FAA Aviation News

SAFETY FIRST FOR GENERAL AVIATION

September/October 2009

Unlimited Excitement

A Vintage Lot

Up Close and Personal

Bigger, Faster, Heavier

In this issue, we focus on exhibition flying safety. Highlighted are the FAA's role at the National Championship Air Races & Air Show, the challenges of competition and formation flying, and the behind-the-scenes efforts to keep vintage aircraft and their legacy thriving and flying.

The airplane is a Hawker Sea Fury. *Photo by James Williams.*

Features

Departments

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Comments or questions should be directed to the staff by:

- E-mailing: AviationNews@faa.gov
- Writing: Editor, *FAA Aviation News*, Federal Aviation Administration, AFS-805, 800 Independence Avenue, SW, Washington, DC 20591
- Calling: (202) 267-8212
- Faxing: (202) 267-9463

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JOHN M. ALLEN
DIRECTOR, FLIGHT STANDARDS SERVICE

Jumpseat

In Praise of Flight Instructors

Talk to a passionate pilot and odds are you'll find someone passionate about the instructor who helped him or her learn to fly. Aviation Safety Inspector (ASI) Ray Stinchcomb, featured in this issue's FAA Faces column, has strong memories of one of his earliest flight instructors, Ed Sester, "who instilled a sense of calm competence I have tried to copy throughout my flying career, both while giving instruction and conducting tests." Another ASI, Jean Hardy, gets animated when remembering her instruction with Bill Kershner. Kershner was one of flight instruction's all-time greats. "He made it fun," Hardy recalls. "He could make the most complicated concepts understandable." For Kershner, ground school and his blackboard were close seconds to the cockpit in bringing aerodynamic truths to life.

As for me, the pivotal person in my early piloting career was Lt. Col. Richard Vanslambrook. Col. Vanslambrook instilled in me the absolute importance of flight discipline and professionalism. He would "chew up" pilots who he felt were complacent. If you didn't know something, your only hope for survival was to confess you didn't know, but would find out in short order. He was fair and taught me how important it is to strive for total professionalism in piloting. This is the paramount facet of airmanship.

Flight instruction has been on my mind lately. In recent months, we saw several accidents that spotlighted issues about pilot proficiency and training. There are some tough questions, such as how do you measure ability—in hours, in answers on a test, or by demonstrating a perfect landing? Or, is proficiency less tangible? Yes, airmanship includes a baseline of aeronautical knowledge, a certain set of skills, and the ability to put these to practical use. But, how do you quantify or assess good judgment, which is so essential to being a proficient pilot?

This is why certificated flight instructors (CFI)—like Bill Kershner, like this year's CFI of the Year Arlynn McMahon, and like so many among our nation's cadre of 93,000 CFIs—are so important. Yes, FAA develops rules and regulations. Yes, we set minimum standards. But, it is flight instructors, like so many good teachers, who impart not just knowledge, but understanding.

A good flight instructor knows the subject, teaches to the individual student, and cares enough to be willing to give you that kick in the posterior if, or when, it's needed. Top instructors update instructional methods as more effective ways of instruction become available. For a great example of updating instructional approaches, see the article McMahon wrote on scenario-based training in the July/August 2009 issue of this publication.

Great flight instructors transmit a culture of safety.

Most importantly, flight instructors like Kerschner and McMahon convey so much more than checklist memory aids, such as AV1ATE and GUMP. They do what great teachers do. They transmit the culture. And what is so important, to all of us, is that they transmit a culture of safety.

But instruction, as McMahon knows, can only go so far. Ultimately, the true test of proficiency rests with the student. I can't say it any better than how the 2009 CFI of the Year put it:

> Instructors can teach the basics of flight. They can teach systems. They can hone skills. They can observe a student or biennial flight review applicant and gauge how well that pilot functions in that environment. But only the individual pilot can determine where, when, and how to put those skills to use. This comes only by personal judgments that set personal minimums before every flight.

Congratulations, Arlynn, on your award. And, thank you, and the thousands of other dedicated CFIs, for what you do for aviation and for safety.

ATIS Aviation News Roundup

AirVenture® Welcomes Babbitt

You could feel the anticipation as the overflow crowd of pilots and aviation enthusiasts at EAA AirVenture waited to hear from recently appointed FAA Administrator Randy Babbitt.

Seconds after the new administrator's first few words, which included citing his EAA membership number, a collective nod of approval swept through the audience as they realized he was one of their own—an airman, who earned his first pilot certificate at age 16.


Photo by Laurie Zaleski

"We're making headway," stated Babbitt, referring to the decline of fatal accidents and the success of the many runway safety initiatives, which include some headed for smaller GA airports. Further evidence of greater safety on the surface can be seen in the reduction of serious runway incursions, which Babbitt reported as down 70 percent from a year ago.

Despite the success of these initiatives, Babbitt urged vigilance especially as flight hours in personal aviation are down. "You can't stay sharp if you're not up there regularly," said Babbitt. He recommended pilots take advantage of the many free educational resources available from FAA and industry, including booklets, DVDs, and Web sites.

In conclusion, Babbitt urged his fellow pilots to reach beyond the scope of regulations and strive for greater professionalism. "We've got a safe system," he said, "but we need to step it up individually and collectively."

At the opening of the session, Babbitt presented the prestigious Wright Brothers Master Pilot Award to EAA founder and National Aviation Hall of Fame inductee Paul Poberezny. "It's a privilege and an honor to be on stage with someone of such stature," remarked Babbitt after citing Poberezny's aviation accomplishments, including having piloted nearly 500 different types of aircraft.

After his speech, Babbitt fielded questions from the audience ranging in scope from pilot fatigue to hangar homes and through-the-fence agreements. A question about Transportation Security Administration (TSA) actions elicited an excited response from the audience. Babbitt pledged to work with the incoming head of TSA on important GA issues.

WASP Awarded Congressional Gold Medal

On July 1, 2009, President Obama signed into law S. 614 awarding the Congressional Gold Medal, one of the highest U.S. civilian awards, to the Women Airforce Service Pilots (WASP) for their World War II service. From 1942 to 1943, more than 1,000 women joined WASP; 38 made the ultimate sacrifice for their nation. "Every American should be grateful for their service, and I am honored to sign this bill to finally give them some of the hard-earned recognition they deserve," said President Obama.

FAA Issues SAFO on Tire Safety

For pilots, the phrase "kick the tires, and light the fires" is a familiar one. It refers to the important task of checking your airplane's tires before you fly. Although some may revert to a cursory kick, as the phrase states, fulfilling this critical preflight check involves much more than a perfunctory punt. In a Safety Alert for Operators (SAFO) issued on June 12, 2009, FAA emphasizes the important task of checking tire

pressure, specifically cold tire pressure, at intervals recommended by the manufacturer.

Although SAFO 09012 was based on a Learjet Model 60 accident (which may have been caused by low tire pressure), it underscores the importance of knowing how dangerous an under- or over-inflated tire can be. Over-inflation causes uneven tread wear, reduces traction, and makes the treads more susceptible to cutting. Under-inflated tires can stress the sidewalls, cause heat build-up, and can ultimately lead to a blowout. Be sure to look for these telltale signs of improper inflation, and know your aircraft's recommended tire pressure. If in doubt, consult an aviation maintenance technician.

SAFO on Lithium Battery Fire Hazard

On June 23, 2009, FAA issued SAFO 09013 regarding the dangers of certain lithium-type batteries (rechargeable and disposable) in many common portable electronic devices, or PED. Both these types are capable of ignition and subsequent explosion due to overheating. Overheating results in thermal runaway, which can cause the release of either molten burning lithium or a flammable electrolyte. Once one cell in a battery pack goes into thermal runaway, it produces enough heat to cause adjacent cells to go into thermal runaway. The resulting fire can flare repeatedly as each cell ruptures and releases its contents.

Based on testing by the FAA's Fire Safety Branch, the agency recommends the following procedures for fighting a fire of a lithium-type-battery-powered PED: (1) extinguish the fire and (2) cool the remaining cells to stop thermal runaway. The SAFO warns users against picking up and moving a smoking or burning device, as well as not to cover the device or use ice to cool it. This would only insulate the device and would increase the chance of additional thermal runaway.

To view a complete list of SAFOs, go to http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/

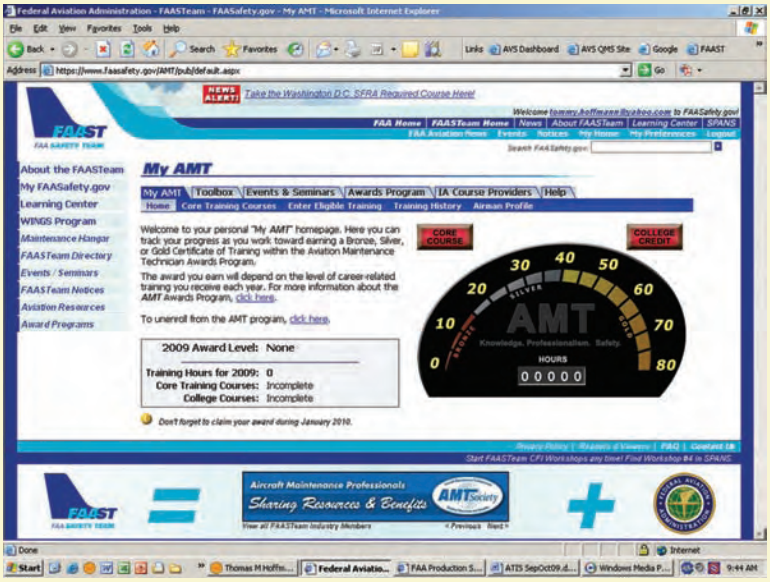
Bill O'Brien AMT Awards Program Now Online

Effective with the release of Advisory Circular (AC) 65-25E on June 3, 2009, the William (Bill) O'Brien AMT (Aviation Maintenance Technician) Awards Program is now online at www.FAASafety.gov. This provides AMTs an easier and more effective way to participate and receive credit for initial and recurrent maintenance training courses. The new program is named after the late Bill O'Brien, a former FAA National Resource Specialist, co-founder of the original AMT Awards Program, and a well-known and respected advocate for AMTs nationwide.

The new online program has several levels, or phases, of recognition for both technicians and employers. Technicians who successfully meet the program requirements within a given calendar year will obtain a certificate of training, along with a Bronze, Silver, or Gold AMT Awards Program decal. Employers can obtain a Gold or Diamond Award of Excellence depending on the percentage of their employees receiving awards each year.

Part of the requirement for any award level is the completion of specific "core" course(s) available online. The courses focus on accident/incident causal factors, special emphasis items, and regulatory issues. The remaining program-eligible courses for an award may be provided by manufacturers, repair stations, FAA Safety Team- (FAASTeam) sponsored safety seminars or symposiums, or FAA Web-based training.

"We're thrilled about offering this new learning opportunity for AMTs and AMT employers," says FAASTeam Outreach Program Manager Bryan Neville.



"Participation in the AMT Awards Program will help reinforce and promote a high level of professionalism and safety within the aviation maintenance industry."

For more specifics on eligibility and requirements for the award program, go to the "Maintenance Hangar" section of FAASafety.gov and reference AC 65-25E, or click the help tab to access a detailed tutorial. Also, here's an e-mail address for any additional questions: AMT@FAASafety.gov. Please note that you must register on FAASafety.gov before you can enroll in the awards program.

