five parts, the certification process allows people, organizations and equipment to operate in our airspace. It allows manufactures to build aircraft, aircraft engines, propellers, and parts, and it allows organizations to provide the required maintenance services.

Design & Development

Photo courtesy of Cirrus Aircraft



The 2013 Cirrus Perspective is an integrated avionics suite built by Garmin, which uses technology in ways not possible in off-the-shelf products.

Will it fly, and will it fly safely? AIR issues design approvals in the form of type certificates for aircraft, aircraft engines, and propellers. The proposed design must comply with airworthiness standards. However, experimental aircraft and special light-sport aircraft are not type certificated. ARM also coordinates the process to adopt the regulatory standards.

Production

Photo courtesy of Cessna Aircraft



Single engine aircraft are being assembled and painted at the Cessna facility in Independence, Kan.

It's time to build and sell the aircraft. AIR issues production approvals and airworthiness certificates. Airworthiness certificates are often issued by designees. AIR also conducts oversight to determine that a manufacture's quality control system is functioning.

The Written Word, Simplified

What are the rules and regulations you ask? Let's start from the top.

1. Statutes

Congress passes statutes, which are law. FAA is granted authority from Congress to promulgate regulations under Title 49, United States Code, Subtitle VII-Aviation Programs. Within the FAA, the authority for aviation safety regulation and oversight is delegated to the AVS organization. Sometimes state and local statutes may also be passed dealing with aviation. This is the law of the "air," which is usually broad in nature.

2. Regulations

The FAA then regulates the aviation industry. These rules, or regulations, are found in Title 14, Code of Federal Regulations (14 CFR), which is online at www.ecfr.gov. The regulations specified in 14 CFR are the rules enforced by AVS.

3. Policy

An order is written by AVS and is a publically accessible document via the Regulatory Guidance Library (rgl.faa.gov). It provides FAA personnel with policies, procedures, and guidelines for ensuring compliance. Advisory Circulars (AC) are issued by AVS as way for the airman to comply with the regulations. The proposed actions of these policies are not enforceable but highly recommended.

People



Photo by CAP Col. Jane Davies

As a Civil Air Patrol cadet, Matthew Walters pays careful attention to a preflight checklist while going through a flight training academy.

Someone has to fly it. AFS certicates the pilots who fly and the mechanics and repairmen who maintain the aircraft. AAM establishes standards used to certify that airmen are medically fit to fly and clears air traffic controllers for duty. AOV credentials air traffic safety personnel. And individuals from the private sector are often appointed by the FAA to aid in these processes.

Operations

Photo by Paul Cianciolo



A Civil Air Patrol Cessna 182 is prepped for a mission. CAP operates one of the largest fleets of single-engine piston aircraft in the world, with 550 aircraft currently ready to fly.

Now the aircraft is ready for routine flight. Air carriers, commercial operators, pilot schools and training centers are certificated by AFS to keep the aircraft in the air and operated by trained personnel.

Maintenance & Modifications

Photo courtesy of Cirrus Aircraft



This infrared camera is available on new Cirrus aircraft and can be retrofitted to existing type certificated aircraft by a certified facility to improve situational awareness and safety. The system's camera is mounted in a pod under the left wing and has sensors for both ambient and infrared light, with both images merged on a display inside the cockpit.

To keep the aircraft flying, routine maintenance needs to be performed and upgrades completed as new technology comes out. AFS issues certificates to repair stations. And AIR approves major design changes, which is often done through the use of designees

Continued Operational Safety

All offices in FAA's Aviation Safety organization ensure that existing certificate holders continue to meet requirements, standards, and regulations.

AFS does this through inspecting the people, aircraft, and the organizations that operate in the airspace system. Conducting surveillance in all areas of air commerce is the most significant duty of AFS. AFS personnel also investigate causal factors of problem areas, enforce FAA regulations, maintain

the Civil Aviation Registry and promote a systematic approach to safety oversight.

AIR ensures continual operational safety by monitoring the design, production, and operation of certificated products. A change to a design generally must maintain the same level of safety as originally certified. AIR uses data gathered to detect safety concerns and take correct action before it can lead to an accident.

