March/April 2025

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ABOUT THIS ISSUE…

The March/April 2025 issue of *FAA Safety Briefing* explores the value of our nation's vast array of public-use airports and their importance to the communities they serve. Articles help raise awareness of runway safety and wildlife hazards and highlight the benefits of exploring new places to land.

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FAA Safety BRIEFING

The FAA Safety Policy Voice of Non-commercial General Aviation

DEPARTMENTS

ROBERT RUIZ, ACTING FLIGHT STANDARDS SERVICE EXECUTIVE DIRECTOR

A NATIONAL ASSET

There's a popular aviation saying that states "A mile of highway will take you one mile, but a mile of runway will take you anywhere." In addition to highlighting the nearly limitless travel possibilities of aviation, the saying also signifies the importance of airports that facilitate those journeys. From the large air carrier hubs to the rural grass strips, airports are vital to both local and national economies and are a fundamental part of our nation's aviation infrastructure.

Readers of this publication might be interested to learn that general aviation airports comprise nearly 90% of our nation's public-use airports. They provide critical services that in many cases can't be supported at the larger primary commercial service airports. Some of these services include aeromedical flights, aerial firefighting, agricultural operations, law enforcement, disaster relief, flight training, and providing access to remote communities. In this issue, we'll take a closer look at the important value GA airports hold in the aviation community and the FAA's commitment to airport safety improvement.

How an airport is designed and laid out is a critical factor when it comes to safely facilitating traffic flow. Identifying and mitigating airport hotspots — areas where there is increased potential or a history of collision or runway incursion — is a top priority for the agency. One program that is dedicated to addressing hot spots and other airport surface problem areas is the Runway Incursion Mitigation (RIM) program. In the article "RIM to the Rescue," we take a closer look at this initiative and how it's having a measurable impact on reducing incursions and improving safety at hundreds of airports.

Airports can be hubs of activity for not just airplanes, but also for many of our feathered and four-legged friends. Unfortunately, wildlife strikes are a serious threat to aviation safety. In 2023 alone, there were 19,603 strikes reported, a 14% increase over the previous year. In the article "Unintentional Aerial Encounters" and our Drone Debrief department, we discuss some of the steps the FAA is taking to better measure and analyze wildlife strikes and explore new methods to better mitigate this threat.

Circling back to the opening quote of this article, airports serve as springboards for aeronautical exploration and broadening your aviation experience. In addition to connecting us to the alluring $100 hamburger, lobster roll, crab cake, or other local delicacy of your choosing, airports can help hone your skills in unfamiliar environments that you will inevitably encounter during your travels. Visiting airports of various shapes, sizes, and activity levels provides invaluable operational experience, especially if an emergency dictates an unexpected deviation.

At many airports, the education doesn't always end with practicing in a congested pattern or executing a short-field landing to perfection. As you'll see in the article "National Treasures," some airports worth visiting are sites of historical significance, house aviation museums with rare or vintage aircraft, or host events that bring the pilot community together and inspire future aviators. In other cases, they simply open doors to breathtaking vistas and allow us to appreciate the beauty of our nation from a vantage point very few get to experience.

One final note on safety — when planning your next airport adventure, be sure to do your homework so you're familiar with the traffic pattern procedures, airport grounds, taxiway locations, NOTAMS, and construction notices. An excellent resource that you've heard me mention before is the *From the Flight Deck* video series (faa.gov/flight_deck). These videos provide a great way to get a first-hand look at an airport before even setting foot inside your aircraft.

We hope this issue provides you with a greater appreciation of our nation's network of airports and the vital roles they play not just for aviators, but for the community at large. As such, the FAA stands committed to supporting and investing in our nation's airports, large and small, to ensure their continued safety and success.

Safe flying!

AVIATION NEWS ROUNDUP

SAIB Issued for Angle of Attack Alerting Systems

The FAA recently published a Special Airworthiness Information Bulletin (SAIB) providing information to help general aviation aircraft owners and operators understand the importance and safety benefits of angle of attack (AOA) alerting systems on aircraft type certificated under Title 14, Code of Federal Regulations (14 CFR), part 23 and operating under 14 CFR parts 121, 135, or 91. Increasing awareness of the benefits of these alerting systems may reduce the risk for loss-of-control (LOC) incidents and accidents.

Research has shown AOA indicators assist pilots with stall margin awareness, stall prevention, and recovery from unusual attitudes or upset. By providing the pilot with an indication of the wing's stall margin, regardless of g-loading, the pilot may be more likely to avoid a stall or upset. The pilot will also have a better indication of when the wing is flying again during recovery after exceeding the critical AOA. An AOA indicator can allow the pilot to maximize performance of the aircraft very near the critical AOA.

Several studies have also indicated that AOA indicators could aid pilots in diagnosing problems with a pitot tube (used to indicate airspeed) or static port (used to indicate altitude). The FAA recommends that pilots install and calibrate critical AOA alerting systems and receive training on the use of AOA indicators and how to incorporate them in instrument scans.

You can review the SAIB at bit.ly/SAIB_AOA.

Sample AOA indicator systems.

FAA to Begin Using New Computer-Based Color Vision Tests

The FAA modernized its color vision testing with computer-based equipment and operationally based passing scores. The new testing process screens for both yellow/blue and red/green deficiencies and addresses inconsistencies and color degradation from using older test plates.

As of Jan. 1, the FAA requires all applicants for an initial airman medical certificate to test for color vision deficiencies using the new program. Pilots who have held a medical certificate do not need to retest unless they want a color vision restriction on their certificate removed, develop a medical condition, or are taking medication that affects color vision. Learn more at bit.ly/4j5ecoi.

New Requirements for Certificate Holders with Foreign Addresses

The FAA issued a final rule requiring individuals with foreign addresses, and no U.S. physical address of record on file with the FAA, who hold or apply for certain certificates, ratings, or authorizations to designate a U.S. agent for service of FAA documents. The U.S. agent will receive service of FAA documents on the certificate holder or applicant's behalf. This rule facilitates the FAA's ability to accomplish prompt and cost-effective service of process and service of other safety-critical or time-sensitive documents to individuals abroad through service on their U.S. agents.

#FLYSAFE GA SAFETY ENHANCEMENT TOPICS

Please visit bit.ly/FlySafeMedium for more information on these and other topics.

MARCH

Risk-based Flight Review and WINGS – Learn how a risk-based flight review can identify and mitigate hazards and risks with pilot operations.

APRIL

Stabilized Approach – Maintaining a stabilized approach and landing is a great way to avoid a loss of control situation.

As of July 2022, approximately 115,000 individuals outside the U.S. hold certificates, ratings, or authorizations issued under 14 CFR part 47, 61, 63, 65, 67, or 107 and do not have a U.S. physical address of record on file with the FAA.

On Jan. 3, 2025, the FAA published a final rule extending the U.S. agent rule compliance date for applicants from Jan. 6 to April 2, 2025. Please note that the compliance date for current certificate, rating, or authorization holders remains July 7.

You can view the final rule at federalregister.gov/d/2024-22000.

Safety Management System for General Aviation Organizations

The FAA recently issued an Information for Operators (InFO) notice encouraging all general aviation organizations to develop and implement a safety management system (SMS) that meets the 14 CFR part 5 requirements.

An SMS integrates risk management into normal day-to-day business practices. Safety is managed as a core business function where the organization treats safety in the same way it manages other functions (e.g., financial, quality, marketing). The International Civil Aviation Organization (ICAO) standard states that GA operators of large aircraft (gross weight >12,500 lbs.) and turbojet aircraft must establish and maintain an SMS "commensurate with the size and complexity of the operation and meet the criteria established by the State of Registry." ICAO recommends that GA SMS include:

- A process to identify actual and potential safety hazards and assess the associated risks;
- A process to develop and implement remedial action necessary to maintain an acceptable level of safety; and
- A provision for continuous monitoring and regular assessment of the appropriateness and effectiveness of safety management activities.

Check out the InFO, which includes strategies to develop and implement an SMS, at bit.ly/InFOs.

Airport Design Challenge

Enrollment is open for the 2025 season! The Airport Design Challenge (ADC) is an interactive learning and collaboration opportunity for students in grades K-12. During the ADC, students have the opportunity to design virtual airports in Minecraft based on guidance from FAA aerospace and engineering experts. Participating students meet aviation professionals, engage with other designers, and learn about the aerospace industry. The challenge offers first-hand experience in an aviation-related application of STEM concepts and helps students apply their academic knowledge and skills to professional simulations. Learn more about the challenge and see the 2024 winners at faa.gov/adc.

How to Avoid Medical Certification Delays Caused By Name Errors

Pilots may wonder, why is it important to use my name as it appears on my government-issued ID? In a recent episode of the *Pilot Minute* video series, Federal Air Surgeon Dr. Susan Northrop explains how certification delays caused by a name error can be avoided by checking the MedXPress entry against your official government-issued identification. If the two do not match, be sure to revise any name variation in your MedXPress account to reflect your full name on your federal or state-issued ID and save valuable time getting your medical certificate.

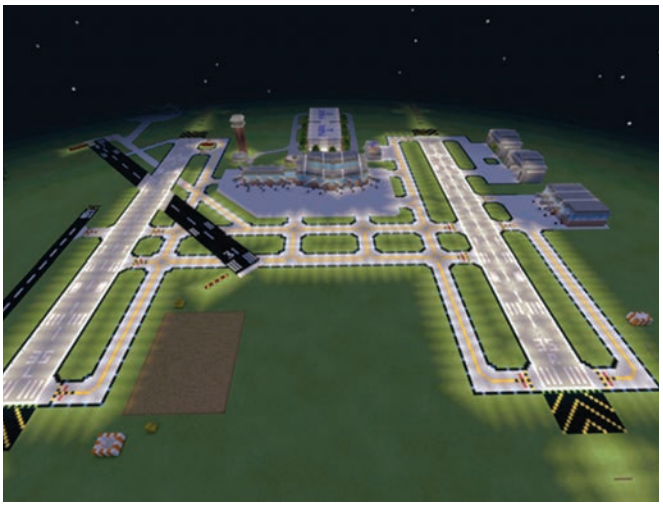
To watch this and other videos, visit bit.ly/FAAPilotMinute.

FAA Partnership to Modernize Flight Training Regulations

The FAA has partnered with the National Flight Training Alliance (NFTA) to spearhead the modernization of part 141 regulations governing flight training in the United States. The FAA and NFTA will collaborate with flight training providers and the general aviation industry to execute updates to flight training regulations and enhance efficiencies.

The FAA and NFTA began engaging with stakeholders across the country in January to solicit input and coordinate modernization efforts. Formal meetings, both in-person and virtual, will begin in March 2025, inviting flight training providers and industry leaders to shape the future of flight training. Priorities include leveraging advanced technologies, reducing training costs, lowering barriers to entry, and promoting the adoption of safety management systems to enhance operational standards. The initiative also emphasizes the importance of adopting data-driven standards and incorporating safety management systems into flight training operations.

You can learn more about the effort at bit.ly/141_FlightTraining.



American Trio's OKC design from the Airport Design Challenge.

DR. SUSAN NORTHRUP, FAA FEDERAL AIR SURGEON

A NEW ERA OF COLOR VISION TESTING

On Jan. 1, the FAA changed color vision testing for pilot medical certificates. This primarily impacts first-time applicants for an FAA medical certificate. There is no change in the privileges and limitations for current certificate holders. However, you might be wondering, "Why the change?"

Having adequate color vision — the "ability to perceive those colors necessary for the safe performance of airman duties" — in pilots was assumed by the developers of traditional aviation sectionals and charts, airport signage, and lighting. Color vision has been evaluated by both the FAA and military branches with various tests including the Ishihara plates and Falant Lantern. It was recognized, though, that some individuals passed the test despite a significant color vision deficiency (CVD) due to either limitations of the test or memorization of the plate order.

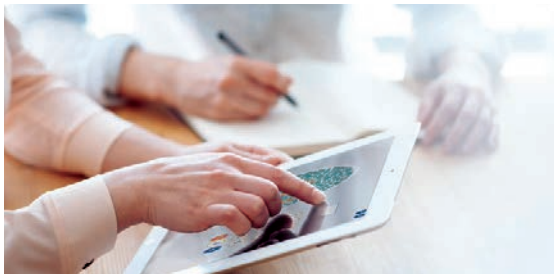
Over the past few decades, aviation has become an increasingly color-rich environment with multi-function displays and tablets. The FAA recognizes that adequate color vision is much more essential in aviation. The military, in fact, noted that both aircrew and flight test engineers who held waivers for CVD sometimes struggled with accurately interpreting the more modern color-rich displays.

The limitations of current testing were highlighted on July 26, 2002, when a FedEx aircraft struck trees on short final to the runway at Tallahassee Regional Airport (TLH), landed short, and was destroyed. Fortunately, there was no loss of life, although the crew was seriously injured. During the investigation, the NTSB determined that the known color deficiency of the first officer, the pilot flying, was a factor in the mishap. Notably, this individual had received a "waiver" for his CVD from both the military and the FAA. The NTSB then made several recommendations to the FAA.

Subsequently, our staff at CAMI, the Civil Aerospace Medical Institute, began an extensive review of available testing for color deficiency. It quickly became clear that the current tests had inherent limitations including color fading of the plates with time, lighting issues, and the ability of individuals to memorize the order of the plates if not shuffled. Also, none of the tests in routine use evaluated blue-yellow deficiency, which had become increasingly important in aviation.

The staff at CAMI then undertook testing of both color-normal and color-deficient individuals to determine thresholds for operationally acceptable (not necessarily normal) color vision. Following this, we began an in-depth discussion of the path forward with our ophthalmologist consultants and military counterparts. A change to computer-based testing was necessary and three such tests are now authorized. Any is acceptable and the applicant has the option of taking a test more than once (since they are randomized) or a different test if one is failed. More information can be found at bit.ly/Color_Vision_FAQs (PDF).

So, whom does this impact? We determined that those who already had an FAA medical can retain their current privileges. In other words, if someone has a CVD, but has been given a letter of evidence (LOE) or a statement of demonstrated ability (SODA), we will continue to recognize these. Note that these generally were issued following an operational color vision test (OCVT). However, these



are time-consuming and expensive for both the pilot and the FAA. One of the goals for the change to computer-based tests is to minimize the need for an OCVT in the future.

First-time applicants for an FAA medical certificate after Jan. 1, 2025, will receive a computer-based test. With certain exceptions, this is a "one and done" test for them and is not required for those who have a medical issued on or prior to Dec. 31, 2024. The first exception is if you are diagnosed with a medical condition or take a medication that can impair color vision, a computer-based test will be required as part of your evaluation. This is true regardless of when you first had an FAA medical issued. The other exception is for those issued a medical prior to Jan. 1, 2025, but who request removal of a current limitation for color vision or an upgraded medical (e.g., from a Class III to a Class I or II).

We recognize that this is a significant policy change and will monitor it closely to minimize the impact on pilots while ensuring safety of flight.

Dr. Susan Northrup received a bachelor's degree in chemistry, a medical degree from The Ohio State University, and a master's degree in public health from the University of Texas. She is double board-certified by the American Board of Preventive Medicine in Aerospace Medicine and Occupational Medicine. She is a retired U.S. Air Force colonel and a former regional medical director for Delta Air Lines. She is also an active private pilot and aircraft owner.