FREDERICK E. TILTON, M.D.
FAA FEDERAL AIR SURGEON

Aeromedical Advisory

Lost in Space

The term "spatial orientation" defines our natural ability to maintain body orientation in relation to the surrounding environment. Humans are designed to maintain spatial orientation on the ground. Even discounting the more extreme maneuvers of aerobatic or air race pilots, the simple fact is that the three-dimensional flight environment creates sensory conflicts and illusions that affect spatial orientation. Statistics show that 5 to 10 percent of all general aviation accidents can be attributed to spatial disorientation. Around 90 percent of these are fatal.

Spatial Orientation in Flight

Good spatial orientation relies on effective perception, integration, and interpretation of visual, vestibular (inner ear organs of equilibrium), and proprioceptive (skin, muscles, tendons, and joints) sensory information. Spatial orientation in flight is difficult to achieve because numerous sensory stimuli vary in magnitude, direction, and frequency. Discrepancies result in a mismatch that can produce illusions and/or lead to spatial disorientation. To avoid spatial disorientation:

Humans are designed to maintain spatial orientation on the ground.

- Maintain proficiency in flight by reference to instruments.
- Use the flight instruments when flying at night or in reduced visibility.
- If you experience disorientation, trust the instruments and disregard sensory perceptions.

Spatial Disorientation and Airsickness

A related topic is airsickness, another possible result from the motion and orientation cues of the flight environment. Fatigue, alcohol, drugs, medications, stress, illness, and anxiety can increase susceptibility. Low mental workload is another factor. A pilot who concentrates on the mental tasks of flying is therefore less likely to become airsick.

Pilots should not take anti-motion sickness medications, which can cause temporary deterioration in ability to perform certain tasks. A more effective remedy is repeated exposure to the flight environment. If you do become airsick while flying, open the air vents, loosen your clothing, keep your eyes on a point outside the aircraft, and avoid unnecessary head movements. Land as soon as possible.

FAA Aeromedical Training Programs for Civil Aviation Pilots

To learn firsthand how it feels, consider experiencing spatial disorientation illusions in a Barany chair, a Vertigon, a GYRO, or a Virtual Reality Spatial Disorientation Demonstrator. The FAA's Civil Aerospace Medical Institute offers a one-day training course to familiarize pilots and flightcrews with the physiological and psychological stressors of flight. The course covers spatial disorientation, oxygen equipment, hypoxia, trapped gas, and decompression sickness. Spatial disorientation demonstrators provide the experience of vestibular and visual illusions in a safe, ground-based environment. A ground-based altitude chamber flight also offers a practical demonstration of rapid decompression and hypoxia.

For information and scheduling the one-day course, call (405) 954-4837, or check the FAA Web site: www.faa.gov/pilots/training/airman_education/aerospace_physiology/index.cfm. To learn more about this topic, see the information brochure at: www.faa.gov/pilots/safety/pilotsafetybrochures/.

Good health and safe flying!

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

LYNN MCCLOUD

Unlimited Excitement

The Biggest Little City Meets the Biggest Air Race

Photo by James Williams

Reno, Nevada, famous as the "Biggest Little City in the World," has long been known for classic cars and gambling. Each year, it becomes even more recognized for the National Championship Air Races & Air Show, an annual event held in September that started in 1964.

Largely the brainchild of Nevada rancher, businessman, and World War II combat veteran Bill Stead, the races got started because Stead yearned to see air racing reborn. He had a background in aviation and motor sports, particularly Unlimited hydroplane boat racing, but more than that Stead wanted to bring back his boyhood excitement of the Cleveland Air Races and rekindle the storied National Air Races. Stead's dream, coupled with the state of Nevada looking for ways to celebrate the state's centennial in 1964, provided seed money and fostered the return of air racing.

Stead didn't start small. While he held the first two races at his Sky Ranch with its dirt airstrip, the first year's event opened with the finish of a transcontinental race from St. Petersburg, Florida, to Reno. Over the next several days, closed-circuit races were held for five classes of planes: Unlimited, Formula One, Midget, Stearman, and Cherokee 180.

That first year, Czech pilot Mira Slovak and "Miss Smirnoff," an F-8F *Bearcat*, won the Unlimited class and Bob Porter took first in the Formula One class. Many maintain that the real 1964 Unlimited winner was Darryl Greenamyer, but Greenamyer refused to land his P-51 at Sky Ranch, opting for the concrete at Reno-Tahoe Airport. The rules stipulated taking off and landing at Sky Ranch.

The races moved to longer—and paved—runways in 1966. The new location was about eight miles north of Reno at the former Stead Air Force Base (now Reno Stead Field). The airfield was named after Bill Stead's brother, Croston Stead, who was killed while flying with the Nevada National Guard.

Hawker Sea Fury *"Spirit of Texas"*

Photo by H Dean Chamberlain

From those early years in the dirt and dust to today with Darryl Greenamyer—a seven-time Unlimited gold champion—now going for the gold in the Sport Pilot class, the National Championship Air Races & Air Show is *the* event in air racing. Each year, the races host some 150 racers and more than 200,000 spectators.

Today, there are six classes of racing at Stead Field: Biplane, Formula One, Sport, T-6, Jet, and Unlimited. (See sidebar.) While Reno Air Racing Association (RARA) runs the overall event with requirements and rules for all races, each race class is overseen by a separate organization with its own rules, training programs, and limitations on aircraft and pilots.

The Unlimited class at Reno has been characterized by dynasties of particularly fast planes.

As Philip Handleman writes in *Air Racing Today: Heavy Iron at Reno*, the Unlimited class at Reno has been characterized by dynasties of particularly fast planes. "From the second year of the races in 1965 through the end of the decade, all the Gold championship races were won by Darryl Greenamyer, one of the grand old men of air racing who has set speed records for both piston and jet aircraft." Handleman says Greenamyer's run in the 1960s represents "the longest uninterrupted winning streak in Unlimited racing history."

There have been new entrants to the dynasties, such as Ray Cote and John Sharpe in Formula 1, as Handleman details in his book. Interestingly, Greenamyer staged a comeback 40 years later flying a Lancair *Legacy* in the Sport Class. According to FAA's National Air Show Coordinator Jeff Weller, "Some say the current race pilot to watch is John Penney in the famous *Rare Bear* (a highly modified World War II-era Grumman F-8F *Bearcat*). Penney has victories in the Unlimited and Jet Class races and may someday exceed the number of Greenamyer wins," Weller adds, "that is, if Greenamyer ever stops racing."

While following the excitement of who wins, what is paramount to the FAA is safety. As National Air Show Coordinator, Weller approves the race courses submitted by RARA and also approves the speed limitations for each course. For example, the Jet class course is limited to 550 mph. "We run the numbers to determine the highest speeds permitted that will not endanger the spectator areas should an airplane experience a catastrophic failure," says Weller.

FAA's primary responsibility:

A Grumman F7F Tigercat *approaches pylon 7.*

Photo by James Williams

Protecting spectators. "The pilots are assuming the risk inherent in racing," Weller explains, "and we look after the crowd. However, we do protect the race pilots by requiring them to be certified in the class they are racing." RARA, along with each racing class, holds a Pylon Racing School each June to qualify pilots to race. "The FAA requires that all race pilots meet the high standards set by the race class organizations and RARA, which includes training, testing, and currency," Weller says.

There has not been a single spectator fatality at Reno. "In fact, the biggest risk to spectators," Weller says with a smile, "is hurting themselves walking around the pit area and tripping while mesmerized by the sights and sounds of race planes up close."

In addition, FAA approves the air show at Stead Field. As it does with some 400 air shows across the country each year, the local FAA Flight Standards District Office (FSDO) works with air show organizers to issue waivers from the regulations. Reid Walburg of the Reno FSDO is FAA Inspector-in-Charge (IIC). Walburg and his team have worked with RARA for months in advance to prepare for the big event, which, this year, is set to include the U.S. Navy Blue Angels in their first visit since 2000.

The IIC is responsible for issuing the waiver(s) and conducting surveillance of the air races and air show. Walburg's top priority: Protect non-participating persons and property on the ground as well as other users of the national airspace system. Because of the event's size and complexity, Walburg solicits volunteers from the Reno FSDO to provide assistance. This year, about 10 volunteers from the FSDO will be at Reno Stead Field. For one, Airworthiness Inspector Bill Kunder assures all participating aircraft are airworthy and meet FAA standards, while Avionics Inspector Dave Butler checks that all participating FAA personnel are properly briefed on safety requirements.

According to some reports, annual U.S. air show attendance surpasses major league baseball and, at Reno, air races plus air show is a great way to introduce young people to aviation. "Air shows are great entertainment for all ages," says RARA's Valerie Miller. "At the air races you get the added excitement of the world's fastest motor sport."

Take me out to the races, indeed!

Lynn McCloud is managing editor of FAA Aviation News.

The 46th National Championship Air Races & Air Show

Scheduled from September 16 – 20, 2009, at Nevada's Reno Stead Field, the races feature six classes of aircraft that race every day, Wednesday through Sunday. The smaller and lighter Biplane Class and Formula 1 aircraft generally fly first thing in the morning. The T-6, Sport, Jet, and Unlimited aircraft generally fly after noon.

In between races, there are aerobatic exhibitions, fly-bys, military and civil aircraft demonstrations, and other performances—there is always something happening at the Air Races.

Look for the final schedule on the Reno Air Racing Association Web site at: www.airrace.org.

Biplane: Small aerobatic aircraft, such as Pitts Special, Mong, and Smith Miniplane. Speeds exceed 200 mph on a 3.18-mile course.

Formula One: Aircraft powered by a Continental O-200 engine. Weights and sizes of every major engine part must be within stock limits. Strictly controlled cam profile and carburetion. Must have 66-square-feet of wing area, weigh at least 500 pounds empty, and have a fixed landing gear and fixed-pitch propeller. The fastest aircraft reach almost 250 mph on the 3.12-mile race course.

Sport: High-performance kit-built aircraft. Eligible aircraft include production model kit-built aircraft (of which five or more have been produced and delivered to customers by the manufacturer), powered by a reciprocating engine of 650-cubic inches or fewer. Aircraft must have a current FAA-issued airworthiness certificate. Aircraft race on a 6.37-mile course at speeds reaching nearly 350 mph.

T-6: Stock aircraft, including the original T-6 *Texan*, the Canadian-built *Harvard*, and U.S. Navy SNJ-version aircraft. Aircraft are powered by the Pratt & Whitney Wasp R-1340-AN-1 air-cooled radial engine and all have essentially the same airframe. Speeds reach 220-230 mph on a 5.06-mile course.

Jet: Open to any non-afterburning jet with less than 15 degrees of wing sweep, e.g., Fouga *Magister*, North American T-2 *Buckeye*, and Lockheed T-33. This class began in 2002 as an invitation only class featuring Czech-built Aerovodochody L-39 *Albatros* jets, racing at speeds in the 400+ mph range. It is now open to all qualified pilots and aircraft, and the racing speeds are in the 500-mph range on the 8.48-mile course.

Unlimited: Piston-driven aircraft with an empty weight greater than 4,500 pounds. Most-flown aircraft are stock or modified WWII fighters, such as P-51 *Mustang*, F-8F *Bearcat*, and Hawker *Sea Fury*. Aircraft speeds on the 8.48-mile course cannot exceed 550 mph.

A VINTAGE LOT

Photo by Michael W Brown

Keeping Aviation History Alive

TOM HOFFMANN

The word vintage can take on several meanings. For some, it could invoke memories of a bold, crisp cabernet sauvignon. Others might think of floral-embroidered bell-bottoms or velvet mini-dresses. Or, it could even be a light-hearted euphemism for those folks in their more "advanced" years.