And it's just as important to make sure that the people flying the aircraft continue to be medically fit according to standards developed by AAM. Aerospace medical education programs, human factors research, and medical services and research for civil aircraft accidents are the other integral areas covered by AAM.

To ensure that the airspace continues to remain safe, AOV monitors, reviews, and analyzes the daily operations of the National Airspace System to spot trends and issues. AOV also audits FAA's air traffic control systems through independent oversight.

AVP is the FAA's main interface to the National Transportation Safety Board (NTSB). In the event of an aircraft accident, NTSB determines the probable cause. The FAA always investigates accidents for regulatory compliance and shares information with the NTSB for their determination of probable cause.

Holding it all together is AQS, which oversees numerous support activities, including information technology services, human resources, internal and external communications, safety management systems, the AVS budget, and environmental protection compliance.

As the prop keeps turning, so does the FAA in keeping up with new technology. If a change is needed as the result of an event — an accident, incident, or new technological development — then the process of continual improvement helps to ensure the safety of the airspace system. The lifecycle of an aircraft is a continuous cycle of setting standards, certifications, and continued operational safety, which is the job of FAA's multifaceted Aviation Safety organization. Next time you fly your aircraft, remember that all the rules and regulations are there to keep you safe. ✈️

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 search and rescue team leader with the Civil Air Patrol.

Twice the Safety *at* Half the Cost

The FAA is poised to update a major rule that changes the agency's approach to rulemaking and opens the door to new technology and a new way of thinking about enhancing safety.

A recently concluded aviation rulemaking committee (ARC), formed by the FAA in late 2011, has taken a fresh look at the agency's part 23 rule that encompasses engineering standards for airplanes with 19 seats or fewer.

What it found was that the original rulemaking — while relevant for the era in which it was drafted — had become increasingly outmoded as the aviation industry grew more sophisticated. The ARC found that the original rule, revised throughout the decades, actually had been hampering the introduction of new and safer technology and ideas into the aviation industry.

The ARC's draft rule focuses on making part 23 more performance-based, so that the FAA can move to the next level of safety.

"The new rule will use consensus standards to enable innovation and the expanded use of new technology. This enables us to embrace change without having to rewrite regulations," said Earl Lawrence, manager of the Small Airplane Directorate. "We expect to see an increase in safety and new technology. The way we put it is, 'half the cost and twice the safety.'"

The new part 23 will enable manufacturers to achieve the level of safety required by the FAA through the use of consensus standards. The result is stunning: more than 100 pages of old regulations have been distilled to 15. It's important to note the safety oversight is still there, but the prescriptive design is taken out of the regulation and will become a consensus standard, with additional guidance from technical standard orders and advisory circulars. The FAA will continue to exercise the authority to certify whether an airplane design meets the standards.

"We don't just want to add another layer," said Lawrence, "we want to rewrite the whole thing to make it clearer and more straightforward to comply with." With this new approach, changes will be made to the underlying standards, leaving the safety umbrella in the regulations. "It is not part 23 lite, it is part 23 right."

The existing certification process has proven to be overly complex and costly to companies who want to introduce new safety-enhancing technology to the

industry. The existing regulatory framework based on aircraft weight and propulsion type can lead to special actions being required by both the company and the FAA to get safety enhancements approved. These additional actions can be costly and time consuming, sometimes preventing or delaying the introduction of new technology, or slowing its adoption rate by aircraft owners due to increased certification costs that must be passed on to the consumer.

Lawrence offered up an example involving protecting passengers in a plane accident. A plane that stalls at 30 knots and crashes might require an airbag to protect the passengers. A plane that stalls and crashes at 60 knots might require an airbag, as well as a seat that is certified to withstand an impact of that magnitude. For a plane stalling at 90 knots, the requirement could be an airbag, a certified seat, and a crush zone in the aircraft fuselage. "We're varying the level of oversight for obtaining the certification," said Lawrence.

