FAA Aviation News

AVIATION SAFETY FROM COVER TO COVER

JANUARY/FEBRUARY 2005

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Breakthrough Technologies for Situational Awareness

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FRONT COVER: Soar Truckee's "Mighty Pickle" a Piper Pawnee at the Truckee-Tahoe Airport, CA. (H. Dean Chamberlain photo)

BACK COVER: SpaceShipOne and its White Knight on the ground at Mojave CA (Dave Clemmer photo)

FIGURE 1 — This Beechcraft Bonanza *is typical of many existing high-performance general aviation aircraft used for transportation.*

Breakthrough Technologies for Situational Awareness—

One User's Experience

story and photos by Robert A. Wright

As pilots, we are fascinated by improvements in aviation technology. Typically these involve new aircraft models, engines, and avionics and other technologies that improve the safety and utility of our flight operations. Lately, new avionics innovations have created possibilities for large improvements in safety and utility by adoption of technology that is a fundamental feature of modern life—the graphic user interface (GUI).

For some time, we have become accustomed to using personal computers (PC) and the Internet to obtain weather information and other services for our pre-flight planning requirements. Graphically displayed information has vastly improved the ability to convey information, as opposed to individual pieces of data, in a manner that improves the user's picture of what is taking place. The old adage "one picture is worth a thousand words" comes to mind as one way to describe this revolution.

The GUI revolution is now firmly entrenched in the cockpit. For several years, general aviation pilots have had a choice of moving map navigators with Global Positioning System (GPS) as the navigation engine. The latest generation of these devices has powerful aviation databases that provide aeronautical, topographical, and other information and provide the functional equivalent of a flight management system (FMS) found in larger aircraft.

More recently, the GUI revolution has picked up even more steam with the introduction of multifunction displays (MFD) and primary flight displays (PFD). Within the next 12 months, these devices will become de facto standard equipment on virtually all new production general aviation aircraft (except utility and recreation aircraft). These devices, when combined with appropriate data bases and integrated data links or other receivers, provide the platforms for conveying important safety information to pilots in a powerful graphic presentation. Graphical display of weather, terrain, traffic, airspace, and other information will become universal in such aircraft. Importantly, these capabilities are now available for operators of used aircraft through retrofit installation or the use of portable electronic flight bags (EFB) and even the personal digital assistants (PDA) that many of us now find indispensable.

Many experts within the general aviation community and in the Federal Aviation Administration (FAA) have concluded that improved pilot situational awareness can result from use of graphic interfaces that have benefited from intelligent human factors design. These experts have concluded

that improved situational awareness can reduce the number of general aviation accidents that result from weather, controlled flight into terrain (CFIT), loss of control, and other causes.

THE BIG PLUNGE

I am fortunate to own (in partnership with another pilot) an older Beech *Bonanza* that I routinely use for most of my transportation requirements (see figure 1). My partner and I have owned the *Bonanza* since 1993 and in 2001 we accomplished a major renovation of the airplane. In addition to new paint, interior, glass, and other cosmetic changes, we installed a multi-mode radio with integrated GPS and a moving map navigator. To top it off, we also installed an MFD that has a high resolution moving map that includes airspace alerting and terrain alerting. The installation we selected (see figure 2) is typical of what many owners of high performance aircraft are doing with retrofit installations of advanced avionics.

These new avionics have changed the way we fly. For example, the track line feature on the MFD vastly improves performance during an instrument approach while using an Instrument Landing System (ILS) by showing changes in track as the wind shifts during the approach. I can now "nail" the localizer by reacting to these track changes—even before the change results in a course deflection on the horizontal situation indicator (HSI) or course deviation indicator (CDI). This ability to display track information as an overlay on the flight plan route or desired track is one of the most useful features of any moving map navigator or MFD (see figure 3).

I could cite several other examples of how my situational awareness has improved with the original MFD installation, but the best was yet to come.

THE BIG LEAP FORWARD

Having made a big investment in our airplane and seen the safety and other utility advantages that accrued from this decision, my partner and I began to look differently at the benefits of new flight technology. As with many PC owners in search of the "killer" application, I was interested in adding the next big leap in situational awareness to the platform already installed. The obvious choice was weather data link.

In 2004, we installed a weather data link receiver in the *Bonanza* that is integrated with the existing MFD. The data link receiver we chose receives continuous weather information broadcast from a satellite without any user input required. The weather information is up-linked from the service provider to the satellite and then down to the aircraft. By the time I have taxied out and performed the pre-flight run up, the weather information has been received by the aircraft for the route of flight entered into the GPS navigator, within certain defined parameters.