SUN 'n FUN Aerospace Expo

FAA SAFETY CENTER FORUMS

April 1–5, 2025

	08:30 – 09:30	10:00 – 11:00	11:30 – 12:30	13:00 – 14:00	14:30 – 15:30	
TUESDAY APRIL 1	**Weather or Not to Fly** Jeff Arnold Leidos Flight Service **WINGS: AK1**	**Don't Grind the Gears When Shifting Culture** Lee Stromenger FAA **WINGS: BK3**	**How to Avoid a Fighter Intercept** Trevor Boswell NORAD **WINGS: BK2**	**The Fun and Challenges of Flying Seaplanes** Steve Guetter Wipaire **WINGS: BK2**	**How Lancair Improved its Safety Record** Jeff Edwards AVSafe **WINGS: BK3**	**Join us for daily forums at the FAA Safety Center**
WEDNESDAY APRIL 2	**Aeromedical Update** Dr. Brett Wyrick FAA **WINGS: BK3**	**Loss of Control and Decision Making on Land and Water** Steve Guetter Wipaire **WINGS: BK2**	**Importance of Oil Analysis** Wayne Odegard Aviation Laboratories **WINGS: BK3/AMT**	**Using "*From the Flight Deck*" Products** Andrew Applegate Dane Guynn Runway Safety **WINGS: AK2**	**Weather by Phase of Flight** Dr. Ian Johnson Brandon Smith FAA **WINGS: BK2**	**Tomorrow: Meet the FAA**
THURSDAY APRIL 3	**Planning the Transition to Replace 100LL** Chris D'Costa Swift Fuels **WINGS: BK3/AMT**	**Straight Talk About Aviation Safety** John & Martha King Schools **WINGS: BK3**	**Meet the FAA** *No Session* WINGS: NA	**Visual Separation for VFR Aircraft** Katherine Wilson NTSB **WINGS: BK3**	**Recognizing Dangerous Goods and Your Risk** Victoria Lehman FAA **WINGS: BK2**	**Mike Millard is back with AMT and WINGS Credits!**
FRIDAY APRIL 4	**Aircraft Maintenance Human Factors** Mike Millard FAA **WINGS: BK3/AMT**	**Instrument Departures** Ed Verville DPE **WINGS: AK1**	**Accident Investigation Updates** Patrick Hempen FAA (Ret) **WINGS: BK3**	**Top Schools Teaching: Loss of Control** Ed Verville DPE **WINGS: BK2**	**Navigation During GPS Outage** Dr. Vance Massimini FAA VOR MON **WINGS: BVK2**	**Tomorrow: It's no illusion, Dr. Stretanski is here!**
SATURDAY APRIL 5	**Aircraft in Distress** Tom Slater FAASTeam Rep **WINGS: BK1/AMT**	**Have You Seen Anything Like This Before?** Mike Millard FAA **WINGS: BK3/AMT**	**Weather or Not to Fly** Jeff Arnold Leidos Flight Service **WINGS: AK1**	**Using "*From the Flight Deck*" Products** Andrew Applegate Dane Guynn Runway Safety **WINGS: BK2**	**Medical Aspects of Flight Illusions** Mike Stretanski AME **WINGS: BK3**	**Make Better Decisions Through Education**

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bit.ly/FAAST_pamphlets

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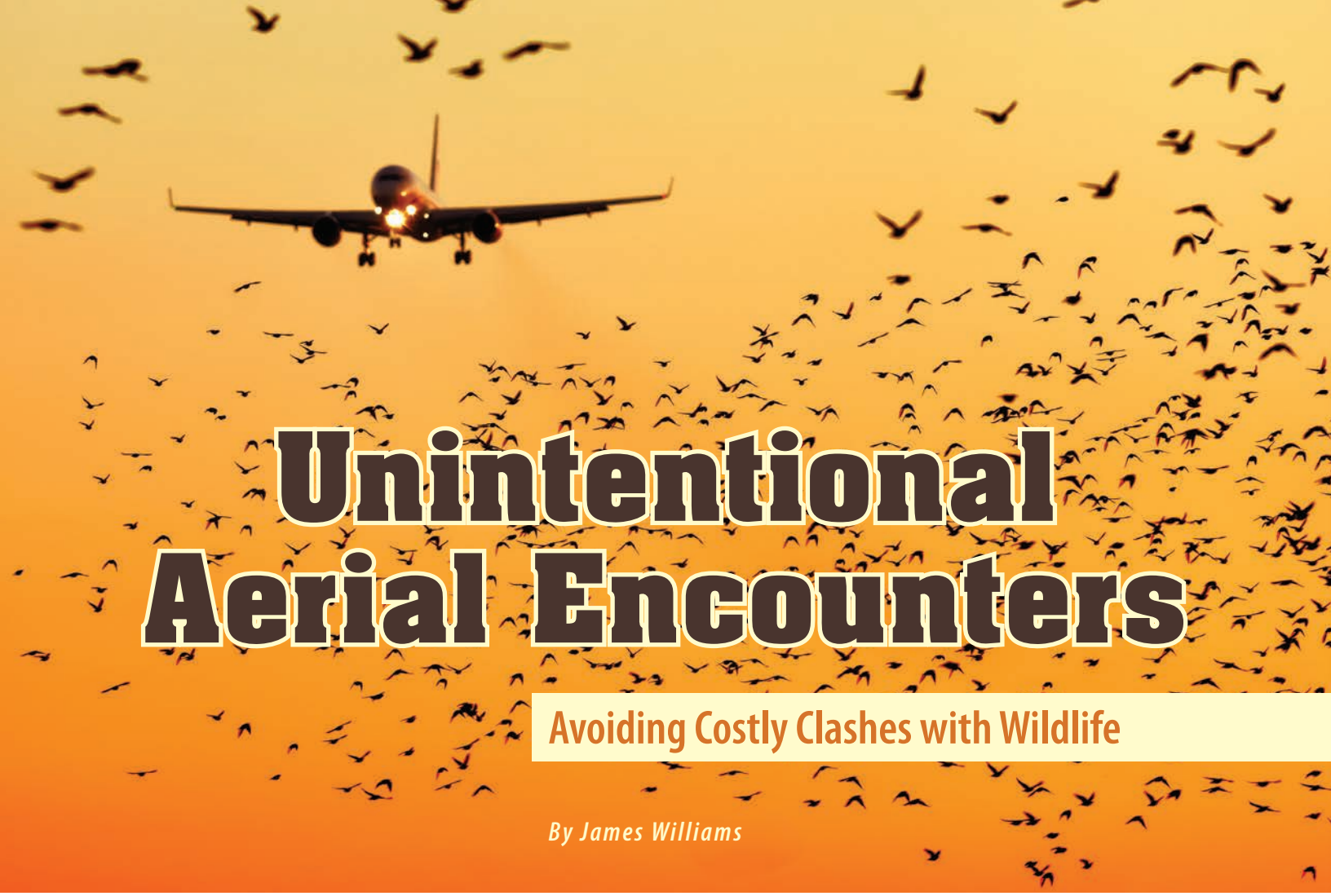
bit.ly/FAA_Forums



Unintentional Aerial Encounters

Avoiding Costly Clashes with Wildlife

By James Williams

"Always keep your eye on your opponent, and never let yourself be deceived by ruses."
— The Dicta Boelcke, Oswald Boelcke, 1916

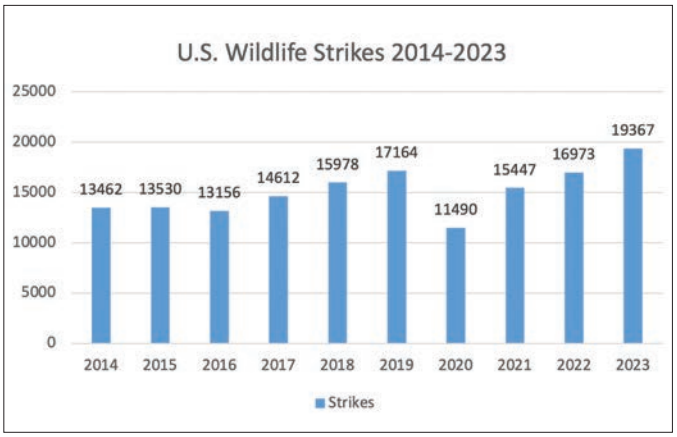
Surprises can be good when discussing a birthday party, but not when just hoping for a peaceful flight. The Dicta Boelcke cited above was a simple list of eight rules for air combat developed by Oswald Boelcke in the infancy of air combat. Boelcke, along with Max Immelmann, for whom the aerial maneuver is named, and others, formed the original cadre of fighter pilots with aircraft developed as fighters. The Dicta Boelcke which was distributed around the nascent German Fighter Corps, served as one of the earliest tactical guides and influenced virtually every air combat manual up to today.

Our dealings with wildlife in general aviation (GA) are not inherently adversarial, but potential conflict exists. Oftentimes, pilots and birds find themselves occupying the very same airspace; it is an encounter where no one truly wins. Denying the enemy's use of the sky was the first purpose of fighter aircraft — to deny the sky to bomber aircraft. More importantly, reconnaissance aircraft helped the high commands aim artillery and plan offensives. Our ambitions as GA pilots aren't so grand, but the individual consequences of these unintentional wildlife conflicts can range from deadly, to simply inconvenient. So, what do we do about it?

> **In 2023, there were 19,367 strikes logged, with 701 classified as damaging strikes.**

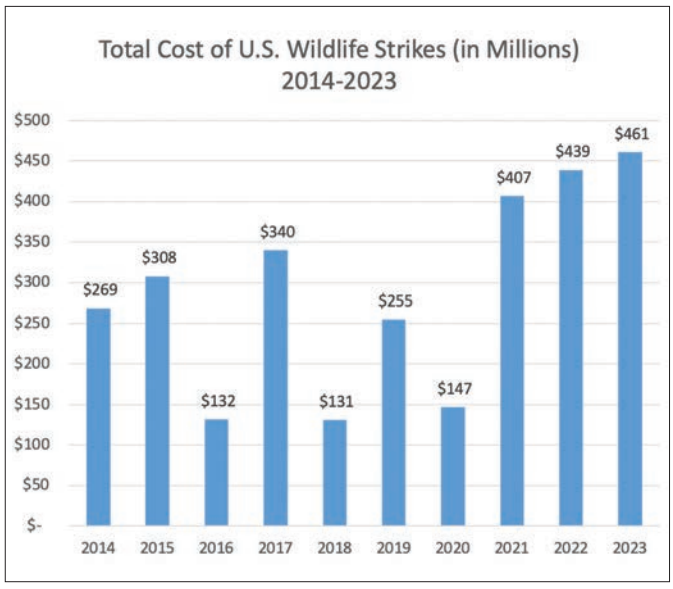
Securing Our Advantages

The first step in approaching any problem is to define the problem and make sure it actually exists and that you are not chasing ghosts. Regarding wildlife strikes, we have data to consider. In cooperation with the U.S. Department of Agriculture Wildlife Services, the FAA produces an



annual report of the Wildlife Strike Database. While there is some discussion around the completeness of that data, the question is generally around to what degree the official tally undercounts actual wildlife strikes since many minor strikes are not reported. So, we can consider the total reported strikes to be a lower boundary for the scale of the problem and the real number may be much higher. The total damage and injury count is probably closer to reality since it's more likely that someone will report a strike that results in significant damage or injury. However, even the "low impact" strikes are essential to report because they can inform mitigation strategies.

Wildlife strikes dipped in 2020 due to lower aviation activity but have been steadily rising ever since. In 2023, the last year with complete data, there were 19,367 strikes logged, with 701 classified as damaging strikes. The data for 2024 is still being vetted and analyzed and should be available in the next couple of months. Total costs for the same period had a similar trend but didn't set any records with a high of $461 million versus a high of $589 million in 1995. Total cost includes repairs, aircraft downtime, and



Avoid overflying areas like wetlands to reduce the odds of a bird strike.

other expenses. However, it is hopeful that despite a significant increase in reports, the damage bill isn't climbing in strong correlation. This may mean we are capturing a more complete picture.

Making Preparations

How can we prepare to avoid these unintended clashes? The Dicta Boelcke emphasizes working in groups, and that's an important point here because what we can do directly is limited. But together with airports, government agencies, and others, we can work to reduce the dangers. As individual pilots, we can improve our situational awareness. Many factors can increase or decrease our likelihood of a too-close encounter with the wild kind.

First, seasonal migration patterns bring extra avian visitors to, or throughout the country. During those times, extra vigilance should be applied. But this is really just ramping up some common-sense concepts that can help avoid collisions. Knowing the area surrounding airports for our flight route can help. Avoid flying over attractive environments like lakes, ponds, wetlands, water treatment facilities, and garbage dumps to the extent practical. Also, increasing altitude can reduce your chances of a bird strike. Most reported strikes — a whopping 92% — happened at 3,500 feet above ground level (AGL) or below, and 71% occurred at 500 feet AGL or below. Altitude isn't a complete savior, but it dramatically improves your odds; about 1% of strikes occur at 9,500 AGL or higher. Unfortunately, these tactics won't work as we approach the airport so we'll need to lean on our airport partners.

Fire Only at Close Range

The Dicta Boelcke emphasizes the need to engage only at close range to ensure success, and close range, in terms of the airport environment, is where our danger is greatest. It's where we're low and slow and may not have any avoidance options. Airport operators know this and work with government and research organizations to enhance their defensive and offensive wildlife weapons.

The most effective solutions involve an ounce of prevention. By working with communities and municipalities, airports seek to avoid placing wildlife attractants like the aforementioned landfills, retention ponds, wastewater treatment plants, etc., in the immediate surroundings. This can go a long way toward reducing the wildlife populations in the immediate airport area, but it isn't a complete solution. Airports also work to make their grounds less habitable for birds and other animals. While small rodents like mice aren't usually a problem for aircraft directly, they can draw potential problems in the form of predators. Habitat modification may include removing water, food sources, and nesting locations from the airport area to the extent possible.

Many factors can increase or decrease our likelihood of a too-close encounter with the wild kind.

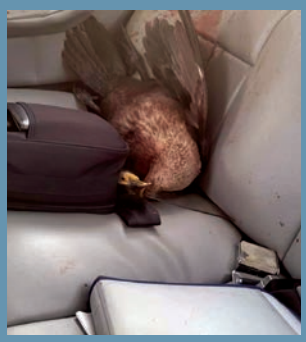
To illustrate this with a personal story, we once had neighbors living in the U.S. as embassy staff and they were unfamiliar with the local wildlife common in suburban America. They would put out "food" for the squirrels in the middle of their backyard. But with the placement in the open area surrounded by tall trees, their intended squirrel feeder quickly became a hawk feeder. Allowing attractive habitats on airport property can create similar circumstances where an inconsequential species attracts a problematic one for pilots. Good perimeter fencing is also a must. While we think of this in terms of security, it is also a barrier for animals like deer and coyotes. These strikes are far rarer than bird strikes, but the larger size of these animals can make any contact more dangerous.

While passive measures are great, they often require supplementation with more active approaches. These can vary greatly depending on each airport's budget and needs. Simple solutions include techniques like propane cannons that startle animals periodically. But like the classic scarecrow used for centuries on farms, there may be a need to reinforce this faux threat with something more tangible. This is where "dog fights" come in multiple ways. Using trained predators like dogs and raptors can make your airport environment seem less hospitable to concerning species. Using these predators to chase off wildlife can affect local populations beyond the short time the predators are active.