But for pilots and airplane aficionados, the word vintage immediately conjures images of P-51 *Mustangs*, DC-3s, Ford *Tri-Motors*, and more as it rekindles the nostalgia of a bygone era.

Vintage aircraft are often the headliners at air shows and fly-ins across the country, and with their colorful and patriotic livery, are among the first spotted by spectators. Yet, have you ever stopped to appreciate how these aerial "landmarks" are able to safely grace our skies, well after their original tours of duty?

Behind the scenes of air shows, aircraft displays, and air races—like those found at Reno's National Championship Air Races & Air Show—is the hard work of several hundred dedicated individuals, who ensure the vintage aircraft on display all look, sound, and fly just like they did in their prime. Despite the showbiz glitz and glamour associated with these types of aircraft, maintaining their safe operation and historical accuracy is not easy. It's often a labor of love for these stalwarts of aviation history, whose reward is the knowledge these flying national treasures will continue to safely astound spectators for generations to come.

The Power of Teamwork

How is safety oversight for so many different types of vintage aircraft managed from the FAA perspective? It's a tall order and requires a collaborative effort. A big part is keeping pilots current and qualified, particularly on aircraft that require a type rating for the pilot in command (PIC). Realizing that there are not enough qualified aviation safety inspectors to provide initial qualification and proficiency checks in many types of large vintage aircraft, the FAA entered into a partnership with the Experimental Aircraft Association (EAA) to create the National Designated Pilot Examiner Registry (NDPER, pronounced en-DEEP-er), which sets the guidelines for maintaining a cadre of highly-experienced examiners qualified to conduct practical tests and proficiency checks in certain vintage aircraft.

Two pristine examples of Waco aircraft

Officially created in 1993, the NDPER program was created under the provisions outlined in a letter of agreement between FAA and EAA. It was later amended to include the National Designated Flight Engineer Examiner Registry (NDFEER) for reciprocating-engine-powered airplanes. Following the framework of the agreement, FAA establishes the policy and provides oversight, while EAA maintains overall administration of the program.

A similar agreement is in place that handles initial and proficiency checks in all of the various types of experimental exhibition aircraft, which have a unique set of operating limitations. This group is known as the Experimental Aircraft Examiners (EAE).

Currently, there are eight active examiners nationwide in the NDPER program and 13 EAEs. Both sets are listed on the EAA Web site (http://www.warbirds-eaa.org/programs) along with the aircraft groups they are qualified to conduct checkrides on. While EAE and NDPER operate independently, plans call for the two groups to be combined in 2010, and for the examiners to be known collectively as Specialty Aircraft Examiners.

FAA Aviation Safety Inspector Raymond "Ray" Stinchcomb is the program manager for NDPERs and EAEs and interfaces regularly with each of the examiners to provide guidance and support as needed. Stinchcomb also meets with the EAA at its headquarters in Oshkosh, Wisconsin, during AirVenture® and during the annual NDPER meeting each January. Stinchcomb is featured in this issue's FAA Faces column.

"It's a small, tight-knit group," says Stinchcomb, "And, by working together and keeping the avenues of communication open, we've been successful with facilitating the continued safe operation of vintage aircraft."

FAA announced at this year's AirVenture® another initiative designed to keep vintage aircraft flying. The Vintage Designated Engineering Representative (VDER) program designates engineers, whose expertise covers all systems of a particular vintage aircraft, and authorizes them to approve any technical data for that aircraft. The VDER program, a joint venture between FAA and EAA, helps reduce the cost and complexity related to repairs or modifications for vintage aircraft owners.

Who Said Time Machines Don't Exist?

The thought of flying in a restored B-17G *Flying Fortress* or AT-6 *Texan* may seem too good to be true, but at many air shows and flight museums across the country, reliving the glory days of aviation in a vintage aircraft is easier than you might think. Keep in mind, however, the availability of these historical flight experiences are limited by the category of airworthiness the aircraft is listed in, as well as the business intentions of the operator.

Although some vintage aircraft can have a standard airworthiness certificate and can be used for local sightseeing rides, many are categorized as either "limited" or "experimental," and due to operating limitations requirements in Title 14 Code of Federal Regulations (14 CFR) sections 91.315 and

CAST A VOTE FOR YOUR FAVORITE

Celebrating its 11th year, the National Aviation Heritage Invitational will be a featured event at the National Championship Air Races & Air Show. The Invitational's objective is to preserve aviation history by restoring vintage aircraft to original flying condition. Aircraft owners and restorers will compete for the coveted Rolls-Royce Aviation Heritage Trophy. Competing aircraft are judged in three categories—Military, Classic, and Antique—and must be 45 years or older. The greater the historical accuracy and authenticity, the better an aircraft's chance to "fly" away as the winner.

To get visitors and fans more involved with the event, the People's Choice Award gives everyone attending a chance to vote for their favorite aircraft. If you're at Reno this year, be sure to check out these historical aircraft and cast your ballot!

A New Standard D-25 offers a taste of the vintage aircraft experience to the public.

91.319(a)(2) cannot carry persons or property for compensation or hire. However, some operators of these aircraft can conduct these operations under exemptions. Also, 14 CFR section 91.319(c) prohibits aircraft with an experimental certificate from operating over a densely populated area or in a congested airway, unless otherwise authorized by the Administrator. While these regulations are critical to assuring aviation safety, the FAA does take into consideration the importance of operating historic aircraft.

Part of that consideration is taking into account the public's interest in maintaining, preserving, and flying these aircraft. The cost of operating the aircraft includes expensive and hard-to-get parts, storage fees, and fuel for engines that aren't exactly models of efficiency. One flight hour on a B-17 can cost more than $4,500!

The Commemorative Air Force (CAF), based in Midland, Texas, is one example of a nonprofit aviation association dedicated to honoring military aviation. The CAF has more than 9,000 members who maintain a fleet of 171 vintage warbirds worldwide—making it one of the world's largest air forces. The CAF Web site has a search feature to locate the closest CAF chapter where you can experience a flight in a T-6 or a P-51 *Mustang* (two planes you're likely to see at the races in Reno). "The CAF, along with other similar organizations, are important elements in maintaining our nation's rich aviation heritage," says FAA Accident Investigator T.R. Proven, who is Operations Officer for the CAF's National Capitol Squadron in Virginia.

It Takes a Village to Save an Aircraft

In addition to FAA's regulatory support, there are several entities that help keep vintage aircraft operating safely, including the Vintage Aircraft Association and Warbirds of America (both subdivisions of EAA), as well as other vintage aircraft type clubs. The success of these organizations is due in large part to the volunteer efforts of aviators and aviation enthusiasts, who spend countless hours to keep America's aviation heritage a living, breathing entity, rather than existing only through museums, photographs, and stories.

The next time you see low-flying B-25 on a mock strafing run or hear the distinctive roar of a P-51's mighty V-12 Merlin engine overhead, take a moment to acknowledge the extraordinary behind-the-scenes efforts of the men the women who keep these essential chapters of aviation history alive and well, and most importantly, safe.

As the Warbirds of America exclaim, "Keep 'Em Flying!"

Tom Hoffmann is associate editor of FAA Aviation News. He is a commercial pilot and holds an A&P certificate.

FAA ISSUES AC FOR VINTAGE AIRCRAFT

On May 18, 2009, FAA issued Advisory Circular (AC) 23-27, *Parts and Materials Substitution for Vintage Aircraft*. The intent of the AC is to provide guidance on parts or materials substitutions used for maintaining old or out-of-production GA aircraft where these parts or materials are difficult or impossible to obtain. Today, vintage aircraft need safety-enhancing upgrades and modifications to maintain their continued airworthiness. These same vintage aircraft often have little of the data required to get FAA approval of such modifications, making it difficult for owners to perform these changes. AC 23-27 helps address these issues by making suitable replacement parts selection easier and by reducing the time required to accomplish safety-enhancing upgrades.

For More Information

Advisory Circular AC 23-27 – Parts and Materials Substitution for Vintage Aircraft
http://rgl.faa.gov/, click Advisory Circular and search AC 23-27

Vintage and Experimental Aircraft Program page
http://www.faa.gov/licenses_certificates/vintage_experimental/

Vintage Aircraft Association (VAA)
http://www.vintageaircraft.org/

SUSAN PARSON

Photo by James Williams

Up Close *and* Personal

Lessons Learned from Formation Flight Training

Like many general aviation pilots, most of my flying activity could be described as the "plain vanilla" variety: Personal transportation flying from airport A to airport B, instructional activity in the local area, and practice to maintain proficiency and currency. There's nothing wrong with that, but, as I wrote in the JJuly/August 2009 *FAA Aviation News* Editor's Runway column, I sometimes get a hankering to try a more exotic flavor of flying. As a huge fan of "aluminum overcast" warbird formations, I decided I wanted a taste of flying in formation.

Last autumn, my quest took me to a school out west where a pair of former military instructor pilots patiently tutored a fellow fledgling formation flyer and me in the finer points of getting up close and personal without making a very loud noise. Let me get this part out of the way first: I loved every second and have budgeted carefully so I can go back and learn more. Rest assured that personal risk management keeps me in "do-not-try-this-at-home" mode until I can train enough to be truly proficient. Still, it turns out that many of the basic formation flying principles can apply to even the most humdrum home 'drome flying.

Briefings Aren't Necessarily Brief

No formation flight starts without a thorough preflight briefing. This session covers weather and all the standard items mentioned in Title 14 Code of Federal Regulations (14 CFR) section 91.103 for a preflight briefing, but that's only the beginning. For formation flight, the preflight briefing includes a detailed description of who, what, where, when, and how. For example:

One way to construct your own detailed briefing is to borrow from the visualization techniques used by aerobatic pilots and sports champions.

- Who is flying lead, and who is flying wing?
- What maneuvers are to be flown? In what sequence? What speeds are to be used? What are the emergency procedures?
- Where is the operating area?
- When do we expect to complete each maneuver and each sequence?
- How do we signal intentions (e.g., radio, hand signals, both?)

Not all these questions apply to the typical general aviation flight of one aircraft, but you

Photo by James Williams

A diamond formation of T-28* Trojan *aircraft

can certainly step up the quality of your preflight preparation by collecting the "all available information" required in 14 CFR section 91.103 and then conducting a more extensive formation-style briefing:

- Who is PIC? (This is very important when two pilots are on board.)
- What is the mission? What procedures apply in case of an emergency?
- Where is the operating area and what airspace issues exist?
- When do we expect to arrive?
- How will we navigate, communicate, and (if appropriate) share flying duties?

This list is just a starting point. One way to construct your own detailed briefing is to borrow from visualization techniques used by aerobatic pilots and sports champions. Close your eyes and imagine your way through every step of the flight you're about to make. By mentally flying the entire profile before you launch the actual airplane, you are more likely to find, brief, and eliminate potential "gotcha" lapses and mistakes before they have a chance to get *you*.

Many of the basic formation flying principles can apply to even the most humdrum home 'drome flying.

Keep your Priorities Straight

My formation flying partner and I quickly learned that keeping priorities straight is the key to staying alive while maneuvering moving metal in close proximity. Priority number one is controlling the altitude, or "stepdown," relative to the lead aircraft. Priority number two is to establish and maintain the correct lateral position along an imaginary 45-degree bearing line off the lead aircraft. Priority number three is to control the rate of closure when joining or maneuvering in the formation. I quickly came to think of it as the "A-B-C" rule, and found myself muttering those three magic words almost constantly when it was my turn to fly the wing position.