A more startling example is a type of airplane accident called *controlled flight into terrain* (CFIT). This is a scenario in which a pilot literally flies into an obstacle that he or she cannot see in time to avoid. CFITs accounted for 25 percent of all general aviation accidents in the early 2000s. However, as new avionics and other improvements were introduced, the rate began to fall. But it was the introduction of hand-held GPS — technology that was not available when the original rule was written — that caused the rate to plummet to six percent. Under the rewritten rule, affordable GPS technology would have been allowed in the cockpit more quickly, accelerating and magnifying the safety gains that were eventually realized through hand-held devices.

To capture such an outside-the-box attitude toward rulemaking, the FAA had to seek out the advice and input of numerous aviation shareholders, making it one of the most expansive ARCs ever formed.

The key to the success of the new rule is "finding that sweet spot between too much regulation versus too little," said Lawrence. The ultimate goal — that of safety — is the sweetest part of the part 23 rewrite.

Jim Tise has been editor of the FAA's national employee publications, FAA Intercom and Focus FAA for 14 years. Before that, he worked on aviation publications for Phillips Publishing and McGraw-Hill.



Clean Up on Aisle 7

A Look at Good Workplace Safety Practices

Once, when I was an aircraft maintenance unit commander at a fighter base in Arizona, one of my junior managers (in military speak, an expeditor) came to tell me that one of my avionics workers had had a nasty fall in the hangar. Just before that, another technician (crew chief) had spilled some hydraulic fluid on the floor. He had tried to do the right thing and clean it up with a mop and some water, and then had gone about his business. Shortly thereafter the avionics technician hit the unmarked, slippery spot and away she went. Worse, she had been carrying a piece of equipment at the time, so when she went down, it came down right on top of her. The end result was one very guilt-ridden crew chief, one injured avionics troop, and one exasperated expeditor. What might not be so obvious is that I also had on my hands an OSHA violation, a HAZMAT violation, and a possible EPA violation, but I will get to that in a moment.

June is National Safety Month — a National Safety Council initiative to raise awareness of preventable accidents and injuries in the workplace. Lucky for us, it just happens to coincide with this “Flying Green” edition of *FAA Safety Briefing*. How do these two concepts correlate you might ask? It’s

pretty simple: a clean, efficient, Environmental Protection Agency (EPA) and FAA hazardous materials compliant work center has all the hallmarks of being a safe one.

In 2011 the Occupational Safety and Health Administration (OSHA) recorded 586,870 incidents of slips, falls, and trips in the workplace. These incidents almost always resulted in missed days of work and made up about 22 percent of all recorded events. By practicing good housekeeping and maintaining a clean and tidy work area, it is proven that you can reduce the number of incidents by more than half. It also might keep you from being slapped with a hefty fine for violating some basic laws of doing business.

The first is that OSHA violation. They have a set of regulations, just like the FAA, that dictate how to keep safe in the work place. Title 29 Code of Federal Regulations section 1910.22, titled “housekeeping,” has a sub-section that states “the floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition.” Safety, signs, and signals regulations went into effect in 1996. One such sign is easily recognizable — you’ve probably seen one before — it says “wet floor.” My technician forgot to put out this visual signal to alert others in the workplace about the potential danger and a mishap occurred.

But it doesn’t stop there. In addition to the OSHA foul, another error was made. Aviation hydraulic fluid is an oil-based product made up of alkyl (alcohol) and aryl phosphate esters. It is viscous and fire resistant, and, as an oil, it is also inherently resistant to water. Therefore mopping with just water was not only a hazardous material violation, it likely only exacerbated the problem. In this case, proper cleanup would have involved using a sorbent material to absorb the fluid. Afterwards, the area should have been mopped with a warm, soapy solution.

Last is the Big One — the potential EPA violation. After gently questioning my crew chief, I found out that he had in fact dumped the dirty mop water down the small drain in the janitor’s closet, and not one of the ones that ran along the sides of the hangar floor. So *not* the ones that actually had water separator devices attached. He had dumped it straight into the waste water supply. Granted, this was an isolated incident with only a small amount of



product having been dumped, but you can imagine in an organization such as this where hydraulic, fuel, and oil leaks can occur on a large scale and sometimes at random, it is our duty to make sure that we are taking environmental responsibility for every drop we spill. Not only do we risk harming our ecosystem and creating a health risk, but fines can start at \$500 for personal illegal dumping, and can go all the way up to ExxonMobil's whopping \$2.64 million fine for the alleged improper handling of HAZMAT. In fact, in 2012, the EPA levied a record \$252 million in civil and criminal penalties.