As you can see, it's not about a single approach to solving all your wildlife problems. The layering of these approaches delivers the best results. Just like in the early air war, it

A Personal Perspective

On Halloween a few years ago, I was with a relatively new student pilot whom I just met that afternoon. We decided we were going to do one pattern at Bay Bridge airport. We got off the departure end of Runway 29, and to the left side of my eye, I saw three large birds come across the front of the aircraft. The trailing bird, which I found out was a cormorant, made a hard right turn and immediately entered the aircraft by busting through the plexiglass windshield of the Cessna 172, hitting me in the face and making its way to the back of the aircraft.



At that point, I realized the plane was still flying, but we needed a lot of extra power because of all the drag from the smashed windshield. We made it around, and on final, I actually had to apply full power because of the drag and a 10-knot headwind. Fortunately, we had enough power and landed safely. I've been flying small airplanes for 24 years and instructing for 12 years. The majority of my 4,000 hours is instructing in smaller airplanes, and I never had a close encounter with a bird in all that time.

Typically, the birds will dive under you or just avoid you, but in this case, I think it was just such a low level, with the wetlands being so close to the end of Runway 29, that I think we were both just taking off. Now, I definitely look at the environment around an airport and incorporate a scan for wildlife prior to taking off.

Watch the FAA Wildlife video that features Chris' account at bit.ly/FAAbird.

— Chris Criswell, Manager, FAA Airport Data and Airspace Branch

(USDA Wildlife Service photo)

wasn't just the Fokker Eindecker that led to the period of German air superiority that the British would call the Fokker Scourge. In fact, French pilot Roland Garros (for whom the tennis stadium is named to show you how big a deal it was) had equipped his airplane with a crude system of metal reinforcements on the propellor that allowed him to fire through the propellor arc before the Germans developed the proper equipment. The combination of the right airplane, equipment, pilots, and tactics/doctrine created that success. But nothing lasts forever, and the Entente air forces would catch up after several months. By the end of 1916, Boelcke and Immelmann would be lost in combat. Continued evolution of tactics and equipment is vital. This is why research is so important.

Adding more approaches to wildlife management can provide airport operators with more options and greater variety. This can be useful for some species that habituate to more established tactics and might otherwise require culling. A recent example is using drones instead of predators to drive off wildlife. You can read more about that in the Drone Debrief department (page 28). But adding more tools to the toolbox isn't without complications. Using drones at an airport requires careful coordination and well-defined procedures — it's not as simple as grabbing a drone and heading out to the airport. Wildlife management is an evolving process requiring teamwork from the aviation community. The environment isn't static, and we must continue to help however we can. For most of us, that means reporting any strike we experience, even when it's inconsequential. For some, that means helping maintain a clean airport environment to avoid attracting airborne and terrestrial scavengers. For others, it's working on research that may bring the next great tool to help keep airplanes and wildlife separate. For civil pilots, the greatest air combat victory possible is to avoid it entirely.

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

LEARN MORE

FAA Wildlife Hazard Mitigation
faa.gov/airports/airport_safety/wildlife

Things That Go Bump in the Flight, *FAA Safety Briefing*, Jan/Feb 2009, Page 28
bit.ly/FAASB_JanFeb09

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RIM to the Rescue

How the FAA's Runway Incursion Mitigation Program Is Improving Aviation Safety

By Tom Hoffmann

Improving safety at the nation's airports is a top priority for the FAA. But to truly move the needle with airport surface safety, we must deal with one of its leading nemeses — runway incursions (RIs). In fiscal year 2024 alone, there were 1,757 RIs, nine of which were the more dangerous Category A and B variety where a collision was narrowly avoided or was a strong possibility.

A major contributor to RIs is complex airport geometry; areas where a pilot might get confused about how to properly proceed. You may notice many of these locations labeled as "hot spots" on airport diagrams (e.g., two runway thresholds in close proximity). The FAA is aware of these arrangements and the confusion they sometimes cause for pilots. And while there is solid outreach and guidance for these locations, the FAA needed a specific effort that could focus on complex geometry more quantitatively and develop mitigation strategies that provide more effective and long-term solutions. In 2015 the Runway Incursion Mitigation (RIM) program was established and set out to tackle this very issue. And with nearly 10 years under its belt, RIM is well on its way to being one of the FAA's most successful safety programs.

Finding the Right Angle on Safety

To get a better idea of how many and what types of geometry issues existed, the FAA's Airport Technology Research and Development Branch was tasked with conducting a study that would help inventory problematic taxiway geometry (PTG) locations. Often, the PTGs had commonality with existing hot spots. The 2013 study (bit.ly/PTGreport) created a database of all pilot deviation and vehicle/pedestrian runway incursions at 520 towered airports reported between Oct. 1, 2007, and Sept. 30, 2013, and overlaid them with the PTGs. In doing so, the report identified 19 of the most common geometry elements associated with a runway/taxiway intersection, known as geocodes. The three most problematic geometries discovered were 1) a short taxiway distance from a ramp/apron to a runway; 2) direct taxi access to runways from ramp areas; and 3) taxiways intersecting a runway at other than right angles. For a full list of these 19 geocodes, see table 1.

The research also plotted the intersection of airport design issues and RIs and helped pinpoint an initial 140 locations for further study. This set the stage for the RIM team, which began validating a subset of these initial 140 locations for inclusion into the program, giving priority to high-incident locations.

Table 1. Geocode Listing

Geo Code	Problematic Geometry Definition
0	No geometry issues
1	Y-shaped taxiways crossing a runway
2	Wrong runway events
3	Wide expanses of taxi pavements entering or along a runway
4	Convergence of numerous taxiway types entering a runway
5	High-speed exit crossing a taxiway
6	Two runway thresholds in close proximity
7	Short taxiways (stubs) between runways
8	Direct taxiing access to runways from ramp areas
9	An aligned taxiway entering runway ends
10	Nonstandard markings and/ or signage placement (e.g., overlapping holdbars, nonstandard holdbar placement, runway intersections with multiple hold lines)
11	Greater than three-node taxiway intersection
12	Taxiway connection to V-shaped runways
13	Taxiway intersects runway at other than a right angle
14	Short taxi distance from ramp/apron area to a runway
15	High-speed exits leading directly onto another runway
16	Taxiway coinciding with the intersection of two runways
17	Using a runway as a taxiway
18	Unexpected holding position marking on parallel/entrance taxiway
99	Miscellaneous: • Nonsequential taxiway designation schemes • Absence of full-length parallel taxiway • Taxiway intersection along the middle third of a runway • Runway intersection sign and marking standards

Measuring Up

The validation process for RIM locations involves several steps as well as specific criteria that must be met. First, the location must have had three or more RIs in a single calendar year, or average one or more RIs per year during the most recent 10-year stretch. In addition, some of the unique characteristics of a location are reviewed along with the narratives of the incursions. This is designed to help weed out cases that might skew the RI counts at certain locations, such as a vehicle driver who caused multiple RIs in a single incident. Other unique situations, like an air show or a short-term construction project, could indicate RIs that were caused by something other than a taxiway geometry issue.

The next step is to validate the RIM location in the field. Local FAA staff will do a final assessment of the location and verify the geometry issue still exists. Once that's complete, the location is entered into the RIM inventory.

The number of RIM locations fluctuates throughout the year, with the current total at approximately 140. "Every year we go through a re-evaluation based on the previous year's RIs and add new locations if needed," says Steve Debban, a civil engineer with the FAA's Airport Engineering Division and RIM program manager. "As we go through the year, we'll also remove some from the inventory as locations are completed." Debban adds that locations that fall off are still monitored for effectiveness and could potentially be added back to the list for additional mitigation action based on new data.

Squaring that Circle

Once a RIM location is added to the inventory, FAA personnel and local airport sponsors will coordinate to determine the most appropriate mitigation strategies for the location. "While safety is our number one priority, we prefer solutions that won't hamper the airport operations by causing major issues for air traffic control, fixed-based operators (FBOs), or local users," says Debban.

With that in mind, airports have a variety of mitigation strategies at their disposal to eliminate problematic taxiway geometries and reduce the likelihood of incursions. Some geometry changes might include reconfiguring a taxiway to intersect a runway at 90 degrees or closing a taxiway or, on rare occasions, a runway. A few non-geometry-related solutions include changes to airfield lighting, signage, and markings. Public outreach and procedure changes can also be appropriate measures in certain cases. Other factors like funding sources and environmental studies must also be considered when exploring solutions. While the mitigation process can be iterative, proper planning and stakeholder communication are essential for all parties to agree on a solution that is both effective and efficient.

> **We have a lot of people across the country doing what they can to keep pilots safe and to hardwire safety into the system — that's what RIM is all about.**

Correcting an Acute Issue

Working the RIM process to mitigation completion can be a lot of hard work in many locations, but the results have proven to be extremely worthwhile. By the end of fiscal year 2024, RIM was credited with having mitigated 100 complex airfield locations. Many locations have seen zero RIs post-mitigation, with the total recurrence reduction rate averaging an impressive 80% according to Debban. Mitigations at these locations have also eliminated hot spots from the airport diagram at 32 locations.

Figure 1: Before and after photos from a RIM project at Miami Executive Airport (TMB) that involved several extensive airfield changes. No incursions have been reported since the project was completed in May 2024.

Airports that have benefited from RIM run the gamut from small and medium-size general aviation (GA) fields to the much larger part 139 hubs. A few notable success stories have been:

- **Fairbanks International Airport (FAI)**: Runway 20L was shortened to create a more standard configuration for Taxiway Tango.
- **Terre Haute Regional Airport (HUF)**: Runway 18/36 was converted to Taxiway Foxtrot to provide safety improvements with traffic flow.
- **Miami Executive Airport (TMB)**: A more standard taxiway configuration was created for Taxiways Echo and Hotel where they intersect Runway 31.

In the latter example at TMB, FAA lead program manager Pedro Blanco and former program manager Krystal Ritchey, P.E. needed to address several PTGs that resulted in 11 incursions over a nine-year period. Blanco admits that the most challenging part of addressing a RIM location is often the validation process by the sponsor (accepting there is a problem) and the planning effort to determine alternatives with viable options. "These steps entail significant effort in educating local stakeholders and conducting a planning analysis that prioritizes safety and efficiency through airport design standards first, then risk evaluation alternatives," says Blanco.

Blanco and Ritchey worked diligently with the airport sponsor, stakeholders, and fellow FAA staff to devise a series of changes that the sponsor later approved for construction. The changes were extensive, including shortening a runway, as well as demolishing, extending, relocating, and constructing new taxiways (see before and after photos in figure 1). The hard work paid off as there have been no reported incursions in this area since the project was completed in May 2024. Additionally, other capacity-related

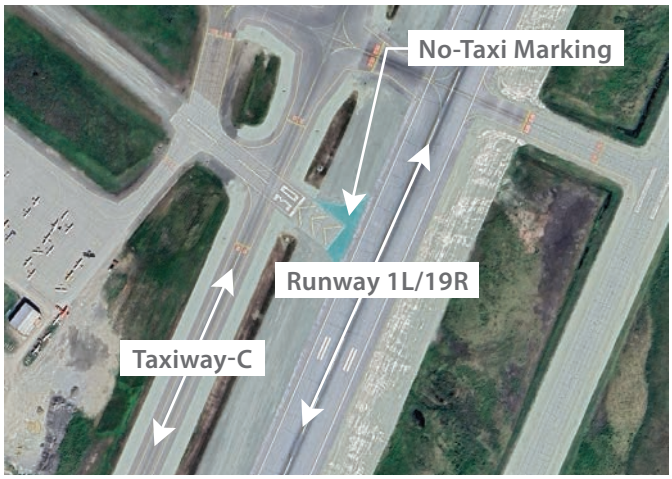
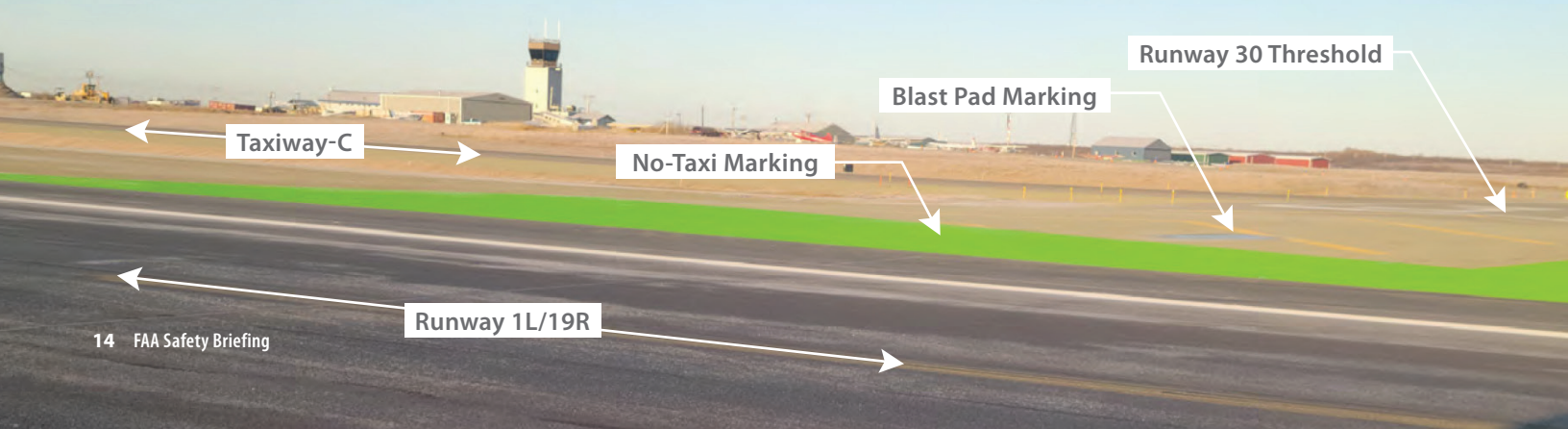


Figure 2: Aerial and side view photo (below) of a RIM project at Bethel Airport (BET) to address a confusing runway intersection.



tasks were identified during the course of the project that may provide future improvements in taxiway and runway utilization at this busy reliever airport.

Another notable example of a successful RIM project occurred at Bethel Airport (BET) in Alaska (see Fig 2). Eight runway incursions took place here between 2019 and 2021 when aircraft turned onto the crosswind Runway 12/30 from the main Runway 1L/19R as opposed to utilizing the nearby taxiway as instructed by the air traffic control tower. "A review of the incursions determined that the connecting pavement between the two runways caused pilot confusion on the ground," says Rory Bryant, P.E., an FAA airport program manager in the Alaskan Region. In 2022 the sponsor mitigated the existing conditions to increase pilot situational awareness by:

- Reducing the length of the blast pad prior to Runway 30 threshold.
- Applying green paint within the non-movement area between the outer limits of the revised blast pad and Runway 1L/19R shoulder edge.
- Installing a missing runway edge light along Runway 1L/19R to meet the advisory circular standards for runway lighting.

Upon completion of the project, no runway incursions have occurred.

By the end of fiscal year 2024, RIM was credited with having mitigated 100 complex airfield locations. Many locations have seen zero RIs post-mitigation.