The weather graphic information I now have is extensive. I can display precipitation including the NEXRAD images, graphical METARS (station reports), graphical AIRMETS and SIGMETS, and text versions of these products. The latency (time delay) of the graphic products (displayed on the MFD) has typically been four minutes or less.

After four months of use, I can say that the system has provided huge safety benefits.

PUTTING IT ALL TOGETHER

Although the operation of the weather data link system in the *Bonanza* is straightforward and user friendly, the interpretation of the information displayed is not entirely intuitive. The pilot must have certain knowledge, skills, abilities, and experience to obtain the full benefit from the system. The best way to illustrate this is to describe a typical scenario for how I have used the system in the four months since it was installed—and then to draw some conclusions regarding its use and how the FAA and general aviation community can use this information.

A well-executed flight usually starts with a well-planned one. I use the *Bonanza* almost entirely for business travel, to attend industry and FAA meetings, conferences, demonstrations, and other events. A typical business trip for me might include meetings in Kansas City, Wichita, and Denver—all in the same day. The flexibility of using a general aviation aircraft allows me to accomplish this travel pattern efficiently. It does require advanced planning, however, to ensure that I have considered weather and other factors that could affect my schedule.

I usually monitor the general weather patterns beginning several days before a flight like the one I described above. I monitor several Internet weather sources, focusing on the general patterns and the graphical forecasts displayed on the National Weather Service (NWS) prognostic charts. I obtain more extensive information the night before the flight, including terminal forecasts (TAF) for the morning departure.

On the morning of the flight, I will obtain a detailed weather briefing, Notices to Airmen (NOTAMS), and information on temporary flight restrictions (TFR) from the Internet or the Direct User Access Terminal (DUAT) system. If I need to fly under instrument flight rules (IFR) I will also file an IFR flight plan(s) at this time. I obviously will do this when instrument meteorological conditions (IMC) prevail, but I will often do it when visual meteorological conditions (VMC) prevail if there are special airspace or other special circumstances that affect my planned route. Most of this information is available in various graphical forms from computer sources—at no cost to certificated pilots.

When I arrive at the airport and after I complete the pre-flight inspection, I check the weather one last time using the computer terminals now available at most general aviation airports. The cost of these terminals is usually borne by the fixed-base operator (FBO) and passed on to pilots as a "bundled" charge in the price of fuel

FIGURE 2 — A typical older high-performance aircraft partially retrofitted with modern avionics.

and other services. Just before departure I will concentrate on graphic display of precipitation, especially the composite NEXRAD image, and hazards such as turbulence, icing, and low ceilings, as displayed by the graphical AIRMETS, SIGMETS, and other advisories.

After taxiing out and completing the run-up, my new weather data link system has automatically activated and the information for my flight can be displayed on the MFD. If there is convective activity present anywhere nearby I will take one last look at the NEXRAD image to see the proximity of the activity to the route already displayed on my MFD. This allows me to anticipate any changes in route that I might request from air traffic control (ATC) to avoid the convective activity.

Once I have taken off I will continuously monitor the weather along my route using both the weather data link system and my own visual observations of conditions. I can look forward up to 250 miles, but I can also look ahead even further using the "pan" feature on the MFD. I will periodically monitor the METAR reports (displayed both graphically and in text form) for my destination and other locations, as well as pilot reports (PIREPS) and other data available from the data link system.

The pre-flight information I described earlier was free, but the in-flight data link products have a cost to the user. I pay a monthly fee for the service. With the amount of hours I fly and the fact that it is transportation related, I can say that the equipment has already paid for itself. I use it on every flight and find it invaluable in increasing both the safety and utility of my flight operations.

What about those pilots who either cannot afford the installed avionics, do not fly often, or who rent airplanes rather than own them? If you fly only locally or on sunny days on short flights mostly for recreation you probably do not need a weather data link system. If you are in the other categories, there are now many options for obtaining data link services, including weather, on the EFB, PDA, and other platforms I mentioned earlier in this article.

CAUTION—KNOWLEDGE, SKILL, AND EXPERIENCE ARE REQUIRED

The scenario I described above works well for me because, admittedly, I have nearly 8,300 flight hours and more than 40 years of weather flying knowledge, skill, and experience obtained in professional, business, and personal flights. I acquired the actual additional skill needed to work the controls on the data link receiver on my first flight using it—it is quite intuitive (unlike many GPS moving map

FIGURE 3 — A multi-function display (MFD) with moving map features and a high capabiliy multi-mode radio.

navigators). The critical knowledge and skill areas are in knowledge and interpretation of weather hazards and aviation weather data that portray these hazards. Even more important is the ability to manage risks associated with weather hazards and the ability to exercise effective decision-making skills.