What my crew chief should have done was to alert someone nearby as soon as he spilled the liquid. He could have either sent that person to get cleaning supplies and a wet floor sign while he waited, or vice versa. Then, after cleaning up the mess and properly disposing of the waste in an appropriate HAZMAT collection receptacle, he should have made a supervisor aware of the situation before going on with his duties. These good housekeeping practices could have prevented the accident from happening at all.

Your take-away lesson here is this: check with your local HAZMAT authority before handling, cleaning up after, and disposing of materials you use in and around the hangar. Recognize that a clean, organized area makes for good maintenance and for good occupational safety. And lastly, remember that it is your moral and ethical responsibility to ensure that your area meets all of the environmental criteria that the FAA and EPA require of you. Doing so can help ensure your workplace is an outstanding one.

Sabrina Woods is an assistant editor for the FAA Safety Briefing. She spent 12 years in the active duty Air Force where she served as an aircraft maintenance officer and an aviation mishap investigator.



Calling All Mechanics

Keep Informed with FAA's Aviation Maintenance Alerts

Aviation Maintenance Alerts (Advisory Circular 43-16A) provide a communication channel to share information on aviation service experiences. Prepared monthly, they are based on information FAA receives from people who operate and maintain civil aeronautical products.

The alerts, which provide notice of conditions reported via a Malfunction or Defect Report or a Service Difficulty Report, help improve aeronautical product durability, reliability, and maintain safety.

Recent alerts cover:

- failed landing light and strobe light switches on the Beechcraft A36 *Bonanza*
- failed contact points on a Slick magneto
- cracked exhaust on a Continental IO-550-N engine

Check out Aviation Maintenance Alerts at FAA.gov



No More Fueling Around *How to Keep Your Fuel Tanks From Going Hungry*

I can remember my first fuel starvation incident like it was yesterday. Having just moved to Texas, I was excited about attending my first big rodeo. Front row tickets to boot! After packing my newly purchased snakeskin boots and bolo tie, I did a quick weather check, kicked the tires, and was off. Given my state of excitement, and of course the fact that I was running late, I completely blew off the low fuel warnings I was receiving on my panel. The indicator might as well have reached out and slapped me in the face, and I think I would still have pressed on. Then it happened: the blood-curdling sound of an engine sputtering its last breath before falling completely silent.

I froze. This couldn't be happening. I was almost there. Then, after mustering up a reserve of inner strength and without so much as a glance at a checklist, I knew exactly what I needed to do. I opened the door, grabbed the empty fuel container from my trunk, and hoofed it to the nearest gas station.

Oh, sorry, did you think I was in an airplane? If I had been, you can bet the ending to my story would have been quite different. In this case, it was a terrestrial error, with the only negative consequence being the long, hot, walk of shame along the highway

shoulder to the gas station, plus missing what would later become my favorite rodeo event, the chuck wagon races.

Unfortunately, this scenario is not all that different from the self-induced predicament some pilots have experienced, only they didn't have the luxury of being able to pull off on the shoulder, park, and walk somewhere for fuel. According to the latest Joseph T. Nall report (produced by AOPA's Air Safety Institute), 89 accidents occurred in 2010 as a result of fuel exhaustion; 11 of them fatal. And despite a decline in fuel management accidents through 2008, more recently those numbers have been reversing, accounting for eight percent of all accidents in 2010. According to the Nall report, inadequate flight planning — failure to determine the amount of fuel required for the flight or the amount actually on board, or to verify the rate of fuel consumption en route — accounted for the largest share (48 percent). Errors in operating the aircraft's fuel system (choosing an empty tank or the incorrect use of boost or transfer pumps) were almost as widespread, and were implicated in 43 percent of the total.

Another interesting statistic from the report showed that a quarter of fuel-management accidents took place at night; almost three times the number seen in other accident categories. That reeks of get-home-itis if you ask me.