Striking the Right Chord

As mentioned earlier, stakeholder feedback is critical to gaining consensus on a RIM mitigation strategy, particularly during the planning and coordination phases. Some of the information the FAA uses for RIM comes from Aviation Safety Reporting System (ASRS) reports, but most feedback is conveyed via the local Runway Safety Action Team (RSAT) meetings. RSAT meetings are held regularly at towered airports to discuss local safety concerns, review data, and develop targeted action plans to improve surface safety. (Learn more about RSATs at bit.ly/41VYSE5.) These meetings give pilots an opportunity to discuss problem areas firsthand and have a seat at the table with any proposed mitigation methods. Some RSATs are designed to specifically cover potential RIM projects, so be sure to keep an eye out and make your voice heard when able.

Debban credits having more data and feedback with being able to better validate the success of RIM mitigations. "For the first few years of the program, our success metrics used to measure pre- and post-incursions against each other, but as we collected more data as the program has matured, we now have enough data to do statistical analyses and have a better understanding of what mitigations are effective," says Debban. For example, the team is now looking at certain hot spots differently. "Before, hot spots that were very large, and maybe had more than one hold line, would be considered a single RIM location," he continues. The team now breaks a larger hot spot into separate RIM locations to better mitigate the issue and measure its effect.

Runway Incursion:

any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft.

Looking forward, Debban is focused on improving safety strategies for wrong surface events (WSEs). "It's a challenge finding mitigations for WSEs as they tend to be very site-specific solutions," says Debban. The FAA's Technical Center is currently working on a study that will assist the RIM team and the entire FAA in developing a more focused and customized strategy for these events than what exists with current airport design standards.

A Straight Line to Safety

"We have a lot of people across the country doing what they can to keep pilots safe and to hardwire safety into the system — that's what RIM is all about," states Debban. He attributes simplicity as a leading factor in the success of the program. "Our society has been reliant on technology solutions and how we can use AI to solve our way out of things. But in this case, it's about keeping it simple and building the infrastructure in the way it's supposed to be designed and for the types of aircraft using it." It's a successful geometry formula that will help reduce runway incursions now and for years to come.

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

LEARN MORE

FAA's RIM Program webpage
bit.ly/FAA_RIM

Pilot Best Practices for Airfield Safety
faa.gov/airports/runway_safety/pilots/best_practices

National Treasures

American General Aviation Airports

By Nicole Hartman

(Photos courtesy of the airport operators)

"It's not the destination, it's the journey."
— Ralph Waldo Emerson

When commercial fliers think about air travel, it's typically all about the destination. Maybe they're visiting family and friends, going on an exciting vacation, or taking a work trip to a location they've never been to before. As they say, location, location, location. But there's an important detail we all encounter before reaching our journey's destination — the airport. While most of us have our favorite (and least favorite) airports to travel through on our journey, the airport is usually but a small detail in our plans to get from here to there. However, this important part of the journey might have a little more meaning to those who pilot themselves.

General aviation airports facilitate transportation to thousands of locations not served by commercial aviation. They provide a place for people to park their aircraft and get them fueled and maintained. GA airports also provide vital support for police, emergency, and medical operations. Additionally, many flight schools are located at these airports, supplying a much-needed place to learn to fly.

These airports play a pivotal role in our society, economy, and the aviation system. So, let's learn a little about their history and take a closer look at some of these national gems.

Airport Archives

Airports have played a crucial role in enabling travel and commerce and have undergone numerous changes and developments along the way. Airports, as we know them today, did not exist until the 20th century, when aviation technology advancements made it possible for planes to fly longer distances and carry more passengers. The concept of an airport, or a designated area for the landing and takeoff of aircraft, has been around for as long as humans have been flying. However, the first recorded use of an airport was in 1909, at College Park Airport in Maryland.

College Park Airport was established by the Army Signal Corps to serve as a training location for Wilbur Wright to instruct two military officers to fly the government's first airplane. In 1926 it became a civilian airport and the location of the first scheduled commercial flight in the United States. Today it is the world's oldest continuously operated airport.

The role of the airport eventually shifted from military and governmental to commercial and civilian use. With the development of commercial aviation in the early 20th century, airports became more critical for transporting passengers and cargo. To meet the growing demand for air travel, airports began to expand and modernize, adding longer runways, more terminal buildings, and a more comprehensive range of amenities and services.

General aviation airports are public-use airports that do not have commercial service or have scheduled service with less than 2,500 passenger boardings each year. Typical operations include business flying, personal flying, industrial flying, charter activity, aerial photography, law enforcement, banner towing, skydiving, sightseeing flights, medical evacuation, organ transport, and search and rescue. These airports can also be used for agricultural purposes, such as scrub dusting or mosquito spraying. More than 90% of civil aircraft registered in the United States are

general aviation aircraft. And more than 80% of certificated pilots operate general aviation aircraft. Additionally, about 88% of the airports listed in the National Plan of Integrated Airport Systems (NPIAS) primarily support GA aircraft.

Discovering GA Destinations

There are many factors to consider when selecting a site for an airport. From an aeronautical viewpoint, the basic requirement is that it has a relatively flat area of land large enough to accommodate runways and other facilities and that this area is in a locality free from obstructions to air navigation, like mountains and tall buildings. Factoring in air transport needs, environmental considerations, and the space needed to accommodate a commercial airport makes site selection tricky. However, modest general aviation airports that only require a single runway, an apron, and a building that serves simultaneously as a terminal and administration area allow for more interesting and scenic destinations.

There are about 4,800 public-use general aviation airports in the U.S., each with its own unique characteristics and charm. Here are some of the airports that might pique your interest as actual destinations rather than just steps in the journey.

Mackinac Island Airport (MCD), Michigan

Mackinac Island Airport is a small but busy airport with a lighted 3,500-foot runway. It is open year-round for charter and private aircraft and serves tourists, workers, and island residents. No matter how you land, it's a runway on an island and the airport is the major lifeline for residents when the winter ferry boat stops operations due to ice freezing over the lake. There are no motorized vehicles allowed on the island with two exceptions — a pickup truck/ambulance for the state police and the airplanes at the airport. While on the island your only transportation options are bike, foot, or horse-drawn carriage, but there's plenty to explore with nine historic attractions and three beautiful state parks. And be sure to pick up some fudge from one of the family-run shops before your departure.

Alton Bay Seaplane Base (B18), New Hampshire

Alton Bay Seaplane Base is a public-use seaplane base in the summer and the only FAA-approved ice runway in the winter. Located in Belknap County, the airport provides direct access to Lake Winnipesaukee and the local restaurants and shops that surround the bay. The airport is run by a dedicated group of volunteers who assist pilots (seaplane, ski, and conventional) flying into the bay throughout the year and who also plow the ice runway and parallel taxiway in the winter. The ice runway, which only opens after the ice has reached the necessary 12-inch thickness to safely support aircraft, vehicles, and pedestrians, attracts several hundred pilots during its 4 to 8 week season and it can be one of the busiest airports in the state on winter weekends. This unique airport provides a great opportunity to try something new and challenging while experiencing winter flying. The FAA Safety Team has put together some information that will help you make good decisions when operating in and out of the ice runway (bit.ly/4juOolo).

There are about 4,800 public-use general aviation airports in the U.S., each with its own unique characteristics and charm.

Sedona-Oak Creek (SDX), Arizona

Often described as "America's most scenic airport," Sedona-Oak Creek is located near the Red Rocks on Tabletop Mesa 500 feet above the city. Established in 1955, it originally had no paved runway, and animals such as coyotes could be seen walking around the airstrip. Today the airport provides a gateway for travelers to enjoy hiking, camping, dining, shopping, and internationally renowned spa and resort destinations. It is not uncommon for tourists or locals driving around downtown Sedona to see an approaching airplane fly overhead and then suddenly disappear into the mountains without ever appearing to land. In addition to providing an amazing scenic overlook, the airport also supports aerial/wildland firefighting operations and medical evacuations, contributing to the overall safety and accessibility of the region.

Gilliam-McConnell Airfield (BQ1), North Carolina

Gilliam-McConnell Airfield in Carthage, N.C., is known for its onsite BBQ restaurant, so much so that its FAA identifier is cleverly named BQ1. A

dedicated following of pilots, barbeque lovers, and airplane aficionados visit this airfield to enjoy some BBQ just steps from the runway. Have to wait for a table on a busy day? No problem! Everyone in your party will likely enjoy the opportunity to watch the planes landing and taking off, especially the kids. Speaking of which, the children who visited this past holiday season were delighted when Santa and his skydiving elves flew in, an event that the restaurant hosts yearly for the community.

George T Lewis Airport (CDK), Cedar Key, Florida

With the shortest paved public runway in Florida (2,302 feet), Cedar-Key Airport features water off both ends of the runway and is a great spot to work on your short-field landings and takeoffs. Once you've safely landed you can use the local taxi service, rent a golf cart, or just take the 30-minute scenic stroll to get into town for some fresh seafood. The Cedar Key area is part of a large, protected bird sanctuary and it's common to see osprey, eagles, herons, egrets, buzzards, pelicans, and seagulls. There are even several osprey nests within the immediate area of the runway so watch out!

About 88% of the airports listed in the National Plan of Integrated Airport Systems (NPIAS) primarily support GA aircraft.

Furnace Creek Airport (DTH), California

Furnace Creek Airport in Death Valley is not only America's hottest and driest airport, it's the lowest at 210 feet below mean sea level. The first airport was built in Death Valley in 1923 by the Pacific Coast Borax Company for use by mining executives. However, the company was also building a luxury hotel in the area, so when it opened in 1927, many Hollywood elites like Clark Gable and Carole Lombard would frequent the airport. From air or ground, campsite or five-star hotel, this destination provides spectacular scenery.

Pacific City State Airport (PFC), Oregon

Pacific City State Airport has existed since the 1920s when a plane landed in a mowed cow pasture, which is still the site of the airstrip today. This popular Pacific Northwest coastal airport is valued locally for its economic, emergency, and transportation impacts. It's a short walk to restaurants, fishing on the Nestucca River, the scenic ocean, and lodging. If you'd rather not walk you can borrow one of the airport's bikes, located in a shed under a large tree on the west side of the airport (the access code is the unicom frequency code for the airport). Be it the scenery or the bikes, Pacific City State Airport has a quaint feeling, with one pilot noting he once had to wait for a cat to cross the runway before finishing taxiing to park. Note: pilots have also reported that there is usually a prevailing crosswind resulting in "fun" landings.

Big Creek Airstrip (U60), Idaho

Idaho has nearly 100 backcountry airstrips, including Big Creek, that offer access to outdoor recreation like camping, fishing, and hiking. Flying in the mountains of Idaho can be a challenging endeavor, requiring proficiency in slow flight and airspeed control, a comprehensive knowledge of your aircraft's performance, and well-prescribed personal limitations. Big Creek is known for its upslope before the runway as it is fairly steep for an airstrip. Pilots are advised that steep enclosed terrain may mask your view of traffic landing on the runway. Once safely on the ground, you can set up camp or visit the Big Creek Lodge, originally the Big Creek Hotel built in 1934. The hotel was destroyed in a fire in 2008 and the lodge was rebuilt and opened in 2018. Patrons have said it's a lovely spot to fly in for a meal with a beautiful atmosphere.

Oh, The Places GA Can Go!

While I have not had the pleasure of visiting any of these locations personally (but I want to), and I have no real authority to do so, I feel confident in declaring these airports as destinations of their own and not just a logistical detail in the steps of a journey. Today, airports are an integral part of modern life, serving as hubs for travel and commerce. But general aviation airports are so much more than that. They have long histories and will continue to support great things yet to come. They bring people and communities together and foster future generations of aviators. They make aviation and airplanes accessible to everyone. Not to mention that they've facilitated countless $100 hamburgers. GA airports, like the aviators that fly through them, are diverse and will continue to enhance journeys across the nation.

Nicole Hartman is an *FAA Safety Briefing* associate editor and technical writer-editor in the FAA's Flight Standards Service.

Enhancing Safety and Efficiency from a Distance

A Look at FAA's New Remote Tower Testbed

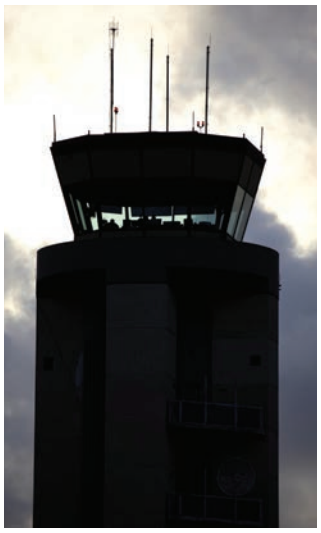
By Tom Hoffmann

In the 2018 FAA Reauthorization Bill, Congress directed the FAA to establish a Remote Tower Pilot Program to assess the feasibility of implementing Remote Tower (RT) technology into the national airspace system. An RT serves as a potentially lower-cost alternative to a traditional brick-and-mortar air traffic control tower. They may also provide traffic flow efficiencies and improved situational awareness to pilots. Critical to advancing this RT program is the FAA's newly developed Remote Tower Testbed which was scheduled to begin vendor testing in February 2025.

What is a Remote Tower?

While an air traffic control tower provides an out-the-window view of an airfield and nearby airspace for onsite controllers, a remote tower system uses sophisticated airfield cameras transmitting to state-of-the-art wraparound displays to mimic this same onsite view for controllers located in a Remote Tower Center. These centers can be sited and operated at locations off airport grounds. Of note also is that, unlike the large footprint of a traditional control tower, the RT camera structures occupy less space.

Previously, the RT Pilot Program had established two fielded test sites in the U.S., one at Leesburg Executive Airport (JYO) in Virginia, and one at Northern Colorado Regional Airport (FNL) in Colorado. FAA researchers subsequently determined that a centralized RT testbed would better meet the ultimate goals of the Pilot Program. Consequently, the FAA selected the Atlantic City International Airport (ACY) and the FAA laboratory space at the National Aerospace Research and Technology Park (NARTP) as the optimum site for a centralized remote tower testbed. Both ACY and the NARTP are campus tenants at the FAA's William J. Hughes Technical Center.



"A centralized testbed approach allows for comprehensive system evaluations in a controlled environment," says Shaquille Frederick, an engineer with the FAA's Advanced Concepts and Procedures

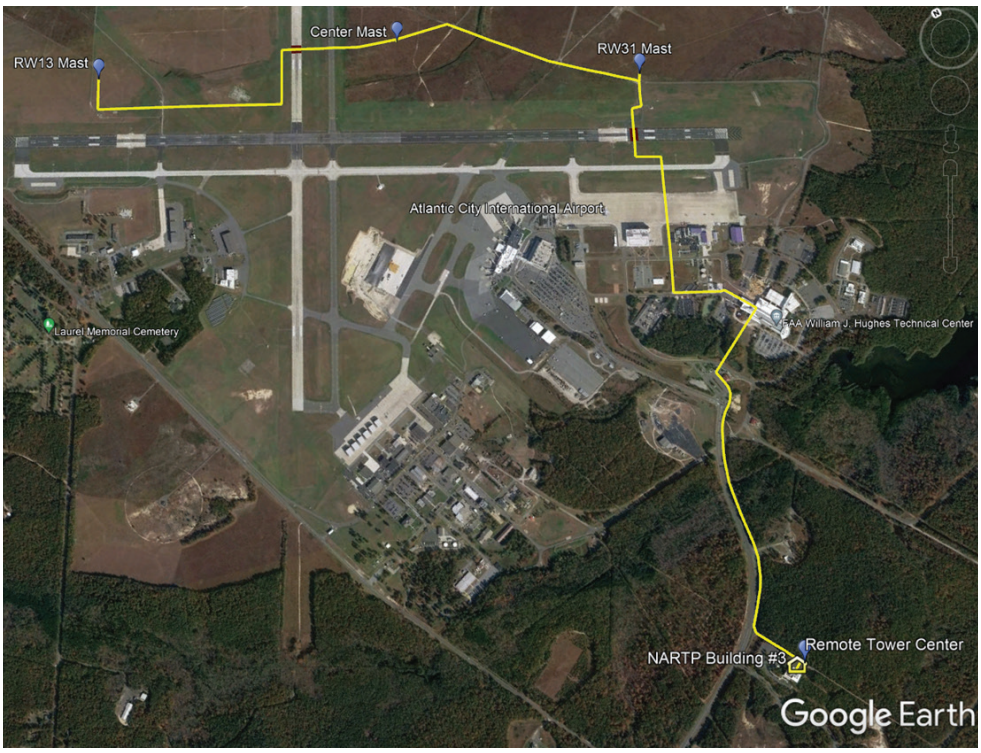
Branch. The ACY environment permits the evaluation of a variety of airport configurations and runway lengths. This reduces risk, ensures system suitability earlier in the process, and supports broader regulatory approvals compared to in-the-field testing.