In the kind of flying that most of us do, the three priorities—in order of importance—are aviate, navigate, communicate. My first flight instructor chanted those words until it became second nature to think, and operate, in the aviate, navigate, communicate sequence. In my instructional flying, I've seen what can happen when pilots get these key priorities out of order. Recently, I watched a pilot on a practice instrument approach carefully reset the heading bug and make a radio call before initiating the turn onto the final approach course. The few seconds he spent on navigation and communication at the expense of aviation—flying the airplane—required a lot more time and effort to get back on course. In any kind of flying, first fix the things that can hurt you the most. Everything else can wait.

Precision Is Not an Option

It's pretty obvious that precision counts for a lot in formation flying. Another oft-muttered mantra during my training sessions was "small corrections only." That was especially challenging in the Extra 300L, a high-performance aerobatic airplane that enthusiastically responds to the slightest touch on the stick. Having another aircraft just ahead (when I flew wing) or just behind (when I flew lead), however, was a constant and powerful motivator to fly as precisely as possible. For those who, like me initially, think that flying lead is easier—think again! The precision required to provide a stable platform for my wingman was no less than that required for the close-echelon wing position. In fact, it was even harder, because flying the lead position also meant taking responsibility for navigation, communication, and keeping the formation clear of terrain and other traffic.

Precision counts in normal general aviation flying, too, and becomes second nature for pilots who regularly file and fly under instrument flight rules (IFR). There is sometimes a tendency, though,

Photo by George Soteropoulos

A demonstration of aerobatic formation flight by the Aeroshell T-6 team

to settle for less when flying under visual flight rules (VFR). Instead, make it a game, or a challenge, to fly as precisely as you can on every flight. You'll be grateful—and safer—for having precision as a second-nature skill.

Lead, Follow, or Get Out of the Way

Years ago, a car company executive became famous for saying, "In this business, you lead, follow, or get out of the way!" That came to mind frequently during my formation flight training. The lead pilot's job is to provide a stable platform and do all the thinking, planning, navigating, and communicating. The wing pilot's job is to follow the lead and fly as precisely as possible. Both pilots have an obligation to get out of harm's way if visual contact with the other formation element is lost. I learned that lesson firsthand: After a turn into the bright southwestern sunshine (thanks a lot, Lead!), I completely lost sight of the lead aircraft. And, I got out of the way.

Respect for roles and positions matters in everyday flying too, perhaps nowhere more than in the airport traffic pattern. On a busy weekend day, knowing how to fit into the pattern, adjust speed and spacing to follow aircraft ahead of you, and when/how to get out of the way and start over are all important skills. Of course, we should all know and follow right-of-way guidance as outlined in the rules and the *Aeronautical Information Manual*, but it's always better to get out of the way than to be "dead" right.

Trust, but Verify

Aviation is built on trust. Formation flying is impossible without it. The lead must trust the wing pilot to maintain proper position. The wing pilot has to trust the lead to keep the formation clear of terrain, traffic, obstacles, and all other dangers. For me, the trust part was toughest when I was flying in the lead position. After an aviation lifetime of staying as far away from other airplanes as possible, it was an act of sheer will to turn deliberately in the direction of my wingman. I had to trust him to be watching me and following my every move as precisely as possible.

Trust with verification is also an important skill or, more accurately, a mindset to develop in general aviation flying—especially if you are IFR in instrument meteorological conditions (IMC). Pilots have to trust controllers and controllers have to trust pilots. Unlike formation flying, where the wing has to put complete trust in the lead pilot, general aviation pilots must never allow anyone else (especially someone on the ground) to do all the thinking. If a heading sounds wrong, or a vector doesn't make sense, speak up. Everyone will be better off if you season the trust with verification.

Think Ahead

I loved flying the wing position during my formation flight training. It was challenging and it was fun, but it was also easier, because "all" I had to do was watch closely and mimic every move made by the lead pilot. Piece o' cake. It was a lot harder when I had the lead, because I had a lot more responsibility. It's an aviation cliché that you should never let the airplane go anywhere your brain hasn't already reached, but that's especially true in formation flying, where the lead has to think, act, and plan for more than one airplane.

Make it a game, a challenge, to fly as precisely as you can on every flight.

As the above cliché suggests, the requirement to think ahead is by no means unique to formation flying. In any kind of flying, but especially IFR operations, my instructor was a strong advocate of the "next two things" mentality. He taught me to think ahead by requiring me to state, at any given time, the next two things I would have to do on the flight.

Train the Way You Fly, Fly the Way You Train

That phrase, which is the essence of scenario-based training, deftly summarizes the reason we should all put these principles into practice every time we fly. If we train for precision, we'll fly with precision and we will all be the kind of safe and solid aviation citizens I hope we all aspire to be.

Susan Parson is a special assistant in Flight Standards Service's General Aviation and Commercial Division. She is an active general aviation pilot and flight instructor.

JAMES WILLIAMS

Photo courtesy of Dave Bowen

Bigger, Faster, Heavier

Transitioning to a Warbird

If you're like me, or most pilots, there may have been a point in your training when you dreamed about owning your own aircraft. Most of us snap out of it really quickly. A few go on to acquire an airplane, such as a *Skyhawk* or *Cherokee*. A rare few go on to own the ultimate dream, a warbird.

For those with means and opportunity, owning a warbird is a fantastic opportunity to own a piece of history—a piece of history that can frequently outperform most GA aircraft. Yet, this fun comes at a cost, and it's more than just the larger amount of money required to operate and maintain these aircraft. Flying warbirds involves a higher level of skill and professionalism because more airplane performance means more pilot responsibility.

Research the costs of ownership, not only maintenance and operations, but also insurance and training.

To learn about the ins and outs of owning and operating a warbird, we went to a place you might not expect: FAA's Chief Information Officer (CIO). You might not think to look around your company's IT staff for a pilot, but FAA CIO Dave Bowen has been flying for nearly 30 years. He made the traditional transition from owning a share of a Cessna to owning his own Piper. From there, he moved on to a Beechcraft *Bonanza*.

As a *Bonanza* owner, Bowen began flying formation with other *Bonanzas*. During a formation training session one day, Bowen saw a video featuring North American T-28s flying in formation and thought, "Gee, that T-28 would be pretty neat." That got the wheels moving in the direction of owning a T-28. Bowen said, "I have a very understanding wife. Her only condition was, 'We're not owning two airplanes.'" Forced to choose, Bowen sold the *Bonanza* and bought the T-28 in 2005.

The first piece of advice Bowen offers to anyone pondering the purchase of a warbird is to know what you want from the airplane. "First and

Photo by George Soteropoulos

Dave Bowen's T-28

A T-28 History Lesson

The North American T-28 was a basic military trainer and the first trainer designed to transition pilots to jet aircraft. The T-28A was built for the U.S. Air Force and was powered by a Wright R-1300 engine with a rating of 800 horsepower, a top speed of 285 mph, and a service ceiling of 29,000 feet. The U.S. Navy subsequently ordered two advanced versions, the T-28B and the T-28C (a tailhook was added). The Navy versions had a Wright R-1820 engine with a rating of 1,425 horsepower, a top speed exceeding 345 mph, and a 37,000-foot ceiling.

Bowen's T-28B was completed by North American at its Irvine, California, plant and accepted by the U.S. Navy in February 1954. He has the full military history of the aircraft, including the original logs.

foremost, make sure that what you intend to do with the aircraft is consistent with what it is designed to do." Some aircraft are better for some missions than for others. Bowen's T-28 is mainly used as a display aircraft. "Because it's big and powerful and burns a lot of gas, it's not necessarily a good cross-country aircraft." A second piece of advice: "Research the costs of ownership, not only maintenance and operations, but also insurance and training."

With Bowen's day job, that invariably leads to the next question: How was it dealing with his employer as an airman? "When I bought the plane, I wasn't part of FAA," Bowen explains. "Also, the warbird program was going through a change in its regulatory oversight. They changed the program to make it more of a type rating to operate the aircraft."

Bowen's most recent checkride was this past February with one of FAA's national designated pilot examiners when he added IFR to his T-28 type rating. His T-28, like many warbirds, is classified as an Experimental-Exhibition aircraft. This classification includes Operating Limitations which describe in detail how the aircraft may be used. FAA requires these Operating Limitations to protect the public from undue hazards, while still allowing these pieces of aviation history to be flown and exhibited across the country.

Operating Limitations restrict where a warbird pilot may fly and generally prohibit flight over densely populated areas. A warbird pilot may fly outside of these restrictions as long as he provides advance notification to the local Flight Standards District Office (FSDO). Bowen says he contacts his FSDO at the beginning of each year to let them know what events he plans to attend. This advance notice helps the FSDO plan its warbird-monitoring workload.

This past year, Bowen has been busy with exhibitions. In May, he took his T-28 to the Joint Service Open House Air Show at Andrews Air Force Base outside of Washington, DC. He flew to EAA AirVenture® in July, along with many other T-28 owner pilots, for special activities commemorating the airplane's 60th anniversary.

Bowen stresses that training and proficiency are even more important with warbirds. He feels strongly about flight time and about professionalism in the cockpit. Bowen says he tries to fly at least once every two weeks and averages about 50 to 60 hours per year. "It's a lot of fun until you have to put gas in the tank," he jokes. That's pretty clear when you consider the airplane carries 177 gallons of fuel (at $4 per gallon) and, at full power, can burn through that in 45 minutes!

Make sure that what you intend to do with the aircraft is consistent with what it is designed to do.

Yet, that doesn't deter this aviator. Next time you're at an air show, be on the lookout for Dave Bowen and his T-28!

James Williams is the FAA Aviation News' *assistant editor. He is also a pilot and a ground instructor.*

For More Information

EAA Warbirds of America
www.warbirds-eaa.org/programs

Boeing Aircraft History
http://www.boeing.com/history/bna/t28.htm

Warbird Examiner Programs
http://www.warbirds-eaa.org/programs/examiner.html

TOM HOFFMANN

Lighter Than Air

Safety Soars in Albuquerque

Photos by Mario Toscano

Anyone who has been to the Albuquerque International Balloon Fiesta (AIBF) knows all about gigantic cows, pigs, and rabbits dancing together in choreographed aerial rodeos. But did you know there is a herd of more than a hundred Zebras, an official Balloonmeister, and a cast of many others, who help coordinate the safety of all AIBF's events? It sounds almost like something out of a children's fantasy book, but ensuring the safe operation of more than 700 balloons at the world's largest event of its kind is anything but child's play. This careful orchestration of safety is especially evident during the many competition events punctuating the nine-day Fiesta.

Blue markers are thrown to the ground as AIBF balloonists try their luck during the precision-marker drop competition.

"X" Marks the Spot

In keeping with the AIBF's motto of "…conducting the world's premier ballooning event," pilots are able to showcase their flying skills by taking part in many exciting competition events. Among them are precision-marker drops, prize grabs (where pilots grab large brass keys perched atop 30-foot poles), and an airborne version of poker called Balloon Fiesta Hold'em. These events demonstrate a balloon pilot's navigational finesse and demand a keen understanding of micro-meteorology. While balloon flight to a casual observer may appear graceful and uncomplicated, there are risks that demand careful attention to safety.

"Balloon pilots have a special relationship with their environment," says 23-year balloon pilot Tom Davenport, who regularly competes at AIBF. "Mastering a balloon is not unlike taming a lion. You can teach them to behave safely, but you must respect that a sudden change in their environment can trigger unpredictable actions."