Almost all fuel management accidents boil down to a lack of planning and/or poor decision making. Common examples include not accounting for a stronger-than-expected en route headwind, trying to squeeze out that extra bit of mileage to get to an airport with cheaper fuel prices, or perhaps trying to save face with a passenger who may be a bit perturbed to set down at a strange airport.

One of the more head-scratching aspects of fuel management accidents is simply how easy they are to prevent, as well as recognize well before they happen. Blaming a bad fuel gauge doesn't cut it. To prevent getting into this situation, try applying some of these tips before your next flight:

- Check your fuel before you go. It seems simple, but you'd be surprised how many pilots skip this important step during preflight.
- Budget extra time for an extra fuel stop or to



make an unexpected landing. A good rule of thumb is to try and land with no less than an hour of fuel left. That way you exceed what's required by the regulations.

- Even if you have an electronic fuel totalizer, know your burn rate — then add a gallon or two to that rate for good measure. That tip is especially pertinent if you are flying an unfamiliar aircraft.
- If you do get low on fuel, don't be afraid to declare an emergency. Too often, pilots fear paperwork or the embarrassment of admitting an error instead of getting ATC's full attention to help get to a fuel pump as quickly as possible.

Following these simple steps is a sure-fire way to prevent you from getting caught "fueling around."

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

Learn More

2011 Nall Report

www.aopa.org/asf/publications/11nall.pdf

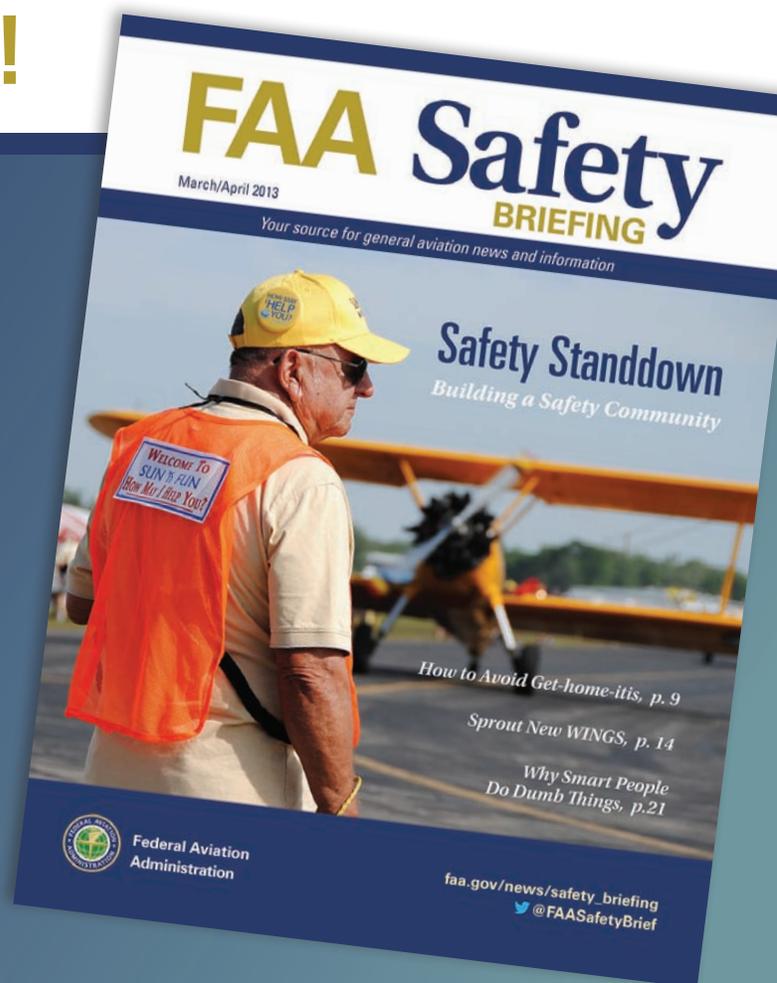
Fuel Awareness Safety Advisor

http://flighttraining.aopa.org/pdfs/SA16_Fuel_Awareness.pdf

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Flying Green: Doing Your Part

If there is a single buzzword for the current decade, it has got to be “green.” Let’s face it, going green is in. Everyone who’s anyone is trying to protect the planet, and green efforts don’t stop there. It has infiltrated recent movie releases with the Hulk, Hornet, and Lantern. Then there are those bailouts, stimuli, and quantitative easing. The last three involve money — you know, *greenbacks*. Somewhere Kermit must be smiling, but just how does the general aviation helicopter pilot or operator go about following this newly minted green gospel?