Finding the Right Site

After an exhaustive location, siting, and coordination effort, three sites for the camera structures were selected at ACY: one near each Runway 13/31 threshold, and a main 360-degree camera site near the airfield's center. The Remote Tower Center is located in the NARTP's FAA lab space, more than a mile removed from the airfield. The distance between the airfield and the NARTP demonstrates the system's flexibility by siting the Remote Tower Center wherever adequate space and appropriate infrastructure is available.

In addition to building out the Remote Tower Center and installing the airfield camera masts at the RT testbed, the FAA also provided voice communications equipment (for monitoring traffic), weather displays, and furniture. Vendors are responsible for supplying their entire system, including all remote tower equipment and the operating system.

"The testbed site is also designed to accommodate system customization," adds Frederick. This includes the ability to adjust camera locations and configurations, enabling vendors to optimize their technologies for testing. Remote tower customization is permitted and encouraged provided it adheres to FAA minimum technical standards.



Google Earth map indicating the position of the Remote Tower System at ACY, including camera locations and Remote Tower Center.

FAA laboratory space at the National Aerospace Research and Technology Park was designated as the Remote Tower Center, far removed from the ACY airfield.

Vendor Contenders

Site acceptance testing of the RT testbed was successfully concluded last year, allowing vendors to begin submitting their RT system designs for approval. Vendors need to follow an intake process outlined in the advisory circular here bit.ly/3Wyeev9 (PDF). Those that pass the intake process will be evaluated at the FAA RT testbed. Functional acceptance evaluations with the first vendor were expected to begin in February 2025.

During these evaluations, data will be collected passively from the remote tower center while the ACY tower maintains control of traffic. The goal of these evaluations is to independently assess respective RT system capabilities in a robust operational environment. If a tested RT system meets FAA criteria and passes the operational evaluation, the FAA will grant the manufacturer a System Design Approval and place the system on a qualified vendor system list. The manufacturer may then sell its RT system to airports within the bounds of the design approval. The current projection for having an initial vendor-approved RT system available is 2027.

For more information on this process, including supporting guidance and process documents, go to the FAA's RT system webpage at bit.ly/FAA_RTS.

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

ADS-B

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ROLL of HONOR

Wright Brothers *Master Pilot Award*

The FAA's most prestigious award for pilots is the Wright Brothers Master Pilot Award. It is named in honor of the first U.S. pilots, the Wright brothers, to recognize 50 years of exemplary aviation flight experience, distinguished professionalism, and steadfast commitment to aviation safety. In 2024, we recognized the following Master Pilots. For more about the award, go to bit.ly/faamasterpilot.

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Robert Bursiel	AK
Lambert De Gavere	AK
Fred Dyen	AK
Craig Emery	AK
David Furber	AK
Robert Gastrock	AK
Robert Hallett	AK
Robert Hansen	AK
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Wayne Koecher	AK
Michael Koskovich	AK
Timothy La Porte	AK
Timothy McGhan	AK
Robert Mercier	AK
Joseph Palmier	AK
John Pratt	AK
Thomas Ratledge	AK
Ronald Sheardown	AK
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Ronald Allen	AL
Larry Anderson	AL
Timothy Freeman	AL
Samuel Givhan	AL
James Griffin	AL
Dennis Jones	AL
David Kraft	AL
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Robert Pauer	AL
Clay Perkins	AL
Charles Preston	AL
Kenneth Satterfield	AL
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Richard Griffin	AR
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Fred Yoder	AZ
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David Alden	CA
Kenneth Barnes	CA
Bart Baxter	CA
Bruce Bolla	CA
Robert Broaddus	CA
Michael Budd	CA
Paul Buller	CA
Emerson Byrd	CA
Robert Carona	CA
Forrest Copeland	CA
Phillip Davis	CA
Daniel DeArman	CA
Garry Dudley	CA
Allan Eckmann	CA
John Fox	CA
William Gervais	CA
Gordon Hardy	CA
Mark Humphreys	CA
Kenneth Jillson	CA
John Johnson	CA
Milo Johnson	CA
David Kahn	CA
Dan Kaljan	CA
John Kaylor	CA
John Kendrick	CA
Paul Koscheka	CA
Thomas Lagrelius	CA
Barry Lawrence	CA
Barbara London	CA
Richard McGlashan	CA
Gary Middleton	CA
Benjamin Moses	CA
Roger Nilsen	CA
William Palmer	CA
Roger Pesuit	CA
George Richards	CA
Richard Richter	CA
Larry Roessler	CA
William Rorden	CA
Delmar Schulte	CA
Larry Selznick	CA
James Simon	CA
Sheldon Simonovich	CA
Michael Stiener	CA
Russell Stocker	CA
John Swanson	CA
Dean Thomas	CA
Peter Tracy	CA
Paul Trent	CA
Eugene Tucker	CA
Robert Valette	CA
Dwight Wait	CA
Keith Wolzinger	CA
Ronald Wood	CA
John Woosley	CA
Steven Zambrano	CA
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Barry Biggs	CO
Gary Bridgestock	CO
Elliot Crawford	CO
Mark Davis	CO
Roger deLuise	CO
Hank Eng	CO
Ronald Fogleman	CO
Don Gosney	CO
Charles Hogeman	CO
James Huffman	CO
Brian Killian	CO
Jerome Limoge	CO
Rick Mason	CO
Charles Shaw	CO
Kelly Siple	CO
James Skelton	CO
Quay Snyder	CO
Monte Squires	CO
William Standerfer	CO
Charles Wilson	CO
Ronald Winsor	CO
Stephen Wood	CO
Clarence Wood	CO
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John Bermingham	CT
Paul Cleary	CT
Domenic Possemato	CT
William Psaledakis	CT
Nile Pullin	CT
Ronald Robbins	CT
Dean Spitnale	CT
———	
Robert Berry	DE
Paul Nuwer	DE
———	
Paul Adrien	FL
Stephen Alcorn	FL
Frank Arnone	FL
Gary Bagaas	FL
David Barnholtz	FL
George Batsche	FL
Thomas Bell	FL
Max Berger	FL
Robert Berryhill	FL
Irving Boswell	FL
Brian Boucher	FL
Joseph Boyter	FL
James Bradgon	FL
Blanchard Brooks	FL
George Bustillo	FL
Christopher Cameron	FL
James Carney	FL
Reginald Carnick	FL
Carter Chapman	FL
John Dougherty	FL
William Emmer	FL
Gene Ford	FL
Lawrence Gilbert	FL
William Harrelson	FL
Philip Harrison	FL
Nile Harter	FL
Michael Hayden	FL
Jack Healan	FL
Charles Hendrix	FL
James Hiatt	FL
Michael Higgins	FL
Edward Hoffman	FL
Laurence Hofmeister	FL
Wylie Johnson	FL
Patricia Jones	FL
Scott Justmann	FL
Gerald Key	FL
Anthony Kiggins	FL
David Landset	FL
David Lippman	FL
David Lippman	FL
Victor Lopez	FL
Paul Loschiavo	FL
Gary Marschheuser	FL
John May	FL
Thomas Miller	FL
Michael Mock	FL
James Mooney	FL
James Morgan	FL
Craig Munson	FL
David Murray	FL
Edwin Nass	FL
Louis Nemeth	FL
Mary O'Donnell	FL
Randall Opat	FL
John Parker	FL
Gregory Payne	FL
Nestor Pedraza	FL
Frances Pellizzari	FL
Stephen Ponder	FL
John Preiss	FL
Joseph Razzano	FL
Wilson Riggan	FL
David Robinson	FL
Stephen Rogers	FL
Edward Rosenblum	FL
Gregory Sanders	FL
Russell Sattler	FL
Vicki Sherman	FL
William Shinew	FL
Lawrence Sietsma	FL
William Slocumb	FL
William Spencer	FL
Bruce Stanley	FL
Bruce Stuart	FL
Russell Sykes	FL
Richard Turner	FL
Edward Turner	FL
Robert Weinstein	FL
Paul Wikander	FL
William Witcher	FL
Dennis Wolcott	FL
Sumner Wyall	FL
Larry Zettwoch	FL
———	
Ramond Bell	GA
Thomas Campobasso	GA

Ralph Cohen	GA
Chris Davis	GA
Herndon Edgerton	GA
Daniel Firebaugh	GA
Kenneth Gibbs	GA
Reynolds Gruber	GA
Douglas Harwell	GA
James Herrin	GA
John Hulsey	GA
AC Hutson	GA
John Jones	GA
Steven Kearney	GA
Charles Kerscher	GA
Clyde Knight	GA
William Knott	GA
Alan Kozarsky	GA
Richard McCalla	GA
Larry McIntire	GA
Loyd Montague	GA
Frank Morgan	GA
Timothy Morris	GA
William Moscow	GA
Scott Murray	GA
William Nelson	GA
Richard Ossoff	GA
Stephen O'Sullivan	GA
Gregory Reese	GA
William Rial	GA
Thomas Ritchie	GA
Donald Roberts	GA
Stephen Roundy	GA
Randall Sage	GA
Taylor Spangler	GA
Mark Stewart	GA
John Thacker	GA
James Tonelli	GA
Robert Walden	GA
Alan Wayne	GA
Carl Wischmeyer	GA
David Young	GA

Alan Sitt	HI

Paul Beck	IA
Douglas Boyd	IA
Keith Campbell	IA
Michael Connell	IA
Quinn Fairchild	IA
Roger Godfrey	IA
Phillip Gray	IA
Travis Gregory	IA
Michael Johnson	IA
Donald Lindholm	IA
Ivan McBride	IA
Robert McDowell	IA
Harold Morton	IA
Gary Ruble	IA
Cecil Schenk	IA
Hazel Sig-Hester	IA
Arnold Sperfslage	IA
Loren Steenhoek	IA
Brent Taylor	IA
Barry Taylor	IA
John Verhulst	IA

Douglas Black	ID
Luke Cesnik	ID
Alan Cohn	ID
Daniel Gase	ID
Al Goodwin	ID
Arlyn Miller	ID
Donald Mullen	ID

Stephen Colson	IL
David Corman	IL
John Edwards	IL
Gary Garrison	IL
William Giannetti	IL
Donald Gregory	IL
Lindell Hardt	IL
Mark Heidbreder	IL
James Holbrook	IL
Robert Jacobsen	IL
Patricia Knight	IL
Jerry Krajewski	IL
Gregory Landis	IL
Robert McConnell	IL
Dennis Morton	IL
James Mrkacek	IL
James Preiss	IL
Kenneth Rapier	IL
Scott Robertson	IL
Coyle Schwab	IL
Duane Sink	IL
Hugh Stoops	IL
Kenneth Swain	IL
Kenneth Wood	IL

Charles Crosby	IN
Brian Crull	IN
Sheila Dick	IN
Harry Goss	IN
Samuel Heiter	IN
David Kovach	IN
James Martin	IN
Harold Price	IN
Timothy Sparks	IN
Kermit Walsh	IN

Arthur Befort	KS
Kenneth Bixenman	KS
David Craig	KS
Jerry Farley	KS
Dennis Fisher	KS
James Floyd	KS
Malcolm French	KS
Larry Funk	KS
Allen Goodwin	KS
Bruce Granheim	KS
Ronald Huckins	KS
James McElroy	KS
David McFarlane	KS
Ulf Moe	KS
Kenneth Newell	KS
John Peterson	KS
William Randall	KS
Donald Tevis	KS
Ronnie Thompson	KS
James Uselton	KS
Kevin Garrison	KY
James Girdley	KY
William Hammond	KY
Leo Krebs	KY
Charles Rathbun	KY
Allan Sweeny	KY
Robert Yaden	KY
James Yonts	KY

Stephen Basco	LA
Hugh Hunton	LA
Donald Imhoff	LA
Robert Knight	LA
Jay Martin	LA

Stephen Basco	LA
Hugh Hunton	LA
Donald Imhoff	LA
Robert Knight	LA
Jay Martin	LA

Donald Brozenske	MA
Alexander Crosett	MA
Jean Hardy	MA
John Krug	MA
James Lortsher	MA
William McGrath	MA
Steven Perko	MA
Donald Proctor	MA
Charles Stevenson	MA
Andrew Zona	MA

Michael Allen	MD
Daniel Morris	MD

Frederick Cahn	ME
Reid Campbell	ME
Edward Clegg	ME
Randall Comber	ME
Joseph Jolda	ME
David Smith	ME

James Allen	MI
Charles Birdsley	MI
Geoffrey Bush	MI
Thomas Cable	MI
Gary Copp	MI
John Dobben	MI
William Donberg	MI
William Dumont	MI
John Freitas	MI
James Gaetzi	MI
James Jordan	MI
Daryl Koch	MI
Scott Leavitt	MI
Joseph Lemanski	MI
Thomas McDonald	MI
Leon Miller	MI
Raymond Monier	MI
William Purosky	MI
Glenn Shaw	MI
Carl Sweeney	MI
Bruce Thorburn	MI
Charles Van Thomme	MI

Thomas Bowden	MN
David Gaylor	MN
Douglas Mansfield	MN
Steven Nedrelow	MN
Marc Remhof	MN
Stephen Rufer	MN
Curtis Shoemake	MN
William Strand	MN
Neil Strawhorn	MN
Robert Streeter	MN

Maurice Bonnel	MO
Linda Brown	MO
Carl Grimmett	MO
David Jones	MO
Michael McGraw	MO
Rodney Mulvania	MO
Stanley Myers	MO
Stephen Novakovich	MO
James Prinster	MO
Daniel Schettler	MO
Michael Scott	MO
Janice Sines	MO
Gary Sines	MO
Gurden Tague	MO
Jerome Woods	MO

Michael Weelborg	MS
Yandell Wideman	MS

Larry DePute	MT
Jonathan Haynes	MT
Frank McDowell	MT
Timothy Pfahler	MT
John Quackenbush	MT
Allen Rickman	MT
William Vance	MT

Phillip Amidon	NC
Samuel Aycock	NC
Samuel Barnes	NC
Michael Beasley	NC
Michael Bluestein	NC
James Brown	NC
Jess Cline	NC
Coy Conrad	NC
Richard Corum	NC
Danny Daniels	NC
Deborah Dennis	NC
James Donahue	NC
Richard France	NC
Virgil Gottfried	NC
William Horan	NC
Cedric Hunter	NC
Stephen Jones	NC
Jerry Marstall	NC
Michael McKendry	NC
Andrew Riolo	NC
Roger Smith	NC
Craig Upton	NC
Forrest Walton	NC
Charles Wenk	NC
Ben Woolston	NC