Accordingly, the behind-the-scenes planning and coordination for all AIBF events is extensive. It involves everyone—FAA and volunteers—to ensure that all goes smoothly. Adding to the complexity is the unique mix of spectators and participants, unlike crowds for most other sporting events. Here, spectators are part of the action, free to explore the Fiesta grounds and witness the excitement of a launch from only a few feet away. It becomes an even more intimate experience for those who are fortunate enough to be recruited to help "crew" the balloons, which includes helping inflate, chase, and repack the envelopes.

Safety Is Black and White

An integral part of that safety net is also one of the most recognizable facets of the AIBF—the launch directors. Wearing black-and-white striped shirts and known as "Zebras," these officials are AIBF's eyes and ears of safety, balancing their responsibilities between the balloon crews, safety officials, and the spectators. No balloon can launch without getting "thumbs up" from a Zebra. Zebras also perform crowd control and convey any concerns about airworthiness or airmanship to the proper authorities.

A Chief and Assistant Chief Scoring Official, along with a Scoring Team, assist Zebras with the additional safety requirements of competition events. In addition to recording the results of the competitions, the Scoring Team provides onsite crowd control at the various off-field target areas. The Scoring Officials and Scoring Team work together to ensure that both pilots and spectators remain safe, and that the rules of the event are enforced.

"Weather" or Not to Fly

Safety at the AIBF begins well before a balloon is ever unpacked. Each pilot is required, as a condition of registration, to have a 30-minute video operations briefing. The briefing reviews NOTAM, TFR, and waiver information. Daily pilot briefings are provided at 0615 each morning of the Fiesta. Since weather conditions are critical to a safe launch, the AIBF has its own meteorologist who gathers data from the National Weather Service, from on-field weather stations, and from sounding balloons that

Competitors watch the results of their precision marker drop.

are launched in the airspace directly above Fiesta Park. The meteorologist reviews the weather data, which is then communicated to all pilots by the event Balloonmeister at the morning briefing. Based on the weather information, the Balloonmeister, with input from FAA and the Event Director, makes the launch decision. As a rule, winds faster than 10 knots, visibility fewer than three miles, clouds below 1,500 feet, or rain will postpone or cancel any scheduled competition events.

With the proper tools and support staff in place, ballooning can be both safe and exhilarating.

With such a short window of time before the sun's heat can diminish "ideal" flying conditions, many pilots find themselves in a race against time to get airborne and start heading for the target drop areas. Some pilots, in their haste, may forget checklist items or hurry their inspections. Or, there may be the pilots who haven't accrued much flying time between events and may be rusty with procedures.

One way to combat these hazards is to take advantage of the several balloon safety seminars held onsite at the AIBF. The FAA Safety Team (FAASTeam) is front and center with representatives giving talks on such topics as accidents, aeronautical decision-making, and fuel management, to name a few. There's also the Albuquerque Aerostat Ascension Association (AAAA or Quad-A), which conducts its Balloon Federation of America- (BFA) approved/sanctioned Balloon Fiesta Seminar. This four-hour seminar is usually attended by more than 300 pilots, and may qualify those attending for an insurance discount.

"Safety is top priority at the Balloon Fiesta," says FAASTeam Program Manager and balloon-rated pilot J.D. Huss. "Albuquerque can be a challenging environment, with dangers that should never be taken lightly. But with the proper tools and support staff in place, ballooning can be both safe and exhilarating."

Up, up, and away!

Tom Hoffman is associate editor of FAA Aviation News. He is a commercial pilot and holds an A&P certificate.

For More Information

Albuquerque International Balloon Fiesta Web site
www.balloonfiesta.com

Albuquerque Aerostat Ascension Association
www.hotairballooning.org

FAA Balloon Flying Handbook (FAA-H-8083-11A)
http://www.faa.gov/library/manuals/aircraft/media/FAA-H-8083-11.pdf

SUSAN PARSON

Checklist

Free Lessons from Costly Mistakes

My summer reading list included books on aviation history (yes, I am an airplane junkie). But it's not possible to read *North Star over My Shoulder,* Bob Buck's personal memoir, or *A Few Great Captains,* DeWitt Copp's account of military aviation's beginnings, without appreciating how far we have come in terms of standards, training, certification, and continued operational safety for airmen and aircraft. Modern aviators owe much to those pioneers whose efforts—and, all too often, whose mistakes—led to improvements.

It Could Have Been Me...

We can still learn from mistakes. Given the harsh penalties that aviation errors can impose, however, most would agree that it's infinitely preferable to profit from other pilots' pratfalls. To paraphrase my college French professor, whose brutal grading practices provided a powerful incentive for grammatical perfection, why repeat a mistake when there are still so many to be made for the first time?

Fortunately, FAA has a great resource to help us learn from the *faux pas* of fellow flyers. Specifically, the FAA Web site now has an online *Lessons Learned from Aviation Accidents* library that presents some of aviation's major accidents and the lessons we can take from them. The library uses three different "perspectives" to organize the accidents and illustrate the complex interrelationship of causes. Each accident contains at least one high-level lesson related to a threat element, and at least one lesson related to a theme element.

Airplane Life Cycle

The first perspective offers accident summaries organized relative to the life-cycle element most prevalent in each accident. These elements include:

- Design/Manufacturing
- Operational
- Maintenance/Repair/Alteration

Threat Categories

The second perspective in the library presents the selected hazards in terms of threat categories. These include bird hazards, cabin safety/hazardous cargo, flight-deck layout/avionics confusion, crew-resource management, fuel exhaustion, fuel-tank ignition, inclement weather/icing, incorrect piloting technique, in-flight upsets, lack of system isolation/segregation (e.g., where a malfunction or failure affects more than one system or cascades a failure into subsequent failures), among others. While not every category applies to general aviation operations, most are relevant to aviators at any level of experience and equipment.

Given the harsh penalties that aviation errors can impose, most of us would prefer to profit from other pilots' pratfalls.

Common Themes

The third perspective organizes accident summaries according to a set of common themes. These include flawed assumptions, human error, organizational lapses, pre-existing failures (e.g., a problem that can cause an accident when combined with other malfunctions), and unintended effects. Similar to the cliché about unintended consequences, the latter theme addresses those situations where an initiative, change, new process, or other activity intended to improve something actually produces, not only the improvement, but also an undesirable outcome. This theme in particular underscores the complex interdependence of human beings, machines, systems, and environments.

To Visit the Library...

The *Lessons Learned From Aviation Accidents* library can be found at http://accidents-ll.faa.gov/index.cfm. Who knows what you could learn from another's mistake?

Susan Parson is a special assistant in Flight Standards Service's General Aviation and Commercial Division. She is an active general aviation pilot and flight instructor.

MIKE LENZ

Hot Spots

Wrong Way Corrigan

and the Right Way to Step Back and Learn

It's a foggy morning in July 1938 at New York's Floyd Bennett Field. With chocolate bars at the ready, young Douglas Corrigan takes off from the Brooklyn airfield in his single-engine Curtiss *Robin*—"Sunshine"—and heads for the California coast. Yet, 29 hours later, instead of sunny beaches, Corrigan finds the Irish coast, some 5,000 miles away from his intended destination, earning him fame and the lasting nickname: "Wrong Way" Corrigan.

Corrigan claims his navigational error was due to cloudy conditions and a compass problem. However, many believe his (mis)adventure and story, which he stuck to, was a way around the authorities who wouldn't approve his transatlantic dream flight. But what about pilots who really do go the wrong way, or do the wrong thing when they are sure it is right? Most important, what are the available cues that could help a pilot avoid making a mistake?

When something just doesn't look right, there is usually a reason.

Doing the Wrong Thing

There have been pilots who really did go the wrong way, or did the wrong thing. For example:

- A student pilot on a cross-country flight lands successfully at his first destination. However, upon departing for the return flight, the winds shift and traffic is now using runway 9 instead of 27. When taking the active runway, the pilot sets the heading indicator to the runway alignment, but sets it incorrectly.
- A Mooney pilot lands gear up after ATC asked him to keep the speed up because faster traffic would be following him. After extending the gear and reducing speed, he hears a warning horn, but thinks it is the stall warning horn sounding too early. He makes a note to "write that up" and continues with the approach.
- A professional crew lands a couple of hundred miles short of their intended destination after a mix-up with the flight plan by ATC. When the crew has trouble locating fixes on the arrival procedure, ATC helps with vectors and the "correct" frequencies at the wrong airport.

Cues You Can Use

What were the available cues in these scenarios? How did the pilots they go the wrong way or do the wrong thing? Let's take a look.

Student Pilot: He landed when traffic was using runway 27. The winds shifted and traffic began using runway 9. But, when the student pilot taxied into position on runway 9, he set the heading indicator to what he remembered as the landing runway, which put it 180 degrees off. Shortly after departure, things didn't look right. To his credit, the pilot asked ATC for help. ATC attempted to radar identify the aircraft but looked for it to the "west" of the departure airport as reported by the pilot. This was unsuccessful and soon radio transmissions became weak and difficult to understand. ATC was baffled as to why the landmarks the pilot was reporting could not be found west of the airport.

As darkness approached, the student again made a good choice by deciding to land in an open field while fuel was still available for a power-on landing and there was still daylight. The landing resulted in no injuries and only nose gear damage. When help arrived and the student was told where he was, he quickly realized his error.

Cue: When something just doesn't look right, there is usually a reason.

Mooney Pilot: He lowered the gear at a higher speed than normal with a manual gear extension system. The gear extended, but did not lock (possibly due to increased air resistance from the higher speed). In addition to the warning horn, the aircraft was equipped with a warning light indicating the gear was unsafe for landing. The light had been dimmed for night operations and

went unnoticed. The pilot completed the approach and landing secure in the belief that the bleating horn was simply an out-of-adjustment stall-warning system.

Cue: When normal procedures are modified or interrupted, the potential for error is magnified.

Professional Crew: The landing at the wrong airport occurred after a long transatlantic flight. ATC had mistakenly changed the destination airport to Brussels, Belgium (EBBR), instead of Frankfurt, Germany (EDDF), pretty close on airport designators and distance (under 200 miles). There were plenty of cues. First, they were instructed to descend 20-30 minutes sooner than normal for a descent to Frankfurt. ATC assigned an invalid arrival procedure, then corrected the error by providing vectors for the instrument landing system (ILS) approach.

Although both Brussels and Frankfurt have runways 25 left and right, an additional cue was that the ILS frequencies were different and ATC offered the "correct" ILS frequency to the crew after they initially flew through the ILS localizer course (extended runway centerline). Still another cue was the second officer's inability to receive the Automated Terminal Information Service (ATIS) or to contact company radio. A fourth and final cue came when the airport was in sight and one of the flight crewmembers noticed the airport configuration "just didn't look right," but the approach and landing were continued.

Cue: When multiple things don't make sense, multiple questions are in order.

(Mis)Using Cues to Excuse

In all of these cases, competent pilots had warnings and cues that something wasn't right. In each instance, the pilots used the cues not to make things right, but to make excuses. Each one rationalized reasons for the unexpected, and each was therefore comfortable with the decision—right up to the point when it became painfully obvious that something was very wrong. You may have done it yourself. Even if you escaped without harm, safety requires avoiding the make-excuses mindset. So, how do we properly use the cues?

Everyone has experienced that nagging feeling that something is not quite right. The little voice is speaking, but why? When you have this experience, take a mental step back and think about what an observer might see. When things just don't add up, sometimes you have to question authority, whether that "authority" is human or machine.

Sometimes you may have to clear your head to see what the trouble is. A common bit of advice is to pause and "wind the clock" before taking any action. The rationale for this advice is twofold. First, "winding the clock," whether literally or mentally, is a way to "do something" that requires no thinking, thereby freeing mental capacity to work on the possible reasons for that funny feeling. Second, it helps prevent rash decisions and impulsive actions.