When flying commercial planes, consumers can choose airlines that fly newer, more efficient aircraft, promote the use of biofuels, and advertise their recycling programs for glass, plastic bottles, and aluminum cans. Passengers can bring headphones, blankets, pillows, etc., to limit the use of disposable items. NASA has ongoing programs to push green aviation, such as developing lighter, stronger composites, and reducing fuel consumption, emissions, and noise — all in an effort to maintain a healthy planet.

For the rotor world, Eurocopter, through its Blue Helicopter enterprise, is working toward reducing industrial wastes, energy consumption, and emissions as a way to produce eco-friendly flying machines. In addition, as part of the FAA’s NextGen initiative, the Automatic Dependent Surveillance Broadcast (ADS-B) system has been implemented in the Gulf of Mexico, greatly increasing the efficiency of routing helicopters flying to and from oil platforms.

However, all this means little to the present day helicopter owner as he takes off for a job outside the Gulf or for the “hundred dollar hamburger.” Tuning up the engine and washing the exterior — making sure to properly control the runoff, of course — are things aircraft owners already do since these practices save fuel (i.e., money) and make flying safer. But it turns out there are a few more things that operators can do while they wait to purchase that new-fangled aircraft that sips green, algae-based fuel and quietly emits only sunshine, purified water, and seedlings to replenish the rain forest. Here is a list:

1. **Night.** Take advantage of the sun being down much the same way you would with your lawn mower. That is, refuel in the early morning hours if you can. The cooler temperatures will allow for fewer fumes, and you will get
2. **Maintenance.** It’s obvious, but still worth pointing out, that operators should follow all manufacturer recommended maintenance procedures not only to make the aircraft more efficient and safe, but also to save money. Tune-ups have been mentioned, but should your helo have wheels, ensure the tires are properly inflated to save fuel when taxiing. The tires will last longer (as do ones that have their sidewalls regularly treated with a protectant), and this will keep them out of the landfills longer. Better yet, take worn-out tires, in addition to batteries, used oil, and antifreeze, to recycling centers. Whenever parts are changed out, choose the newest, most efficient replacements available. Not only will you be going green, but your bird will thank you with better service, a longer life, and lower operating costs.
3. **Little Things.** Take along a trash bag when you fly. Recycle your garbage; don’t just assume the FBO is going to separate the plastic and aluminum that gets tossed into that little can in the visitors’ lounge. Check for leaks, make sure the gas cap fits tightly, minimize idling, use the autopilot, use an iPad instead of pencil and paper — the list is endless. Basically, many of the same things that make sense for your car make sense for your aircraft.

The first step for all of us should be to actually care about our environment and what we leave behind. That is the most important part as we try to make the entire industry, that is, the whole gang, green. Okay, so that last pun was fragile, but so is our planet, and it’s the only one we’ve got. Do your part to help it stay green.

Rory Rieger is an aerospace certification engineer in the FAA Rotorcraft Directorate. He has served as a fixed- and rotary-wing pilot for the U.S. Navy and Navy Reserve for 27 years. His career has included duty in more than 20 combat operations.



Flight Forum

Peer Pressure?

Hello! I just wanted to start by saying what a wonderful magazine *FAA Safety Briefing* is. I have been reading it since it was called *Aviation News* and I wanted to know if the magazine is juried or peer-reviewed? I wanted to use it as a reference in some of my research activities.

— Jonathan

Our articles are vetted through other branches and divisions within the FAA that are considered subject matter experts on the topic(s) at hand. Once an article has "cleared" its review process, it is signed off and returned to us for publishing. Thanks for your question, and we are glad you find the content useful!