One example will suffice to illustrate these important points. Pilots using the data link system will quickly face the need to distinguish the fine line between routine weather flying and hazardous convective weather and other hazards. For example, how can you tell whether the "yellow" area displayed on the MFD is convective activity forming or merely moderate precipitation with relatively smooth air (see figure 4)? Several techniques may be needed to resolve this particular decision.

The data link receiver itself can provide important clues by displaying graphical SIGMETS, AIRMETS, and other advisories. PIREPS can also be important clues. The data link system in our *Bonanza* also displays the echo tops on the NEXRAD image, which helps identify areas and severity of convective activity.

Technology alone will not provide all the answers, however. As a pilot, you must have sufficient knowledge of weather and the skill in interpreting weather information in order to put the information obtained from weather data link in context. For example, it is essential to know the nature of the air mass in which you will be flying to determine such basics as whether it will be stable or unstable. Knowledge of frontal behavior and circulation are also critical to understanding the "big" weather picture.

Finally, I make it a rule of thumb to stay VMC whenever the weather and other conditions permit. For example, I will fly high to stay in "on top" conditions to be able to visually assess weather ahead, even if I incur an operational penalty, such as a stronger head wind. I find the data link system to be superior to both airborne weather radar and lightning detection devices as an aid in weather flying, but nothing yet devised beats the good old "mark one eyeball" as a weather decision tool.

Some in the government and industry human factors research community have raised questions about whether data link equipment and similar cockpit equipment will actually improve safety or rather produce unintended hazards. For example, with respect to weather data link, researchers have raised questions about the latency (delay) of the data, the potential for pilot "fixation" on the display at the expense of loss of positional and situational awareness, and whether such systems encourage risky behavior.

The FAA certainly is in favor of applying relevant, timely, and validated research results to the development of training standards and other guidelines. My own work in this area, over the last ten years, has focused on practical and "hands on" operational experience with several experimental and operational data link systems of various kinds. I believe that much of the previous research on cockpit automation and related human factors issues needs to be updated. For example, with respect to the items in the previous paragraph, the current data link systems have very little latency. The new generation of MFD and PFD displays vastly increases situational awareness because of the quality of the mapping features and data integration, and risk management is a process to be managed as a part of pilots' normal responsibilities. I urge the research community to move on and address these issues with updated information.

Perhaps the largest area of debate in the aviation and research communities centers on whether weather data link information should only be used for "strategic" rather than "tactical" purposes in flight. I believe that this issue is being overcome by technological developments and other events. The rapid decrease in latency of data transmission, coupled with the improvements in displays and in types of weather information available allows weather data link equipment to be used for many tactical weather decisions and may even be superior to airborne weather radar for this purpose. Future research in this area needs to include empirical data from pilots who actually have used these systems.

PUTTING IT ALL TOGETHER

Given what I have just outlined, how can a low time pilot safely use equipment such as weather data link for in-flight weather decision-making?

FIGURE 4- A display of data linked weather on an MFD. It is important to know whether the precipitation displayed at the aircraft's one o'clock position is convective in nature — or not.

Pilots need to start with a solid base of knowledge regarding weather and the particular weather data link equipment they will use. There are many excellent training materials available on these subjects from courseware providers and in some cases the equipment manufacturers. Many of these products are computer based and interactive so that they are convenient and easy to use.

The next step is to obtain skills in how to use the weather data link products in real world scenarios that you will encounter in the flying you typically do. Some of this can be done before you leave the ground by again taking advantage of recent courseware offerings dealing with subjects such as practical weather risk management. These products will be just as valuable for pilots who do NOT have data link and other new technologies. This phase will be completed when you obtain some expert flight instruction in one or more real world scenarios in your aircraft, perhaps in combination with a required flight review or instrument proficiency check. Try to seek an instructor who has experience with both new technology and training concepts such as risk management, single pilot resource management, and scenario-based training.

The final phase of transitioning to the use of weather data link and other new technology is to gain operational experience gradually, using the equipment during benign weather and gradually integrating it into more serious IFR/IMC conditions. If you are not instrument rated, the system will be used in a different way since you must practice weather AVOIDANCE, rather than weather flying.

WRITING THE "BOOK" ON USING THE NEW TECHNOLOGY

If you have concluded that the new era in general aviation is different, you would be right. The "art and science" of operating general aviation aircraft is evolving and many people in the FAA, industry, and academia are hard at work in creating the guidelines, standards, and certification methods to enable this evolution to occur at a new higher threshold of safety and utility.