Sometimes you may have to clear your head to see what the trouble is.

Cueing Up a Solution

Though it's tough to get away from it all while flying the plane and fighting the funny feeling, here are a few tips for cueing up a safe solution:

- Consider engaging the autopilot, if installed in your airplane. "George" can fly the plane, but only you can think and make decisions.
- Verbalize the problem. If something doesn't seem right, what is it that doesn't seem right? For instance, "The radios seem to be working, but I can't receive frequencies that would normally be available by now." This simple process can help you formulate the questions needed to discover the problem.
- Use all available resources. Ask for help from ATC, co-pilot, passengers, or even another pilot via radio.

It's simple things that keep us out of trouble, and it's the failure to do the simple things that get us into trouble. As Corrigan's story shows us, it can be easy to convince yourself that you're headed the right direction. Instead, heed the signs and "red flags"—they might just save your life—and let "Wrong Way" be a moniker for the history books.

Mike Lenz is a program analyst in Flight Standards Service's General Aviation and Commercial Division and also a pilot.

ANTHONY COPPOLA

Engineering *the* Future *of* Flight

In just 106 years powered flight has progressed from a mere dream to where it affects nearly everyone on the planet. Aviation enables our commerce, our lifestyles, our travel, and our defense. We owe that reality to those pioneers who looked to the sky and overcame seemingly countless obstacles to create the aviation technologies that make our modern lives possible.

We may not think of ourselves this way, but tomorrow's generations will regard us as the pioneers of *their* day-to-day reality, but only if we have enough people with the "right stuff" to develop technologies for tomorrow. As you may have heard, the pool of qualified workers for aerospace jobs has been shrinking in recent years.

According to Troy Thrash, executive director of the National Aerospace Development Center, in a June 2007 U.S. Air Force press release, the average national age of aviation and space workers is 55. "Even NASA said they employ more people older than 70 years old than they do younger than 30," Thrash said. "The concern is that we don't have knowledge transfer mechanisms in place to take what's in the brains of those 70-year-olds back down to the kids coming up in the aerospace industry today." Up to half of the current aerospace workforce is eligible for retirement within the next five years. Unfortunately, the pool of qualified workers for aerospace jobs has shrunk in recent years, and we will only be able to replace half of these retirees.

Students use professional tools to solve real problems that industry has identified and defined.

The Challenge—Wing Design

Fortunately, a group of visionary organizations from government and business formed to address this challenge. Their solution is the Real World Design Challenge (RWDC). The Challenge is a public/private partnership that aims to develop a Science, Technology, Engineering, and Mathematics (STEM) workforce by teaching high school students the art of innovation. Specifically, students use professional tools to solve real problems that industry has identified and defined.

Given the importance of aviation innovation, the 2009 Real World Design Challenge focused on maximizing fuel efficiency through wing design. Engineers from Cessna designed the technical challenge and set up the basic part kit. PTC, a computer software company, provided each school that participated with a perpetual license for professional engineering software valued at nearly $1 million. Flomerics provided each team with EFD.Pro analysis software. Business Educational Partnerships Group and the Educational Development Center helped design the program and its process. The Educational Development Center designed the scoring rubric. FAA took a lead role helping with the logistics as well as by contributing aviation and engineering mentors. According to U.S. Secretary of Energy Steven Chu, this competition shows that, "U.S. students, when challenged to excel, are able to perform at the highest levels of science, math, and engineering."

The Results—Designs with Flair

On March 21, 2009, two hundred school teams from ten states participated, and each state sent its best team to a national event in Washington, DC, to present its wing design to a panel of expert judges. The judges conferred while the students attended presentations by engineering professionals. "I was surprised that high school students were capable of working at this level of engineering expertise," said John Stuart of Parametric Technology Corporation and one of the judges. The results were close; since all the presentations were of exceptional

The Real World Design Challenge's final round took place at the National Air and Space Museum on March 21, 2009. Honolulu's Iolani School won first place.

quality. Ultimately, the teams from Cumberland Valley High School in Pennsylvania, Iolani School in Hawaii, and Newburyport High School in Massachusetts advanced as the three finalists.

The finalists had a last chance to present their work to a blue-ribbon panel of judges from government, industry, and academia gathered in the Smithsonian's National Air and Space Museum's IMAX theater. Each team rose to the challenge. All presentations showed professional skill, and even before announcement of the winning team, dignitaries were approaching students with internship offers. The all-female team from Iolani School won.

The Future and Beyond

One of the goals of the Real World Design Challenge is to reach all students—including groups that have been underrepresented in engineering and aerospace. The Iolani School team highlights the value of reaching these traditionally underrepresented groups. The Real World Design Challenge will continue to expand to reach as many students as possible. The 2010 Challenge will add 15 more states and all 50 states will be included by 2011. FAA will continue to be a major contributor to the aviation component of this exciting and important project.

What is the topic for the 2010 Challenge? Sorry, we can't tell you. It's scheduled to be announced in October, so stay tuned for more details. The Challenge's Web site is http://www.scied.science.doe.gov/RWDC/index.html.

Anthony Coppola is program manager at Parametric Technology Corporation (PTC), where he manages government relations and strategic education programs. He holds a J.D. from George Washington University Law School and a B.S. from the College of William and Mary.

Calling All Mechanics

Keep Informed with

FAA's Aviation Maintenance Alerts

Aviation Maintenance Alerts (Advisory Circular 43.16A) provide a communication channel to share information on aviation service experiences. Prepared monthly, they are based on information FAA receives from people who operate and maintain civil aeronautical products.

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

Recent alerts cover:

- Main gear down-lock switch failures on a Piper PA-32R-301T
- Broken piston skirt on a Continental IO-470-VO engine
- Frayed aileron cables on a Cessna 421B

Check out *Aviation Maintenance Alerts* at: *http://www.faa.gov/aircraft/safety/alerts/aviation_maintenance/*

BEAU KELSEY

Nuts, Bolts, and Electrons

In-flight Electrical Fires

Although in-flight electrical fires are rare, they can happen at any time—and they can be disastrous. In this article, we'll look at ways you can minimize the chances of a fire, and be better prepared in the event one occurs.

Recognizing an In-Flight Fire

Many pilots associate an in-flight fire with a flame-filled cockpit. Usually, though, the first signs of an electrical fire are much more subtle—a slight burning odor, a higher than normal electrical load, or tripped circuit breakers, etc. Abnormal behavior of electrical components (avionics, for example), or random failures of multiple components, can also tip you off to fire in a hidden area. Pay attention to the clues: Don't wait for a major problem before taking action.

Be familiar with the specific emergency procedures for your aircraft, so you can take action at a moment's notice.

Resetting Circuit Breakers in Flight

Crewmembers may create a potentially hazardous situation if they reset a circuit breaker without knowing what caused it to trip. A tripped circuit breaker should not be reset in flight unless doing so is consistent with explicit procedures specified in the approved operating manual used by the flightcrew or unless, in the judgment of the captain, resetting the circuit breaker is necessary for the safe completion of the flight. A detailed entry in the aircraft's maintenance log is a proven safety practice for tracking purposes and may provide maintenance personnel with key information to enable prompt trouble-shooting and effective corrective action on the ground. For more detailed information on FAA's policy on resetting a circuit breaker in flight, reference Advisory Circular 120-80, In-flight Fires.

Immediate Action

During any in-flight fire, every second counts: The last thing you should be doing is fumbling through the pilot operating handbook looking for an emergency checklist. Be familiar with the specific emergency procedures for your aircraft, so you can take action at a moment's notice. Here's a simplified checklist:

- Fly the aircraft and stay calm!
- If you're talking to ATC, advise them that you have a fire and may need to shut down the aircraft's electrical system. Declare an emergency: There is NO penalty for doing this.
- Look for any tripped circuit breakers, then turn OFF their associated component(s).

If you can identify a component that is potentially involved and not essential to a safe landing, but its breaker isn't tripped, pull the breaker(s). This may stop the smoke or smell and prevent further damage. Remember: The underlying problem is still there.

DO NOT RESET the breaker(s)!

If you can't immediately identify the problem, turn OFF the master switch first, then individually turn off all the other electrical components. Remember that you will lose lighting and certain flight instruments once the master switch is off.

- If flames are present, or if smoke persists or worsens, use a fire extinguisher to put out the flames.
- Prepare to land as soon as practical, even if it means an off-airport landing. If you are flying in instrument meteorological conditions, try to reach VFR conditions.

On the Ground

The presence of smoke or a burning odor is a sure indicator that wiring has been damaged—and that means the aircraft is no longer airworthy. It's

important to remember that wiring damage is cumulative and that the damage will not get better without attention. Without a thorough inspection, there's no way to determine the extent of the damage. A relatively inexpensive replacement of a faulty wire, or a circuit protection device, could prevent a much more costly repair (or a total loss) in the event of a fire or accident.

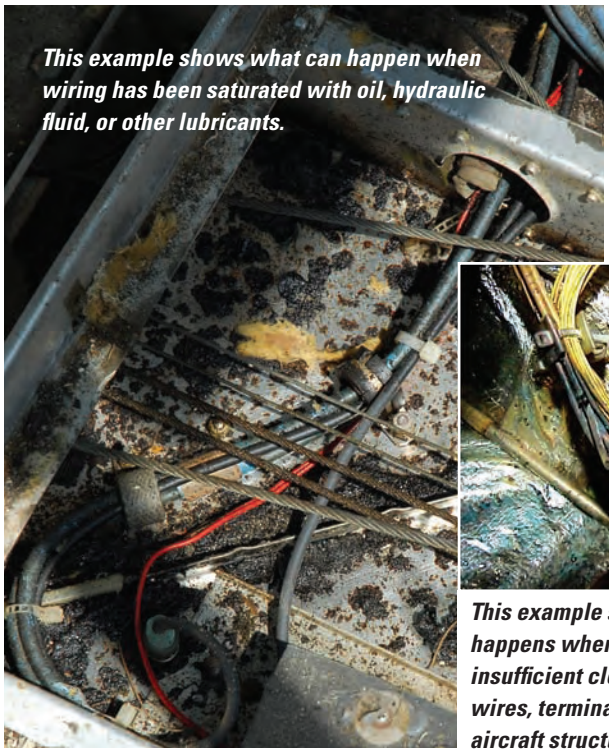
Once you're safely on the ground, write a detailed description of the incident in the aircraft's maintenance log or discrepancy sheet, noting which components were in use when the problem started. The more detail you provide, the faster the problem can be found and fixed. This written entry, along with appropriately placed placards (and/or other less formal notices), should also let other pilots know the aircraft's status and prevent it from being operated until the problem has been addressed.

Talk to your mechanic or maintenance facility about assisting with your aircraft's routine inspections and maintenance. It's a perfect opportunity to become more familiar with your airplane and its electrical system. Aircraft owners should routinely interact with maintenance personnel and attend programs or seminars sponsored by aircraft type clubs, maintenance experts, or the FAA. The AOPA Air Safety Foundation's Aging Aircraft (www.asf.org/agingaircraft) online course is an excellent resource to help aircraft owners recognize and mitigate the risks associated with aging aircraft.

Aging Aircraft

As aircraft age, both chronologically and in terms of flight time, many factors can affect their "true age"—and, in turn, the condition of their wiring. With the average GA aircraft nearly 30 years old, and many classic aircraft still flying past the age of 50, the condition of aircraft wiring is often given less attention than it really deserves. See the photos above for examples of problems to look out for.