Ernest Blair	ND
John Blair	ND
Vernon Chausse	ND
Roy Wiege	ND

John Johnson	NE

Gary Lantner	NH
Clifford Magnor	NH
Elliott Marchegiani	NH
Glenn Michael	NH
Daniel Trombly	NH

Arthur Dube	NJ
Cynthia Federici	NJ
Robert Fischer	NJ
Edward Gibson	NJ
Charles Hirsch	NJ
Harry Maroney	NJ
Michael McNeely	NJ
Lowell Miller	NJ
Thomas Murray	NJ
Edward Nagle	NJ
Arthur Penrose	NJ
Robert Ullman	NJ
James Wadkins	NJ
Ralph Woodward	NJ

Dennis Beattie	NM
Gregory Bell	NM
Charles Book	NM
Keigm Crook	NM
Robert Hicks	NM
Donald Jansen	NM
Michael King	NM
Jim Kirstine	NM
James Kirstine	NM
Daniel Marotta	NM
Michael Mattoon	NM
Thomas McConnell	NM
Emilio Verastegui	NM

Raymond Brach	NV
Michael Bradford	NV
Randall Gibson	NV
James LaMay	NV
Burl Nunnelee	NV
Joseph Rajacic	NV
Ralph Raymond	NV
Joey Scolari	NV
Keith Winikoff	NV

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Edward Barrett	NY
George Ezzo	NY
Roger Griggs	NY
Richard Middaugh	NY
Charles Parker	NY
Douglas Auld	OH
Margaret Ballou	OH
Jeffrey Borelli	OH
Richard Buergel	OH
Christopher Cordle	OH
Carl Doherty	OH
Martin Drummond	OH
Michael Emich	OH
Harry Griffing	OH
John Harris	OH
William Hollihan	OH
Richard Hunt	OH
James Jackson	OH
Herbert Johnson	OH
Daniel Kiser	OH
William Kretschmer	OH
Ronald Krickovich	OH
Phillip Martin	OH
Bruce McConkey	OH
Robert Metelko	OH
Walter Omiecinski	OH
Robert Paquette	OH
Robert Parmelee	OH
Robert Perry	OH
Thomas Rudolf	OH
Robert Rutherford	OH
Judy Stream	OH
Carl Strout	OH
James Walters	OH
Donald Wykoff	OH
Robert Castle	OK
David McClurkin	OK
Lee Romanek	OK
Alpha Singleton	OK
Roger Ward	OK
Philip Brown	OR
Jerold Dale	OR
Allen Forsyth	OR
Michael Harfst	OR
Eric Heublein	OR
Richard Heyman	OR
Stephen Knudson	OR
Harmon Lange	OR
Jeff Neiger	OR
John Pappas	OR
Debra Plymate	OR
David Schuur	OR
Larry Stevens	OR
Jerry Trimble	OR
Spencer Wessling	OR
Calvin Augustin	PA
Robert Estill	PA
Joseph George	PA
Carl Gitschier	PA
Martin Haski	PA
Mark Jacques	PA
Gary Leinberger	PA
James McClelland	PA
Charles McKinney	PA
Russell Musta	PA
Lawrence Myers	PA
Harry Neel	PA
Gary Novack	PA
Larry Pedersen	PA
John Reever	PA
Arthur Sperring	PA
Lester Stinson	PA
Peter Alfonso	RI
Marc Auger	RI
Daniel Scanlon	RI
Gail Baxter	SC
David Beam	SC
Frederic Clarke	SC
John Dickerson	SC
Robert Doppler	SC
Terry Fisher	SC
George Fleming	SC
Jerry Frank	SC
Blaine Liljenquist	SC
John Long	SC
Billy Marlowe	SC
Richard Maury	SC
Thomas McManamy	SC
George Ream	SC
William Robinson	SC
Edwin Shields	SC
Stuart Swanson	SC
James Tyner	SC
Gregory Whitt	SC
Robert Woodson	SC
Mark Adams	TN
Steven Arena	TN
John Bookas	TN
Leland Calhoun	TN
James Corkern	TN
James Hammond	TN
Philip Holt	TN
Kenneth Hooper	TN
Cynthia Hughes Berwyn	TN
Charles Johnston	TN
Lawrence Kampa	TN
Louie Lacy	TN
Lynn Larkin	TN
Michael McIver	TN
Steve Michael	TN
Nicholas Nichols	TN
James Owen	TN
Jimmie Ruckman	TN
Harry Stowers	TN
Aaron Tippin	TN
George Vezina	TN
Gary Able	TX
James Adams	TX
Charles Alworth	TX
Myron Babler	TX
J. Baker	TX
Thomas Barger	TX
Allen Benzing	TX
Bruce Bohannon	TX
Alvin Born	TX
Frank Brewer	TX
Michael Burke	TX
Horace Burnett	TX
Paul Carrington	TX
Steven Chase	TX
Thomas Clemmons	TX
Gordon Cohen	TX
Herman Cox	TX
Rodney Doss	TX
Eugene Dukes	TX
Charles Eberhart	TX
Donald Elliott	TX
David Evans	TX
John Fields	TX
Donald Fisher	TX
Robert Fulmer	TX
Aaron Garrett	TX
Al Gonsoulin	TX
Noel Graubart	TX
David Groves	TX
Thomas Grubbs	TX
William Gunn	TX
Grady Harbour	TX
John Harlan	TX
Jack Harlow	TX
William Harper	TX
Terence Henricks	TX
Stanley Hoffpauir	TX
Gordon Holiday	TX
Randall Hollenberg	TX
Walter Huber	TX
Richard Hyslop	TX
John Iisager	TX
William Irwin	TX
Robert James	TX
Rand Johnson	TX
Joseph Kapocsi	TX
Winston Kenworthy	TX
Edward Kimbrough	TX
Stephen Kinzer	TX
Robert Landa	TX
Brenda Landing	TX
Charles Larson	TX
Mary Latimer	TX
Mark Latimer	TX
Richard Law	TX
Zane Lemon	TX
Donnie Lewellen	TX
Rodney Lewin	TX
Don Locker	TX
Donald Loucks	TX
Boyd Maddox	TX
Don Magnuson	TX
Arliss Marshall	TX
Ronald Marshall	TX
William Martin	TX
Evan Miller	TX
Floyd Mull	TX
Steve Nielsen	TX
Bobby Noack	TX
Aubrey Ogden	TX
Jonathan Palmer	TX
Howard Patton	TX
Richard Piasecki	TX
William Porter	TX
Robert Reece	TX
wwwwwFrank Robertson	TX
Scott Rozzell	TX
Dean Rush	TX
Antone Sacker	TX
Allen Salibo	TX
David Schlener	TX
Donald Senter	TX
Michael Sigman	TX
Randy Smith	TX
Warren Smith	TX
F. Starbuck	TX
James Sterling	TX
Keith Stout	TX
Daniel Summerall	TX
Robert Swacker	TX
Stephen Swearengin	TX
Garry Tarpley	TX
Karl Thomas	TX
Craig Thorson	TX
Lauren Trottier	TX
Thomas Tweeddale	TX
Edward Vesely	TX
Oscar Vickery	TX
Joseph Weaver	TX
Noel Welsh	TX
David White	TX
Dianne Wieman	TX
Robert Wier	TX
Richard Wilson	TX
Paul Yust	TX
James Breeze	UT
John Cavanagh	UT
Dana Floyd	UT
Clark Hall	UT
Mario Jimenez	UT
Thomas Moulton	UT
Nicholas Soter	UT
Eric Wickfield	UT
Craig Bond	VA
Brooks Coburn	VA
George Flathers	VA
James Hyde	VA
Thomas Jones	VA
William Keller	VA
Andrew Klarmann	VA
Fracis Parks	VA
Greg Parrott	VA
Michail Sheen	VA
Louis Simmons	VA
Robert Vos	VA
Graham Simpson	VI
David Bahnson	VT
Lisa Miller	VT
Danforth Newcomb	VT
Oistein Andresen	WA
Rex Bloesser	WA
Robert Braunstein	WA
Jeffrey Brewer Escue	WA
Scott Crosier	WA
Lee Donham	WA
Thomas Flagg	WA
John Hallinen	WA
Eric Hansen	WA
Eugene Hill	WA
Robert Jamieson	WA
Joseph Leadingham	WA
William Lockwood	WA
Gregory Novotny	WA
Terence O'Brien	WA
Claudia Simpson-Jones	WA
David Smith	WA
William Stoelt	WA
Steven Theno	WA
David Utley	WA
Kenneth Vanwinkle	WA
Thomas Watkins	WA
Charles Wiest	WA
Pete Wylie	WA
Jonathan Bales	WI
Carl Bumpers	WI
George Frederick	WI
Michael Jones	WI
James Ketter	WI
John Lotzer	WI
Richard Morey	WI
Gary Otto	WI
Alan Ruud	WI
Dale Wahl	WI
John Watschke	WI
Joseph Weirich	WI
Rexford White	WI
Donald Newell	WV
John Earnshaw	WY
Michael Fielder	WY
Earl Gibbs	WY
Bruce Hanson	WY

ROLL of HONOR 2024

Charles Taylor *Master Mechanic Award*

The FAA's most prestigious award for aircraft mechanics is the Charles Taylor Master Mechanic Award. It is named in honor of the first aviation mechanic in powered flight, Charles Taylor, to recognize 50 years of exemplary aviation maintenance experience, distinguished professionalism, and steadfast commitment to aviation safety. In 2024, we recognized the following Master Mechanics. For more about the award, go to bit.ly/faamastermechanic.

Timothy La Porte	AK
Scott Norman	AK
Thomas Ratledge	AK
Ronald Bean	AL
Kenneth Gilliland	AL
Herbert Luoma	AL
David Rothenanger	AL
John Trotter	AL
Jerald Burns	AR
William Paul	AR
Rex Poe	AR
Dickey Robertson	AR
John Tylenda	AR
Ronald DeCandia	AZ
Joseph Goetz	AZ
Leonard Harkness	AZ
Mark Kirsch	AZ
Bradley Power	AZ
Roger Sloan	AZ
David Alvarez	CA
Robert Broaddus	CA
John Fox	CA
Carl Gerker	CA
Edward Gregory	CA
Michael Kirkley	CA
Paul Larsen	CA
Donald Mackie	CA
Richard McGlashan	CA
John Prunty	CA
Paul Qugana	CA
Daniel Scanlon	CA
William Seubert	CA
Ray Smith	CA
David Soto	CA
Michael Stiener	CA
Raja Tarazi	CA
Dean Thomas	CA
David Whitman	CA
Michael Wilson	CA
Brian Ashton	CO
Gordon Roy	CO
Ben Walden	CO
Steven Anderson	CT
Raymond Segarra	CT
Paul Nuwer	DE
Stanley Peters	DE
Michael Terre	DE
Robert Berrios	FL
Ernst Biamby	FL
Donald Bower	FL
Gary Clemmer	FL
Nelson Gonzalez	FL
Nile Harter	FL
Randall Hartman	FL
Richard Hicken	FL
Jamie Hill	FL
Kenneth Hobbs	FL
Anthony Imparato	FL
Steven Johnson	FL
Terry Jones	FL
Robert Kaba	FL
Edward Loop	FL
George Mella	FL
John Parker	FL
Nestor Pedraza	FL
John Preiss	FL
Robert Sweatman	FL
John Trester	FL
James Trudeau	FL
Paul Wikander	FL
Ronald Corley	GA
Raymond Crossley	GA
Stephen DaCosta	GA
Richard Minton	GA
Loyd Montague	GA
Leland Styles	GA
Marion Wiley	GA
Michael Daniel	HI
Dale Mitton	HI
Anthony Tomoso	HI
Steven Butler	IA
Paul Cawthorn	IA
Phillip Conn	IA
Michael Johnson	IA
Ivan McBride	IA
Phil Smith	IA
Barry Taylor	IA
Ernest Keener	ID
Robert Beckett	IL
Kent McMakin	IL
Bruce Rebechini	IL
Gary Schandl	IL
Howard Siedlecki	IL
Gerald Calvert	IN
Kenneth Justice	IN
Arthur Befort	KS
Dennis Fisher	KS
Mitchel Hatmaker	KS
James McElroy	KS
David McFarlane	KS
William Randall	KS
James Girdley	KY
William Hammond	KY
Walter Peery	KY
Joseph Dimas	LA
Paul Baran	MA
Robert Brigham	MA
Donald Pare	MA
Harry Schlegelmilch	MA
William Moore	MD
Thomas Young	MD
Thomas Carr	MI
Dennis Peterson	MI
Charles Van Thomme	MI
Maurice Bonnel	MO
David Jones	MO
Rodney Mulvania	MO
James Trigg	MS
Charles Wright	MS
Jonathen Haynes	MT
Allen Rickman	MT
Steven Vold	MT
Samuel Barnes	NC
Richard Corum	NC
Richard France	NC
Virgil Gottfried	NC
Charles Hartzell	NC
Gregory Parsons	NC
Peter Woods	NC
John Ahrens	NE
Timothy Garity	NE
James Ando	NJ
Edward Gibson	NJ
William Knowles	NJ
Steven Acor	NV
Jim Nunnelee	NV
Paul Abdis	NY
Michael Bonventre	NY
Stephen Brendler	NY
Thomas Ciura	NY
Joseph DiPalmo	NY
Thomas Ege	NY
Paul Faltyn	NY
John Gill	NY
James Irvin	NY
James Irwin	NY
Clifford Johnson	NY
Walter Lechowski	NY
Thomas Schneck	NY
Robert Smith	NY
Michael Torregrossa	NY
Norman Urbaniak	NY
Staniland Wochner	NY
Robert Craig	OH
Roger Deere	OH
Norbert Drees	OH
Michael Dunkley	OH
Stanley Faske	OH
Christopher Hopkins	OH
Charles McConkey	OH
James Miller	OH
Eugene Sprang	OH
Rollin Tomlin	OH
Michael Van Auken	OH
Scott Van Vranken	OH
Gary Welch	OH
Phillip Giedrys	OK
John Jackson	OK
Kenneth Kinsler	OK
Gary Thompson	OK
Kenneth Thompson	OK
Thomas Dalquist	OR
Howard Frank	OR
Frederick Benz	PA
Terrance Formanik	PA
Karl George	PA
Thomas Riemer	PA
Frederick Wright	PA
Cornelius Baker	SC
John Dickerson	SC
John Heverling	SC
Harold Johnson	TN
Michael Smith	TN
Randall Bass	TX
Louis Cuevas	TX
Rodney Doss	TX
Thomas Gates	TX
Gary Geis	TX
Perry Hodgson	TX
Robert Keefer	TX
Mark Latimer	TX
Mary Latimer	TX
Donnie Lewellen	TX
Don Locker	TX
Boyd Maddox	TX
Michael Peterson	TX
Robert Reece	TX
James Williams	TX
Edwin Wunderlin	TX
Joseph Foster	VA
Fredrick Grill	VA
David Bleasdell	WA
Earl Poland	WA
James Richardson	WA
Thomas Cunningham	WI
Richard Rupslauskas	WI
George Snamiske	WI
Charles Styles	WI
Bruce Hanson	WY

UNDERSTANDING THE STC PROCESS AND WHY IT MATTERS TO PILOTS AND AIRCRAFT OWNERS (Part 1 of 3)

This is the first in a three-part series explaining how the next generation of unleaded aviation fuels may be authorized for use in specific engines and aircraft. This installment examines the type certificate (TC) and supplemental type certificate (STC) processes, which enable eligible aircraft and engines to operate using qualified unleaded aviation gasoline (avgas) under the FAA's traditional certification procedures. The second part will review the Fleet Authorization process, developed through the Piston Aviation Fuels Initiative (PAFI), which allows eligible aircraft and engines to operate safely using unleaded avgas. The final installment will discuss the importance of industry consensus standards, such as those from ASTM International, in ensuring the safe, consistent production, distribution, and use of aviation fuels. For more information on these topics, visit flyEAGLE.org.