Clipped Wings

I'm writing you because while it's written (in the Jan/Feb edition) that the FAA wants to work with pilots to help them stay flying, for me it feels like the FAA will find every reason in the world to keep me grounded. After being diagnosed with a cancer that my oncologists say has little to do with flying, I received a letter wanting me to voluntarily surrender my medical. I know you are not responsible for what is written in letters, but as a contributor to the safety newsletter you should be aware this is why pilots are often so reluctant to deal with FAA.

— James

Thanks for your note and the feedback on the Jan/Feb issue of FAA Safety Briefing magazine. We're sorry to hear that you have been made to feel that way. As stated in the "Postflight" editorial, the FAA medical staff has to uphold the medical standards as codified in 14 CFR, but they do try very hard to work with airmen on special issuance medicals whenever that's possible. We are very sorry to hear of your cancer diagnosis, but we wish you the best as you work through treatment so as to regain your health — most important — and, hopefully, your medical certification.

Page Burner

Wow, I do not remember when I read every article so closely! From John Allen's tribute to his friend Lt. Col. Matt Harlan in "Jumpseat" to Susan Parson's revelation of her diagnosis of MS in "Postflight," you really brought out the personal side of aeromedical in the Jan/Feb edition of *FAA Safety Briefing*. Thanks for humanizing the process by way of your articles.

— Jeff

We really appreciate your feedback. It is our goal to try and engage our audience in a way that is personal and relatable, while opening up the avenues of communication and education. It is nice to hear we are succeeding!

Kindle Crisis

First I'd like to say I enjoy reading the magazine cover to cover. It has content and feeling; an unusual match these days. I like using my Kindle, but have failed in trying to get my [FAA Safety Briefing] subscription downloaded. The last issue had instructions but I was not successful following them either. Can you provide more details as to how I may have the subscription downloaded?

— Ron

Thanks for your comments about our publication. We are sorry to hear you are having trouble getting the file to work properly on your Kindle. The best way to go about rectifying this is to go to www.faa.gov/news/safety_briefing/ on your computer, then download the mobi file. After that, there are a few ways to get it to your Kindle. One is to email the file to your secret Kindle email address, which is specific to your device. Another is to transfer the file via USB while your Kindle is plugged into your computer. The last way is to upload the file to your Amazon Cloud account, then once uploaded, click the option that says "send to" your device, which then happens over WiFi. We hope this helps!

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-805, 800 Independence Avenue, SW, Washington, DC 20591, or email SafetyBriefing@faa.gov.



Let us hear from you — comments, suggestions, and questions: email SafetyBriefing@faa.gov or use a smartphone QR reader to go "VFR-direct" to our mailbox.

Climate Control

Nope. This is not another piece on global warming. Meteorological climate change is certainly an important topic, one we address in various ways through this “Flying Green” issue of *FAA Safety Briefing*, but the topic on my mind is a different kind of climate change. Specifically, I want to address a type of climate change that requires a pretty significant degree of warming if general aviation is to survive, or even better, thrive. I’m talking about an environmental factor we can readily control — the climate we create for new and aspiring pilots.

It seems perfectly obvious that we should all want, and thus seek to create a warm environment that welcomes the new and nurtures the novice. Sadly, the enthusiasm of too many would-be pilots withers away in the cold and barren environment they encounter in far too many flight training facilities.

A Tale of Two Cities

As a comedian might say, I am not making this up. Two poignant personal experiences — separated by both time and distance — illustrate my point. I wrote about them in detail several months ago for the online *Air Facts Journal’s* series on the declining pilot population, but here’s the short version.

It was not until the early 1990s that I found a way to assemble the time, opportunity and money (more or less) to pursue my lifelong interest in flight training. You could say I was a motivated potential pilot because I had completed ground school,

It seems perfectly obvious that we should want, and thus seek to create a warm aviation environment that welcomes the new and nurtures the novice.

passed the knowledge test, and acquired my combination medical/student pilot certificate before I went in search of flight training. Logically enough, I started with the school closest to my home. I found myself in a dark and dingy facility festooned with “pardon our dust” construction signs. No one at the counter seemed interested in helping me. When I politely inquired about flight training, one of the attendants off-handedly proffered a single sheet of crookedly-copied information on flight training packages. Since they showed so little interest in me, I quickly lost interest in them. I wanted flight training badly enough to keep searching, and I eventually found a school that wanted my business. But I have often wondered how many

potential pilots were (are) frozen out by the first school’s icy climate.