Damaged wiring may cause an electrical fire by serving as an ignition source for surrounding materials such as fabric, oil, fuel, or other contaminants. On older aircraft, the wiring insulation could sustain a fire—and it may continue to burn even after the circuit breaker has tripped. In addition to flames, the smoke from the insulation or surrounding materials may be toxic and incapacitating.



This example shows what can happen when wiring has been saturated with oil, hydraulic fluid, or other lubricants.

This example shows what happens when there is insufficient clearance between wires, terminals, bus bars, or aircraft structure.

Once a problem is identified, report it to your mechanic and ground the aircraft until it has been thoroughly inspected and repaired.

Beau Kelsey is a writer on the Aircraft Owners and Pilots Association (AOPA)/ Air Safety Foundation's (ASF) Safety Brief staff.

Priorities during an In-flight Fire

While it may be tempting to trouble-shoot, your first priority should be getting the airplane safely on the ground. Prioritize the tasks at hand, and if possible leave the entire electrical system OFF. For aircraft with glass cockpits, remember that loss of primary flight and/or engine instruments will occur after turning off electrical power. If power is needed momentarily, use it, then promptly turn the master switch OFF. Handheld radios and nav/GPS receivers are extremely useful under these circumstances.

BARRY BALLENGER

PANELS AREN'T JUST FOR INSTRUMENTS

Photos by Barry Ballenger

When we think about panels on aircraft, most pilots want to talk about the latest addition to the instrument panel. Instrument panels are important, and it's a lot of fun to show off the gadgetry. But, just as the traffic you don't see is the airplane you have to worry about, the panels you don't see are the ones that can bite the complacent pilot.

I'm talking about access panels—those nondescript and unassuming little doors that hide the working parts of your airplane. These include the round, oblong, or square access panels that mechanics use to peek, poke, and prod inside an airplane during maintenance. On general aviation airplanes, sheet metal or machine screws typically hold these panels in place. Snap latches, such as the flush Hartwell-type latch, often secure the engine-access panels. On larger aircraft, the panels may be held in place by quick disconnect fasteners or other specialized types of hardware, such as Dzus or camlock fasteners.

Just as the traffic you don't see is the airplane you have to worry about, the panels you don't see are the ones that can bite the complacent pilot.

A Proper Preflight...

What's the big deal with access panels? One issue is ensuring their security. Pilots routinely open certain access panels during the preflight inspection to check important systems on the airplane. A typical access panel used by pilots is one designed for checking and servicing engine systems. For example, access panels must be opened in order to check the oil level or drain the gascolator. These panels must also be carefully and completely secured by closing the access door and ensuring the latch mechanism is fully engaged.

One of the many things you should have learned about preflight inspection is how to determine that the latches have engaged. Typically, cues, such as a distinctive clicking sound, tell you that the latch has engaged and is locked. Still, don't move to the next preflight item until you have double-checked and verified the security of any access panel door that you have opened.

...Prevents Problems during Flight!

If you think that a loose or missing access panel is minor, consider these examples.

- A corporate jet returned to the airport shortly after takeoff with the crew reporting a loud banging noise emanating from the tail area. After landing, an inspection revealed that one of the pilots had not properly secured the forward latch on the fueling panel during preflight. When sufficient airflow got under the half-latched panel door it blew open and began banging in the air stream—creating a loud noise and damage to those parts of the airplane it had "attacked."

Vital components reside behind this inspection panel.

It took about $7,000 and a day of down time to get the aircraft back in service.

- An Australian-registered amphibious aircraft lost an access panel on one of the floats during flight. The access panel struck the right horizontal stabilizer, causing considerable damage and leading to control issues. Specifically, the airflow across the open access hole caused vibration of the hydraulic lines, which failed and caused loss of hydraulic fluid. One result was partial loss of the landing gear extension system.
- A single-engine Cessna aircraft returned to the airport after the pilot complained of a "buzzing noise" that started above 60 knots. An inspection revealed an underside horizontal-stabilizer access panel had only one screw holding it. Once the air flow became sufficient, the panel began vibrating against the stabilizer structure, which caused the "buzzing." A new panel and some touchup paint got the airplane back in airworthy condition. The mechanic had to pay the bill since he had not properly secured the panel after maintenance.
- An accident was barely avoided on a training aircraft after a mechanic opened the access panel on the underside of the wing to perform a check and left it open while briefly returning to the hangar. A student pilot was scheduled to use the airplane for his next training flight. Thankfully, though, he found the open access panel during his preflight inspection and asked why it was open.

Maintenance Tip

Any time you conduct maintenance on an aircraft, leave a note/tag or a streamer in the cockpit securing it in the cockpit (a great location is the yoke) stating the aircraft is not airworthy for flight. An aircraft parked on the ramp or tie-down may be assumed to be ready to fly and it may not be apparent it is not ready for flight.

Lessons to Learn

Any good preflight must include a thorough inspection of all access panels. Check for loose or missing hardware, condition of the panels, and, most importantly, security of the panel. Make sure that you check the underside of the fuselage, wings, and stabilizers. Address any concern before starting the engine.

A final caution: Never assume that simply securing an open panel will take care of the issue. As in the case of the student pilot described above, you need to find out if any maintenance tasks are incomplete. An open panel may indicate that a mechanic started maintenance on the aircraft. Loss of an access panel may be minor in comparison to taking off in an aircraft with incomplete maintenance tasks.

An open panel may indicate that a mechanic is still performing maintenance on the aircraft.

Barry Ballenger is an aerospace engineer with the FAA Small Airplane Directorate in Kansas City, Missouri. He also holds an A&P with Inspection Authorization and is a private pilot.

LOUISE OERTLY

College Park Airport

100 Years and Counting

When you think of the Wright brothers, you think of Kitty Hawk or Dayton, Ohio. But did you know that the Washington, DC, area can also claim the Wright brothers as part of its aviation legacy? That legacy is still alive today at Maryland's College Park Airport, which this year celebrates its centennial, making it the oldest continually operated airport in the world.

Field of Firsts

1909 - First woman passenger to fly in the United States, when Mrs. Sarah Van Deman went for a flight with Wilbur Wright

1909 - First military pilot, Lt. Frederick Humphreys, to solo a military aeroplane

1909 - First U.S. naval officer, Lt. George C. Sweet, to fly in an aeroplane, when he flew as Lt. Frank Lahm's passenger

1911 - First army aviation school opened with newly trained pilots Lt. Henry "Hap" Arnold and Lt. Tommy Milling as Wright pilot instructors and Capt. Paul Beck as the Curtiss instructor

1911 - First testing of a bomb-aiming device from an airplane, using a bombsight developed by Riley E. Scott

1912 - First mile-high altitude record by a military aviator, Lt. Henry "Hap" Arnold

1918-21 - First regular U.S. Postal air mail service inaugurated from College Park to Philadelphia to New York. The compass rose and original airmail hangar remain at the modern airport.

1924 - First controlled helicopter flight was achieved by Emile and Henry Berliner

1927-35 - First radio navigational aids (forerunner of instrument landing system used today) developed and tested by the Bureau of Standards

You could say it all began in early 1908 when the U.S. Army released Signal Corps Specification No. 486, ADVERTISEMENT AND SPECIFICATION FOR A HEAVIER-THAN-AIR FLYING MACHINE. According to the requirements, this machine was to be capable of carrying two people with a combined weight of 350 lbs. with sufficient fuel for a 125-mile flight, achieve a speed of at least 40 mph, and remain in the air for at least one hour. It was also "desirable that the flying machine should be designed so that it may be quickly and easily assembled and taken apart and packed for transportation in an army wagon." Also, "it should be sufficiently simple in its construction and operation to permit an intelligent man to become proficient in its use within a reasonable length of time." The contract winner would train two military officers as pilots once the flying machine was approved.

Out of more than 40 inventors bidding on this contract, only the Wrights were able to supply a flying machine in the time specified. In September 1908, Orville Wright began test trials on the Fort Myer parade ground near Arlington, Virginia. Unfortunately, it was during these trials that the first powered-aircraft fatality occurred. On September 17, the aeroplane's right propeller fractured and struck one of the rudder's bracing wires. Orville tried to level the wings, but the *Flyer* took a steep dive to the parade ground. The passenger, Lt. Thomas Selfridge, died of a fractured skull and Orville suffered serious injuries.

As a result of Selfridge's death, the U.S. Army's first pilots wore large heavy headgear reminiscent of early football helmets to prevent similar injuries. Despite the accident, the Army was impressed with the *Flyer's* design and granted an extension to repair the airplane.

Official testing began again on July 27, 1909, and the repaired *Flyer* met all the contract's specifications, plus exceeded the 40-mph speed requirement by 2.5 mph. On August 2, the U.S. government accepted its first airplane, *Signal Corps Number One,* and the Wrights now had to fulfill the next part of their contract—teaching two military officers, Lts. Frank Lahm and Frederic Humphreys, how to fly it.

As with ballooning more than a century before, this new form of aviation drew curiosity seekers to Fort Myer's parade grounds to witness this new flying machine. An estimated 7,000 people crowded the parade field making safety an issue. The parade ground was too small for that large a crowd, and the need for crowd control was taking soldiers away from their other duties. Also, the airplane noise frightened the horses during training. The post commander finally instructed they find another training location.

During a routine balloon ascent, Lahm spotted a large level field close to the Maryland Agricultural College (now the University of Maryland) and the town of College Park. At seven-miles distance, they hoped the location was far enough away from Washington to discourage visitors, but the curious still flocked to the 160-acre field, including reporters from local papers who reported daily on the airfield's happenings.

An article in the October 6, 1909, *The Washington Evening Star* proclaimed the "Wright Machine Reaches College Park by Mule Power." It went on to say the training of Humphreys and Lahm would continue as soon as the plane was assembled. Nearly two weeks later, on October 18, another *Evening Star* article quoted Wilbur Wright regarding one of his students. "Lt. Humphreys is a very daring automobilist and is accustomed to handling a gasoline engine and steering wheel, so that his chaperoning an aeroplane through the unobstructed air is not such a trick, seeing that he is used to dodging all sorts of wheeled vehicles on bad Maryland roads." He also said Humphreys was one of his most satisfactory pupils.

The men would solo after three hours of flight training, with a third officer, Lt. Benjamin Foulois, also training. Unfortunately, before Foulois had a chance to solo, the airplane was damaged. With

Flying to College Park

BY MEREDITH SAINI

Pilots flying in the Washington, DC, area must comply with regulations codified in Title 14 Code of Federal Regulations part 93. The final rule requires all pilots who wish to operate within the Special Flight Rules Area, or SFRA (formerly the Air Defense Identification Zone, or ADIZ), to file a SFRA VFR or an IFR flight plan, squawk a unique transponder code, and maintain two-way communication with ATC at all times.

College Park Airport lies within the Flight Restricted Zone, or FRZ, the inner circle of the SFRA. Pilots who wish to use College Park Airport must complete a few extra steps, which are time consuming, but not inherently difficult.

1. Complete the SFRA training course at www.faasafety.gov. This is mandatory for *all* pilots flying in or near the SFRA, including the FRZ. FAA recommends that you print out the course certificate and carry it with you when you fly.