Q: Why should pilots and aircraft owners be invested in the unleaded avgas approval process?

Pilots and aircraft owners play a critical role in the transition to unleaded fuels. Staying informed ensures they can adopt new fuels safely and efficiently while maintaining compliance with the required approvals or authorizations.

While the approval processes may seem technical, they directly affect daily operations, safety, maintenance, and long-term aircraft reliability. By understanding these impacts, owners can confidently navigate the transition and make informed decisions for their aircraft and missions.

Q: What is an STC, and how is it used to authorize unleaded aviation fuel for specific aircraft and engines?

An STC is an FAA-issued approval that authorizes the use of specific fuel, fluids, parts, and/or equipment in a designated list of aircraft and engines. It is one of two pathways fuel developers can use to bring their products to market.

Through the STC process, fuel developers are solely responsible for testing the compatibility, safety, and performance of a new fuel with specific aircraft and engine models. Once the FAA reviews and approves the data, an STC is issued, authorizing the use of the fuel. The STC database (bit.ly/STCdatabase) can be searched to identify aircraft models approved for a specific modification or installation.

The applicant can sell the STC to customers, enabling them to modify their individual aircraft for the use of the fuel specified in the STC. This modification typically includes updating the fuel placard and may require additional adjustments depending on the STC. For aircraft with a standard airworthiness certificate, the alteration must be performed by a certificated mechanic or authorized entity in compliance with the STC.

STC data is considered proprietary to the applicant. Therefore, the FAA does not provide STC data directly to owners of aircraft with special, restricted, or experimental airworthiness certificates. However, the applicant may choose to share the necessary information with interested parties. Owners of special light sport aircraft (SLSA) can implement the authorization after the SLSA manufacturer issues approval. Experimental aircraft owners must individually determine appropriate unleaded fuels, either by conducting their own compatibility assessments or consulting the STC holder for relevant data.

Q: What is the Approved Model List (AML)?

The AML is a list of aircraft models approved for a specific modification or installation, typically under an STC. Aircraft owners must take specific actions to implement changes to their aircraft, typically through service bulletins or the installation of an STC. For aircraft with a standard airworthiness certificate, the alteration must be performed by a certificated mechanic or authorized entity in compliance with the TC/STC.

Q: How does the STC process differ from the FAA fleet authorization process?

Under the FAA's traditional STC/AML process, an applicant is responsible for demonstrating that the aircraft and engines meet all applicable regulations and minimum standards under the normal certification process when using the new unleaded fuel. The FAA reviews the compliance data provided by the applicant and, upon approval, issues an STC.

Under PAFI, the FAA uses a combination of testing and analysis methods developed in collaboration with industry to determine if an unleaded avgas qualifies as a replacement for approved leaded avgas. The data obtained through testing supports the development of the ASTM production specification for the candidate fuel.

The FAA will identify the makes and models of type-certificated and non-type-certificated piston aircraft and engines that can safely operate with the qualified unleaded avgas, compiling them in the Eligible Fleet Authorization Summary Report (EFASR), which will also include experimental aircraft.

Additionally, the FAA will issue a Special Airworthiness Information Bulletin (SAIB) and provide detailed instructions to implement the necessary alterations for using the fuel. The candidate fuel is then qualified as a replacement fuel under the fleet authorization process for the eligible portion of the fleet.

Q: Why is it important for pilots and aircraft owners to read and understand an unleaded fuel STC?

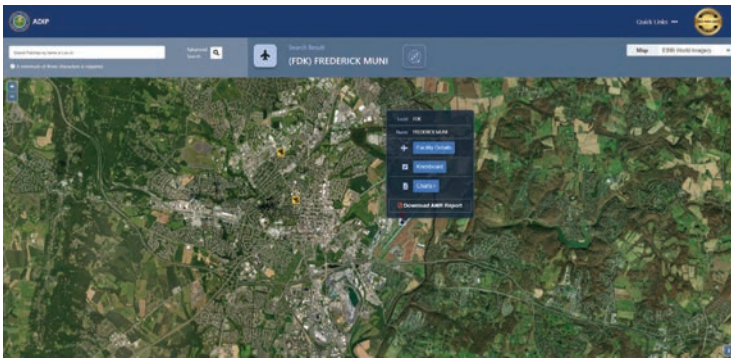
It's crucial for pilots and aircraft owners to read and fully understand an STC, as it outlines the specific modifications, limitations, and operational requirements necessary to safely integrate the approved fuel or equipment into their aircraft. Strict adherence to the STC ensures compliance with FAA regulations while maintaining the safety, reliability, and airworthiness of the aircraft. Currently, two fuels, G100UL from General Aviation Modifications, Inc., (GAMI) and Swift Fuels' 100R have approved AML-STCs.

By understanding both pathways, pilots and owners can better plan for their aircraft's transition to unleaded fuels. Whether through individual STCs or fleet-wide approvals, these processes are designed to ensure safety and reliability.

In the next issue, part 2 of this three-part series will delve into the FAA Fleet Authorization process and its benefits for the general aviation community.

JAMES WILLIAMS

A NEW ERA FOR AIRPORT DATA



Change is hard. Change in critical systems is incredibly hard. Change in a critical system used by multiple user groups, well, you can probably guess how that works. But change is necessary and can also be empowering. The Airport Data Information Portal (ADIP) was a massive overhaul of a bedrock system that underpins many of the commercial applications and services we as pilots rely upon to operate in the National Airspace System (NAS).

"The ADIP system has enabled airport managers and airport owners to transition from a previous legacy paper-based process for updating airport data to an easily accessible system that allows airport proponents the ability to spatially visualize and manage aeronautical information related to their airport," explains Chris Criswell, the manager of the Airport Data and Airspace Branch of the FAA's Office of Airports and also a certificated flight instructor. ADIP is a revolution for both the people who enter data into the system and those who pull from it. For example, airport operators may submit changes to runway lighting systems, operating hours, etc.

Through the Portal

"ADIP allows all users the ability to easily access and query FAA airport aeronautical information for over 20,000 landing areas within the NAS and visualize those locations using satellite imagery," Criswell said. Providing access to satellite or aerial imagery is a great tool for pilot's situational awareness at airports that they may be operating at for the first time. The ADIP system not only provides essential data to pilots to make informed aeronautical decisions, but it also allows airport owners/operators to easily manage their data so that pilots are assured they have access to the most current information."

Rapid access to data changes is key to higher quality information. The FAA ADIP team ensures the quality of the data entered into ADIP by vetting over 30,000 registered users and incorporating a verification/validation process along the entire data update process. "FAA's ADIP system has more than 29,000 vetted, registered users who have designated permissions to manage airport data for over 20,000 landing areas in the NAS," Criswell continued. "Beyond ADIP's publicly accessible user interface, it is home to nine interconnected applications.

"These tools give airport owners/operators transparency to their airport aeronautical information and the ability to visualize, analyze, and manage their data," says Criswell. "This ensures the most current and accurate data can be provided to the flying public to support data-driven decision making."

You may be wondering why this matters to you. Making it easier and faster for airports or their representatives to update, modify, or correct information means your tools are better for navigation and access. That data is what underlies most flight planning tools, GPS systems, Electronic Flight Bags (EFB), etc. Better data quality means a lower likelihood of system errors. Also, by moving to an electronic submission system with ADIP, the hope is to make it easier for smaller operators to update information.

One of the challenges of increasing access to the system is ensuring quality remains high. That is why users are vetted before access is granted. Processes and standards developed by the FAA to maintain the quality of submissions in the new electronic system back this up.

How You Use It

Pilots do not even need to create accounts. Simply navigate to the site and search for any airport or other landing sites of interest, like heliports, for example. From there you can see the airport with high-quality satellite imagery and pull up anything from basic info to approaches or charts. Another nice touch is as you zoom out you can see other nearby facilities, which can be helpful for planning purposes. Whether it's looking for alternate airports or alerting yourself to possible helicopter traffic to a local hospital in the vicinity of your destination, ADIP provides the kind of integrated experience that you previously would have had to go to the private sector for. ADIP is the type of program that people will come to appreciate more. Visit adip.faa.gov and give it a try.

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

LEARN MORE

Airport Data and Information Portal
adip.faa.gov

REBEKAH WATERS

DRONE PATROL

You can often find me in the woods hiking with my dog. There's nothing I love more than spotting wildlife along the way. We often see Canada geese, chipmunks, squirrels, and the occasional beaver. While it's fun to spot these creatures in the wild, it's not so fun to spot them around an airport. Wildlife can pose serious risks to aviation. Using drones as part of an airport wildlife management program can help mitigate these risks.

Many airports have wildlife management programs to help reduce the risk of bird strikes and collisions with other wildlife. These programs employ techniques like habitat management, population control, active deterrents, and monitoring. You can read more about these programs in this issue. Adding drones to these programs could help enhance them. In fact, there can be key advantages to using drones for wildlife management, especially during hazard assessments. Aerial data collection is easier, safer, and more economical when drones are part of a wildlife management program. Drones can inspect areas that are usually difficult to access and cover ground more quickly, making it easier to collect information about wildlife and their habitats.

> AERIAL DATA COLLECTION IS EASIER, SAFER, AND MORE ECONOMICAL WHEN DRONES ARE PART OF A WILDLIFE MANAGEMENT PROGRAM.

If you are involved in an airport wildlife program, adding a drone to the mix could be a useful tool, but there are a few things to consider. First, make sure you are ready to comply with all safety regulations (both local and FAA) including part 107 (bit.ly/3YSQbaA). The FAA has information about on-airport applications for drones, including a letter to airport sponsors about using drones to disperse wildlife. This letter goes over important information to consider including the need to contact regional U.S. Fish and Wildlife permitting offices. As this letter points out, it is important to understand all regulations, in addition to FAA regulations, surrounding wildlife management, including any permits that are required. More information about on-airport operations can be found at bit.ly/DroneOnAirportOps.

Next, decide how you will use a drone to enhance your airport's wildlife management program. Develop a concept of operations and check with your airport manager and ATC to see if they are open to the idea of using drones in wildlife management. Work with them to ensure your program adds value to the airport. Once you've successfully added a drone to your wildlife program, it is important that pilots who use your airport monitor ATIS and be on the lookout for NOTAMs regarding any airport wildlife drone activity.

Wildlife management is an important part of airport safety. When adding a drone to your airport's wildlife management program, follow the steps above to ensure you reap the benefits.

Rebekah Waters is an *FAA Safety Briefing* associate editor. She is a technical writer-editor in the FAA's Flight Standards Service.

LEARN MORE

'Game-Changer': Drones Can Reduce Wildlife Strikes at Airports, According to Award-Winning Eagle Research," *Embry-Riddle Aeronautical University News*:
bit.ly/4aFGLVA

FAA Drone Zone
faadronezone.faa.gov

REBEKAH WATERS

LET'S TALK TIRES

It's that time of year again. Time to get aircraft out of storage and ready for flight, or inspected for any wear and tear that winter weather may have caused. All aspects of aircraft inspection and maintenance are important, but there is one component that is often overlooked with varying consequences as a result: aircraft tires. Aircraft tires operate at the most extreme conditions for load and speed. They are extremely well-engineered and tested, and when operated and maintained properly, are relatively dependable. Proper tire maintenance ensures not only the longest tire life but more importantly contributes to overall aircraft safety.

Inflation

Let's start with inflation. Making sure that tires are always properly inflated is the most important service you can perform on them. Both underinflation and overinflation can be harmful to tires and dangerous for the aircraft and those in it. Underinflated tires can lead to reduced braking performance and valve stem damage or cause the tire to creep or slip on the wheel or the sidewalls to be crushed. Underinflation can cause excessive shoulder wear, ply separation, and casing degradation that could lead to a blowout. Overinflation can make tires susceptible to damage and reduce traction and ride quality. Tires could explode or burst and lead to serious or even fatal injuries in cases of extreme overinflation.

How often you check tire pressure depends on how often the aircraft flies. For aircraft that fly one or more flights a day, check pressure daily. If an aircraft flies less than once a day, check tire pressure before every flight. When tires are newly installed on an aircraft it is important to check pressure every day for several days until the tires start to maintain proper pressure. This is because the initial inflation can stretch the materials that make up the internal structure of the tires. Depending on the type of tires, this growth can be as much as 6% to 10%. The corresponding drop in pressure is equal to the tire growth.

Inspection

Whether tires were used or stored this past winter, they all need a good inspection. It is important to use a systematic approach to make sure all areas of the tire are properly inspected. Tires should always be inspected before each flight. Look for cracks, wear, bulges, foreign objects, and if any cords are showing. If cords are exposed or damaged, remove the tire from service. Check the tread area for cuts and other damage, as well as the depth of the tread. Look for uneven wearing and inspect both sidewalls for evidence of weather or ozone damage, radial cracks, cuts, or gouges.

Tires may need to be inspected after a flight due to a hard landing or heavy braking action. When this is the case, remember that tire pressure should be measured at ambient temperature, as a hot tire will expand. This can cause temporary higher-pressure readings and can also make it dangerous to bleed air.

Storage

How you store tires can also impact safety. Always store tires vertically on the tread if possible. Stacking them on their sides can cause deformations and make the mount process difficult. If vertical storage is not possible, stacking is permissible only if care is used to prevent distortion of the tires on the bottom of the stack, and they should not be stacked for more than six months. How high you can safely stack them depends on their size. Always store tires in a dry, dark environment that is free from sunlight and ozone-producing appliances or lights like welding equipment or fluorescent lights. When moving tires in or out of storage, always roll them, or use mechanical lifting tools rather than carrying them to protect yourself from injury.

Aircraft tires, unlike car tires, take a lot of stress over short amounts of time. While they are only used a small percentage of the time during a typical flight, tire-related incidents have the potential to be deadly since high stress can lead to failures at critical moments like touchdown or roll out. Help reduce the risk of tire-related incidents by making sure tires are properly stored, inspected, and inflated.

Rebekah Waters is an *FAA Safety Briefing* associate editor. She is a technical writer-editor in the FAA's Flight Standards Service.