Things were no better in a much warmer climate, at least warmer in the meteorological sense of the term. Three years ago, I decided to get an aircraft checkout in a city I visit often enough to make the exercise worthwhile. When I asked about checkout requirements, the counter attendant simply pointed to an instructor seated on the sofa behind me with an FBO fuel truck driver. The response was chilly. No one offered a handshake, an introduction, or even an invitation to sit down. Instead, I was subjected to an almost hostile interrogation on my qualifications and experience. The instructor’s description of the overlying Class B airspace seemed designed to intimidate and discourage me ... hard to do, not only because I’m relentless when I want something, but also because the complexity of my home airspace is legendary. Again, I found another school, but I continue to wonder how the first one stays in business. I do *not* wonder why anyone in search of flight training might well opt for another hobby.

We Can Make a Difference

My own story had a happy ending in both cases — but it was not because someone invited me into the warmth of the aviation community. It took flinty determination and scout-style fire-building skills to overcome the cold reception that could have derailed my flying career before it ever started. In a way, though, the saddest part of telling my personal “tale of two cities” is the number of people who have similar — or even worse — stories to tell. It truly makes you wonder what the dickens we are doing to ourselves.

Just as the health of our planet depends on a combination of individual and collective efforts to protect it, the health of our avocation depends on our success in turning “ice” into “nice.” In both cases, let’s all resolve to do our part.

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.



Thomas Gunnarson

Transportation Industry Analyst, Small Airplane Directorate Programs and Procedures Branch



Watching hawks soar and dive for prey over the farmland of Massachusetts was the spark that got Thomas Gunnarson interested in aviation. He built model rockets and radio-controlled aircraft as a child, which would later feed a desire to jump out of perfectly good airplanes and run off ski slopes attached to a hang glider. His passion and experience are in light-weight airplanes, seaplanes, weight shift trikes, powered parachutes, and gliders.

"I'm not as much a 'GA' pilot as I am an air sports participant," said Gunnarson.

He owns a Quicksilver GT 280 single-seat ultralight aircraft and holds private pilot, and basic ground instructor certificates.

After managing several recreational flight schools around the country, he served as the director of safety and training at the U.S. Ultralight Association overseeing an FAA recognized safety program for 500 flight instructors. While there, he spent 10 years on the U.S. delegation to the world air sport federation (FAI) overseeing contests and records for small sport "microlight" aircraft, which included officiating duties at world championships.

"It was a real eye-opener seeing how aviation issues were so consistent even with very different cultures and regulatory systems," he noted.

After 27 years in the recreational aircraft industry, Gunnarson joined the FAA's Aviation Safety organization in 2008. He specializes in the coordination, development, and promotion of safety

standards for light sport aircraft both domestically and internationally. He is the FAA link to the ASTM International Committee F37 on light sport aircraft and has provided training and workshops on the use of consensus standards to industry and civil aviation authorities in the United States, Europe, and South America.

As part of the Programs and Procedures Branch, Gunnarson works to continuously improve general aviation (GA) safety, with a goal to reduce fatal accidents and certification costs by 50 percent. The branch leverages new technology to enhance GA safety, supports the light sport aircraft initiative, and is looking at alternative propulsion technologies, like electric-powered aircraft (see the article "Plugged In" on page 18 for more). They are also directly involved with the efforts to identify suitable replacements for leaded aviation fuel and the potential use of bio-diesel in GA aircraft.

"One of our biggest challenges is maintaining our safety continuum, or the idea that the proper level of safety and certification rigor must be tied to the type of aircraft in question and how it is intended to be operated," said Gunnarson. "We cannot use a one-size-fits-all approach to certification."

Gunnarson also believes the aviation industry should continuously focus on innovation as a catalyst for improving safety. "Whether it's inventing new fuels, creating environmentally-friendly materials, developing new methods of propulsion, or creating other safety enhancements, the safe introduction of innovative ideas should be a priority to help keep GA moving forward."

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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 search and rescue team leader with the Civil Air Patrol.



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