2. Call the Baltimore Flight Standards District Office at 410-787-0040 and request an appointment with an FAA inspector. You will need to bring four documents with you:

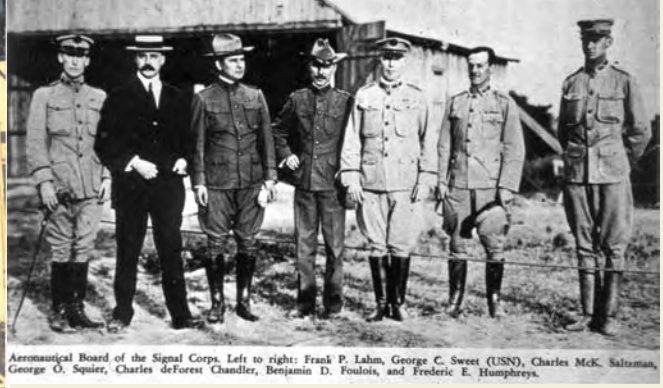
a. Your pilot certificate(s)
b. The original copy of your medical certificate
c. Your SFRA course certificate (see Step 1)
d. One form of government identification, e.g., driver's license, U.S. passport, or U.S. military ID

3. Obtain a Personal Identification Number (PIN), which you will need to file your FRZ flight plans. Complete the PIN issuance form, available at www.tsa.gov (search for "Maryland Three Program") and bring it to the TSA fingerprinting office in Terminal A at Ronald Reagan Washington National Airport. There is a fee; call TSA at 571-227-1322 to check.

4. Visit College Park Airport to turn in your PIN form and learn about specific departure and arrival procedures. An airport representative will call you when your PIN is available. This process can take up to several weeks.

File your FRZ flight plans by calling the FSS Washington Hub at 866-225-7410. FRZ flight plans are not accepted by 800-WX-BRIEF or DUATS.

For more tips on obtaining a PIN and operating out of College Park Airport, visit www.collegeparkairport.org.



Aeronautical Board of the Signal Corps. Left to right: Frank P. Lahm, George C. Sweet (USN), Charles McK. Saltzman, George O. Squier, Charles deForest Chandler, Benjamin D. Foulois, and Frederic E. Humphreys.

winter coming and realizing that flight instruction would be difficult in the cold weather, the Army moved the men and equipment to Fort Sam Houston in San Antonio, Texas, and Humphreys and Lahm returned to their former assignments. With the military leaving College Park Airfield, it opened the door for civilian aviators, who received permission to lease the field.

As the saying goes, the rest is history. When military aviators left, inventors and entrepreneurs came to the field to demonstrate and develop their own flying machines leading to many significant events and firsts in aviation history. For more information on the history of this airfield, visit the College Park Aviation Museum, which is an affiliate of the Smithsonian Institution and located on the grounds of College Park Airport. Both the museum and airport are owned and operated by the Maryland-National Capital Park and Planning Commission. Their Web sites are: www.collegeparkaviationmuseum.com and www.collegeparkairport.org.

College Park Airport (KCGS), as it is known today, no longer supports student-pilot operations and is open for those visiting the Washington, DC, area. However, be aware that the airport is within the Washington, DC, Metropolitan Area Special Flight Rules Area (SFRA) and special vetting procedures must be completed before visiting. See the box on page 29 for more information.

Louise Oertly is an associate editor on the FAA Aviation News *staff.*

Flight Forum

One More Thing

In your May/June 2009 issue, it seems to me one very important point was missed, Type Certificate Data Sheets. Owners have no clue what they are and why they are important. I'm a retired A&P/IA and the stuff we found on aircraft that is not supposed to be there was astonishing. Aviation mail order catalogs cause a lot of the problems—owners buying stuff, putting it on themselves, or wanting us to install it. Without proper paperwork the mechanic must research and document the parts. It took a lot of time that had to be charged to the customer.

—Alfred Dierdorf
Via the Internet

Autogas Dilemma

I read your article in the May/June 2009 issue, "Why Does My Airplane Smell Like It Has Been Drinking," and find the whole implication of your article is that pilots only use unleaded auto fuel to save money. "The increased cost of 100LL is much less than the cost of fixing an airplane if the engine decides to lose power at an inopportune time." This is absurd. For engines in many antique airplanes and those low compression engines that were certified for 80/87, using 100LL is dangerous to impossible. The thing that is so frustrating is that unleaded auto fuel is an "approved" aviation fuel, but it is on less than 4 percent of the airports with fuel service.

Where is the FAA support for having the approved fuel necessary for the health of General Aviation, especially now for the LSA, 100 percent of which are approved for unleaded auto fuel?

—Dean Billing
Sisters, Oregon

The intent of the article was to point out that ethanol can cause problems and it is not approved for use in airplanes with autogas STCs at this time. The FAA would approve the use of those fuels containing the ethanol, if the STC holders or original equipment manufacturers could show that the aircraft/engines would meet the applicable certification standards. The FAA cannot dictate what fuel is available, nor can the FAA state that the fuel must not contain certain ingredients. The FAA can only approve airplanes that meet the certification standards using a fuel that has a specification.

The FAA is looking at autogas/ethanol along with other organizations, e.g., the Experimental Aircraft Association and the Aircraft Owners and Pilots Association. Unfortunately at this time, there is no simple solution.

Which Form?

I just wanted to inform you of a bit of confusion in the article on page 5 of the May/June issue (Mapping the Maintenance Paper Chase). The article mentions FAA Form 377 and in the next sentence goes on to mention Form 337 under step two. Are they two separate forms or is that a misprint? I am not a technical person so the difference, if any, is not apparent to me.

—Ken Nephew
Via Internet

You are right. It should be FAA Form 337, not 377. Thanks for pointing out the typographical error, which we corrected in our online edition.

FAA Aviation News *welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be addressed to your local Flight Standards District Office or Air Traffic facility. Send letters to: Editor, FAA Aviation News, AFS-805, 800 Independence Avenue, SW, Washington, DC 20591, or FAX them to (202) 267-9463, or e-mail them to AviationNews@faa.gov.*

SUSAN PARSON

Editor's Runway

Call to Action

Reading aviation history underscores the magnitude of change in training, certification, and continued operational safety. I got to see that again from my perch as a note taker for the Administrator's June 15 Call to Action on Airline Safety and Pilot Training. With my summer reading immersing me in the mindsets of early aviation, I found it striking that not one of the four focus areas for this meeting would have been considered as key to aviation safety back then.

The Enemy Within

Once upon a time, the focus of any aviation accident investigation was the airplane. Over time, though, engineers and manufacturers learned to design extremely reliable powerplants, airframes, and components. Airplanes and parts do sometimes fail, but reliability and redundancy make mechanical failure an endangered species in the National Transportation Safety Board's (NTSB) search for "probable cause."

Aircraft reliability and redundancy make mechanical failure an endangered species in the NTSB's search for "probable cause."

These days, probable cause is more likely to be summed up in Pogo's famous phrase: "We have met the enemy, and he is us." For evidence, consider two of the year's most publicized aviation accidents. In January's "Miracle on the Hudson," Cactus 1549 was crippled by Canada geese. An experienced and highly professional crew made a dead-stick ditching that allowed everyone aboard to walk away. In the second air-carrier accident in February, factual information suggests that the basic mistakes contributed to a very different outcome.

We as individual pilots, flight schools, and general aviation organizations must commit to improving what we do in training and performance, professionalism, and flight discipline.

We Can Do Better

Participants in FAA's Call to Action meeting agreed that the air carrier industry must do better in human factors areas that contributed to the Buffalo tragedy. GA accidents do not attract the level of scrutiny of major accidents, but they are no less tragic and, in most cases, just as preventable. The four focus areas are all relevant to non-commercial general aviation. I hope that we as individual pilots, flight schools, and general aviation organizations will all commit to improving:

- *Training Standards and Performance.* FAA encourages a "train the way you fly, fly the way you train" approach using realistic scenarios. As reported in the March/April 2009 *FAA Aviation News*, "hi-fi" simulation in GA can also enhance the quality and effectiveness of training.
- *Professional Standards and Flight Discipline.* Being a professional pilot is a mindset, not a paycheck. Perform in a way that makes every flight a testament to good aviation citizenship.
- *Mentoring.* Consider finding an aviation mentor to help you safely gain experience in new areas. If you are a pilot with experience to offer, reach out and be a mentor. (For more information, see www.faa.gov/training_testing/training/media/mentoring_best_practices.pdf).
- *Management Responsibilities for Crew Education and Support.* If you own or operate a flight school, consider what you can do to ensure that your flight instructors have the knowledge, skills, attitudes, and support they need to nurture safe pilots.

Safe flights and happy landings!

Susan Parson is a special assistant in Flight Standards Service's General Aviation and Commercial Division. She is an active general aviation pilot and flight instructor.

MEREDITH SAINI

FAA Faces

Photo by John Cowart

Ray Stinchcomb, Jr.—A Vintage Inspector

Raymond "Ray" Stinchcomb, Jr., has a passion for airplanes that creak, leak, and make a lot of noise. Since his first solo flight in a J-3 *Cub* in 1964, Stinchcomb has logged 12,000 flight hours in dozens of aircraft types ranging in size and complexity from the Pitts S1 to the Challenger 605 business jet. Despite the allure of modern glass cockpits, his favorite airplanes are the World War II-era haulers like the DC-6, for which he recently earned a type rating in Alaska.

"The older airplanes just have more character," says Stinchcomb, an aviation safety inspector with the Certification and General Aviation Operations Branch at FAA headquarters in Washington, DC. "I have always been interested in the older and round-motored aircraft."

Stinchcomb is the go-to guy at FAA headquarters for all things vintage and experimental, which encompasses a broad spectrum of aircraft. While many pilots might associate the experimental designation with a single-engine kit plane, large aircraft, such as the legendary Boeing B-29 *Superfortress*, that were never issued an FAA type certificate are classified as experimental, even though they have proven their worth for more than 60 years.

Keeping these valuable older airplanes in top flying shape is no easy task. Yet, Stinchcomb says most are now owned by private collectors who have the financial resources to ensure they are maintained properly. However, finding examiners to keep the pilots of these aircraft on their game has proven to be an even greater challenge.

"Some of the required skills just aren't being taught anymore," he says. As more pilots and FAA examiners focus on becoming familiar with glass-cockpit technology, fewer are proficient in the operational characteristics of vintage aircraft. Although FAA does not track the number of active pilots with tailwheel endorsements, Stinchcomb believes, based on his direct field experience, those numbers are dwindling. Stinchcomb says there are 13 specialty designated pilot examiners qualified to conduct practical tests in experimental and vintage aircraft. Only about 200 tests are completed annually.

Stinchcomb participated in developing the FAA's Vintage and Experimental Aircraft Program in the early 1990s. This program standardizes pilot qualification, training, and certification in U.S. and foreign experimental aircraft that are turbine-powered, that have a maximum gross weight in excess of 12,500 pounds, and piston-powered aircraft with an engine that exceeds 800 horsepower and a maximum indicated airspeed of greater than 250 knots.

Aircraft Operating Limitations require that before acting as PIC in these aircraft, a pilot must get a specific aircraft authorization on his or her pilot certificate. The FAA is revising Advisory Circular (AC) 91-68 to reflect this procedure, but for now pilots may refer to FAA Order 8900.1 (the "Inspectors' Handbook"), Volume 5, Chapter 9, Section 2, Letter of Authorization (LOA) for PIC of Surplus Military Turbine- or Piston-Powered Airplanes.

Since joining the FAA in 1991, Stinchcomb has edited portions of this handbook to address the experimental aircraft authorization program. He joined the Certification and General Aviation Operations Branch in 2002 and has since taken ownership of the National Designated Pilot Examiner Registry and the Experimental Aircraft Examiner program.

For more information on the Vintage and Experimental Aircraft Program, visit www.faa.gov/licenses_certificates/vintage_experimental.

Meredith Saini is a contractor with Flight Standards Service's General Aviation and Commercial Division. She is a commercial pilot and a flight instructor.

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