LEARN MORE

"Give Me a Brake ... And Maybe a Tire and a Strut Too," *FAA Safety Briefing*, Jan/Feb 2020
adobe.ly/36pluw9

AC 20-97B, *Aircraft Tire Maintenance and Operational Practices*
bit.ly/3X3M6jZ

FAA AMT Airframe Handbook, Chapter 13
bit.ly/43H2Ygx

A LOOK AT HELIPORT DESIGN

Heliports are valuable infrastructure that allow vertical lift aircraft to access areas typically inaccessible to non-vertical takeoff and landing (VTOL) aircraft. These are vital in helicopter air ambulance services, urban air mobility, and other specialized operations. Prior to using a heliport, it is important for the pilot to be familiar with and understand the design of their landing zone. Some questions a pilot should be asking themselves include: *am I allowed to land here, is the area suitable for my aircraft, and if at night, is the heliport intended for night operations?* The most comprehensive FAA resource regarding heliports is Advisory Circular 150/5390-2D, which can help in finding these answers. While the FAA does not certify heliports, this AC provides comprehensive guidance for safe and efficient airspace use.

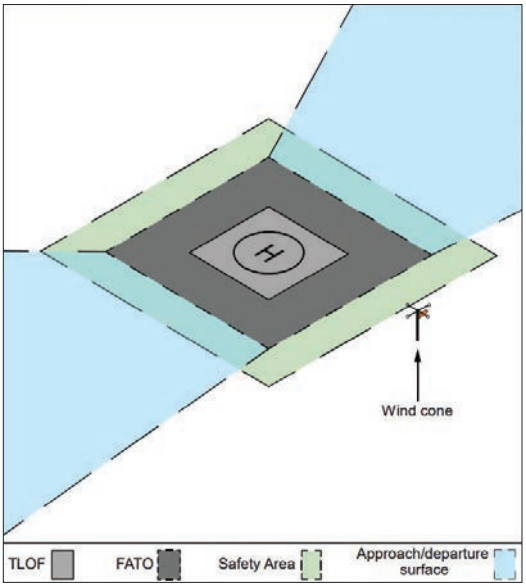
There are three key features for each heliport: touchdown and liftoff area (TLOF), final approach and takeoff area (FATO), and safety area.

1. The **TLOF** is a load-bearing area on which the helicopter lands and takes off, normally centered within the FATO. The TLOF can be identified by a painted "H" in the center, which will be surrounded by a yellow circle. The yellow circle is the touchdown/positioning circle (TDPC), which provides guidance to allow a pilot to touch down in a specific position. To properly use the TDPC, the pilot's seat is intended to be over the marking and the undercarriage will be inside the load-bearing area. The dimensions and design of a TLOF vary based on the location and use of the heliport, with requirements differing from general aviation, transport, and hospital. To know if an aircraft is suitable for the heliport, the pilot needs to reference the TLOF size/weight limitation box. This box is at least five square feet divided into two sections, upper and lower. The upper section indicates a weight limit in thousands of pounds (if there is a diagonal line in lieu of a number, there is no weight limit), and the lower section indicates the controlling dimension of the largest helicopter for which it is designed in feet.
2. A heliport has at least one **FATO**, a defined area over which the pilot completes the final phase of the approach to a hover or a landing and from which the pilot initiates takeoff. Not all FATOs are load bearing, rather they provide guidance and clearance for the helicopter to reach the load bearing TLOF. For those that are load bearing and equipped for night operations, they will typically have green perimeter lights.
3. The **safety area** is a defined area on a heliport surrounding the FATO intended to reduce the risk of damage to helicopters accidentally deviating from the intended flight path and diverging from the FATO.

All three areas must be free of vertical obstructions to provide clear space for safe operations. The design standards provided also assume that there will never be more than one helicopter within the safety area and FATO at a time.

With the evolving industry, the emergence of vertiports is integrating into heliports. On Dec. 27, 2024, the FAA issued Engineering Brief (EB) No. 105A, *Vertiport Design*, to supplement AC 150/5390-2D. This EB clarifies that vertiports are a subclass of heliports and their design takes into consideration aircraft with three or more propulsors, compared to the typical heliport design which was established for single, tandem, or dual-rotor aircraft. They will be identifiable by the letters "VTL" on the TLOF, while still having the traditional "H" in the center.

By understanding the design features and operational requirements outlined in AC 150/5390-2D and EB150A, pilots should be able to confidently utilize heliports in their intended manner.



Basic features of a general aviation heliport.

Leah Murphy is a dual-rated flight instructor and helicopter air ambulance pilot. She is also an FAA Safety Team Representative in Cleveland, Ohio.

LEARN MORE

AC 150/5390-2D, *Heliport Design*
bit.ly/AC150-5390-2D

Engineering Brief 105A, *Vertiport Design*
bit.ly/EB_Vertiports

Check out our GA Safety Facebook page at **Facebook.com/groups/GASafety.**

If you're not a member, we encourage you to join the group of nearly 17,000 participants in the GA community who share safety principles and best practices, participate in positive and safe engagement with the FAA Safety Team (FAASTeam), and post relevant GA content that makes the National Airspace System safer.

The Tower Laughed and Said That Happens a Lot

A top contributor from our Facebook group shared this learning experience:

My wife and I landed yesterday in our Cessna Cardinal RG at KSAF, Santa Fe Regional Airport. The airport's elevation is 7,349' MSL. Of course, we'd been flying higher from Dallas to get here, and I had leaned the fuel-injected engine as I always do when flying higher. Well, coming into land maybe 1500' lower than our cruising altitude I did NOT enrichen the mixture. Dumb. When we landed, full flaps, and I throttled back more as we slowed down now firmly on the runway, the engine STOPPED. Still on the runway, I braked to a stop. The tower sounded concerned. "Is anything wrong?" he asked. I said, "Well, the engine stopped, and I'm going to try to restart it." I enrichened the mixture, and of course, it started right up. I apologized for staying too long on the runway. He said, "No problem, that happens a lot." Live and learn.

— Brian

Other members thanked him for sharing and posted some of their own experiences:

Cardinal RGs specifically seem to have problems with leaned fuel metering at low throttle. I've flown many injected engines, including other Cessnas, that just don't do that. But one 177RG that did, in similar circumstances. Lore says it's a vapor lock. Maybe. It's not that you screwed up enriching descent unless you were flying extremely high. I suspect the real reason that happens all the time is that the before landing checklist says, "mixture rich."

— Michael

Hmm ... I don't want to say ... but I was in a Sundowner and descended out of 5500 MSL to my near-sea level airport. While passing about 3000', the engine quit! After a few seconds of shock, I went through the emergency procedures: switch tanks, mixture full rich ... and varoom! The engine roared to life. Whew ...

— Paul

PEDs Can Cause Deadly Distractions

A recent video from the *Rotorcraft Collective* discusses when and under what circumstances to use portable electronic devices and provides tips on managing use while flying. Viewers were thankful for the information and offered some advice of their own.

Great PSA. Great lesson. Thank you. Note to others ... if you are being distracted by your smartwatch notifications, in the settings simply turn off the feature, i.e., turn off the ability to receive notifications and messages on your smartwatch.

— @Eltoca21

My experience as a mature pilot allows me to share some wisdom. This FAA video is right on target. I learned to fly over 55 years ago with automatic direction finding (ADF) and very high-frequency omni-directional range (VOR) as the main source of electronic navigation. Dead reckoning was a needed skill. Then came LORAN, then GPS, and the follow the magenta line culture. I love the gadgets but experienced several eye-opening mistakes when I realized my focus was too much on the dependency of inside the cockpit. Glass cockpits are amazing, but they are just a tool to aid the pilot. Every now and then, turn off the glass and do a flight if weather conditions allow the old fashion way. Keep those old skills honed.

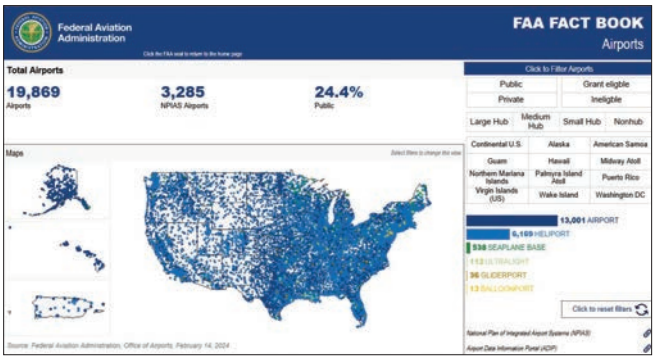
— @danschiffer

For more stories and news, check out our blog "Cleared for Takeoff" at medium.com/FAA.

Let us hear from you! Send your comments, suggestions, and questions to SafetyBriefing@faa.gov. You can also reach us on X (formerly Twitter) @FAASafetyBrief.

We may edit letters for style and/or length. Due to our 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 Office or air traffic facility.

AIRPORTS BY THE NUMBERS



Did you know that there are close to 20,000 airports across the entire United States and its territories? To be more exact, there were 19,869 listed as of February 2024. That's just one of the many bits of trivia I picked up while doing research for this airport-themed issue of *FAA Safety Briefing*. I came across the number on a new data visualization (viz) page I hadn't seen before. I have always been familiar with the FAA's *Fact Book* in hardcopy form, a pocket-sized directory of interesting facts and figures about the FAA and our nation's sprawling national airspace system (NAS). It came in handy when I needed quick numbers on how many certificated pilots or registered aircraft were traversing our skies. But I admit, the new data viz version of the *Fact Book* had eluded me. It was a happy discovery though as these facts and figures were now plotted in a way that provided deeper context and greater visual appeal. See for yourself at faa.gov/newsroom/faa-fact-book. There are sections on airmen certification, air traffic, safety metrics, and of course, airports.

Drilling down into the airports section revealed a number of ways to slice and dice the data. Using an interactive map display, you can filter airports by type (public, private, or grant eligible/ineligible), hub size (large, medium, small, non-hub), and location (continental U.S., Alaska, Hawaii, and the various U.S. territories). You also get a color-coded breakdown of user categories, like heliports, seaplane bases, ultralight fields, and gliderports. You can even see where the nation's 13 balloonports are located.

The data viz tool also includes the number of airports that are public-use facilities listed in the National Plan of Integrated Airport Systems (NPIAS), which stood at 3,285 in February 2024 (see the latest numbers at bit.ly/FAA_NPIAS). Airports included in the NPIAS may be considered for federal funding under the Airport Improvement Plan (AIP) and the Bipartisan Infrastructure Law (BIL) signed into law in November 2021. Approximately 97% of the NPIAS airports are owned by public entities (generally city, county, or state governments) and less than 2% are privately owned airports.

NPIAS airports are categorized by the type of activity and service they provide. The main categories are commercial (primary and non-primary), reliever, and general aviation. The primary commercial service category is further broken down by hub size (large, medium, small, and non-hub) based on the percentage of total passenger boarding. The remaining airports primarily support GA aircraft (about 88%) and are grouped into five categories based on existing activity, geographic factors, and public interest functions. These categories are national, regional, local, basic, and unclassified. The categories were established following an FAA study in 2012 (*GA Airports: A National Asset*) that aimed to better capture the diverse functions and economic contributions of GA airports. You can see a more detailed description of these categories on the FAA's airport webpage here bit.ly/3CxzsCK.

Local airports comprise the largest share of these non-primary categories and serve as the backbone of the general aviation system, accounting for about 36% of all NPIAS airports. According to the 2012 study, local airports also account for 38% of the total flying at the general aviation airports studied and 17% of flying with flight plans. In addition, local airports typically accommodate flight training, emergency services, and charter passenger service.

Basic airports are the second largest category and account for about 7% of the total flying at general aviation airports. Most of the flying at basic airports is self-piloted for business and personal reasons using propeller-driven aircraft, often with single runways and/or limited infrastructure. Although generally smaller, basic airports provide communities with a vital link to the national airport system and many critical general aviation activities.

The third largest category, unclassified, are mainly a mix of privately owned airports, seasonal airports, converted military airfields, and airports not meeting the criteria of the other categories. A follow-on study reclassified many of the initial airports in this category, with 281 remaining as unclassified. The 2025-2029 NPIAS has reduced the 281 unclassified airports to 190 unclassified airports with more meeting the NPIAS criterion.

Future development at general aviation airports included in the NPIAS will continue to be based on eligible, justified and reasonable developments. This becomes even more critical with the growth of new user groups, like drones, commercial space, and advanced air mobility. The FAA stands committed to working with stakeholders and local communities to ensure our airports remain safe and efficient and continue to meet the needs of the public.

PAUL CIANCIOLO

JEAN HARDY

Aviation Safety Inspector, FAA's Training and Certification Group (and Former Airport Owner)

Picture it: Maine, 1982. A young husband-and-wife team is on their hands and knees with paint rollers in the middle of a runway. The centerline needs a touchup. A 10-year-old waves from the controls of an airplane taxiing nearby. Another kid is "skywriting" in the grass while attempting to keep the weeds at bay at the airfield. A wild turkey crosses the road, making bird tracks across the new threshold markings. But I digress.

One of those painters was Jean Hardy, and that was her family running a private, public-use airport she co-owned at the time. It also happened to be the 14th busiest airport in the state then.

"Owning the airport was a lot of work. We paid for everything out of our own pockets, which was okay with me. I drove junk cars in exchange for owning airplanes and the airport," explains Jean. "My husband was an excellent mechanic, and my motto was: *I broke, he fixed*. Together, we also looked at ways to prevent accidents like plowing the runway a certain way so the snowbanks were not too high for low-wing aircraft."

That airport is where one of her kids soloed on their 16th birthday, and the other earned a private pilot certificate on her 17th birthday. They also helped move and refuel aircraft, among other chores.

"We had no problem giving them the keys to the airplane, but we had heartburn giving them the keys to a car," notes Jean. "We saw flying as being safer than driving."

Jean's passion for aviation has always been with her. She saved her money when she was young and took to the skies. She has owned three Cessna 150s, including an *Aerobat*, a Pitts S-1C and S-2A, and a Cessna 172. Jean is a commercial pilot and flight instructor with seaplane, instrument, and multi-engine ratings. When Jean and her husband Jack owned a flight school, they also had a Piper *Arrow*, *Cherokee Six*, and *Aztec* on leaseback. All that general aviation (GA) experience resulted in Jean earning the FAA's prestigious Wright Brothers Master Pilot Award last year, recognizing more than 50 years of safe flying.

Jean's passion for aviation safety led her to work for the FAA. Her first foray into federal service was as an aviation safety inspector out of the Teterboro Flight Standards District Office. She was responsible for ensuring aviation safety regulations and standards were followed and evaluating the competence of other pilots and airmen. Now, Jean is assigned to the FAA headquarters' Training and Certification Group under the General Aviation and Commercial Division. The group regulates training at 14 CFR part 141 pilot schools and institutions of higher education and the certification of pilots, flight instructors, and ground instructors under 14 CFR part 61.

"This dynamic area to work includes exemptions, answering questions from the public and within the FAA, and defining pilot training. We strive to provide the most comprehensive service to the aviation community," she defines. "We also help resolve highly complex technical issues affecting national and international aviation issues."

Being part of the GA community in Maine affords Jean the perspective needed to serve the American people effectively. Even after selling the airport, she still lives in the house at the end of the runway, which is a reminder of her late husband.

"I agreed to sell my beloved single-seat Pitts to pay for an extension to our home. I figured if he had cancer and wanted a new kitchen, then he would have one. This was a good decision — that new kitchen reminds me of Jack every day."

Jean is still a fixture in the local community, having played the alto saxophone for the Seacoast Wind Ensemble for the past 30 years. She equates music and flying as similar endeavors, and she believes that continual practice makes one better. Her advice is to keep learning new lessons no matter how experienced you are.

Paul Cianciolo is an associate editor and the social media lead for *FAA Safety Briefing*. He is a U.S. Air Force veteran and an auxiliary airman with Civil Air Patrol.

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