Flight training in particular is receiving special attention. The FAA/Industry Training Standards (FITS) program is focused on technically advanced aircraft (TAA) and standards developed under FITS are already in use by manufacturers of TAA aircraft including Cessna, Cirrus Design, and others. A new generation of single pilot jets from Adam, Cessna, and Eclipse will use FITS standards as a fundamental part of their training and operational safety systems. The weather data link technology I have described and similar advances will be standard equipment on virtually all new piston and turbine powered general aviation aircraft. For more information, the FITS web site can be found at <http://www.faa.gov/avr/ afs/fits>.

This revolution in safety and utility will be showing up soon at your local airport, as the new aircraft are delivered and begin to enter the rental fleet. Technology retrofit will enable owners of current aircraft to experience these benefits and portable platforms will make the capabilities more affordable and available to more pilots.

As more pilots experience the use of weather data link and similar technology, the FAA would like to hear from you on how you are using the equipment and how it is benefiting your flight operations, or not. As I have found, these changes are exciting and will be of interest to the entire pilot community.

Send us your thoughts and remember to fly safe.

Robert A. Wright is the Manager of Flight Standards Service's General Aviation and Commercial Division, AFS-800, 800 Independence Ave., S.W., Washington, DC 20591.

Tales of an ASI

by Al Peyus

Up, Up, and Away!

or

Watching the Experts Run A Really Big Show!

What a show! What organization! What a great family event! The 2004 Albuquerque International Balloon Fiesta® was all that and more. The Balloon Federation of America (BFA) invited me to participate, observe, and discuss exemption issues with its members, during their annual meeting, while attending the first weekend of the Albuquerque International Balloon Fiesta® in Albuquerque, New Mexico.

When I arrived at Fiesta, I found myself in awe of the sheer number of people including pilots, balloon chase crews, organizers, caterers, merchants, venders, artists, security, and sightseers. To understand the enormity for the potential chaos as well as the major organizational tasks on hand, you need to understand the size and scope of the event.

Fiesta Park is on land purchased primarily for the use of the Balloon Fiesta, but it also supports a golf course. The area is the shape of a very large oval and at least six times larger then any football stadium. The center of the oval provides for 26 rows of launch sites. Each row is separated by about 100 feet. This allows room for about 25 balloons per row. At the south end of the oval is a row of tents housing various sponsor-supported food and entertainment areas. In the center of this is a restaurant that is a permanent two-story structure. A large Arts and Craft tent at the north end of the oval holds articles for sale and display. Along the entire east side are double rows of food, coffee, and merchant kiosks. On the west side of the field area is the briefing stand for the morning pilot briefings. All around the outside of the north and east sides of Fiesta Park are parking facilities for thousands of motor vehicles. It is an enormous area!

You now have a mental picture of Fiesta Park in your mind. Let's toss in thousands and thousands of people watching the events. The visitors are encouraged to walk among the 750 balloons as the balloon crews unpack, set up, inflate, and launch. It has the potential for mass chaos! Each balloon has a crew of at least three people (the pilot and two assistants) not counting any passengers who may or may not have any idea of the process. Got enough people on the ground yet? Nope! Don't forget the professional and amateur photographers, the news reporters, news camera crews, the Federal Aviation Administration (FAA) personnel working the event, and you now have ALMOST everyone that is there. The one group I have left out is the one that keeps every thing moving smoothly on a day-to-day basis.

They are called "Zebras." These are all volunteers! They come because they love balloons and love the excitement of the event. For lack of a better title, they are the launch directors. No one spreads out his or her balloon, fills with air, or launches without a Zebra's approval. It is very easy to figure out who is a Zebra. Their "uniform" matches the name. Each Zebra wears some form of black and white striped apparel. Most are in true costume with many males in long blond wigs, some sport zebra tails trailing behind them, hats of various and imaginative design and style, and the ever present whistle! Picture in your mind a team of referees from a football game who have gone over to the "Outer Limits" with a touch of Saturday Night Live. Zebras are most helpful and gracious, but strict in their upholding of the rules governing the Fiesta. Without them, the chaos would rule supreme.

So, what do Zebras do and why? First, they act as launch directors. A launch director is the total, absolute final authority for a balloon launch. A pilot and crew cannot start unfolding their balloon without the launch director giving the go-ahead. As the masters of their surroundings, the Zebras are in constant contact with each other. Every time a balloon is allowed to unpack, lay out, fill, heat, or launch, the Zebras broadcast the "who, what, where, when, and how" each time they advise a balloon to act.

Mario Toscano photo

The Balloon Fiesta has a regimented training schedule the Zebras must follow to be allowed to act as a launch director on the field. It is a two-year training period that follows a regimented curriculum set by the ballooning industry. After the initial training is completed, a Zebra must follow a senior Zebra around the field for a set time before he or she can start to give the orders. Even then, a senior Zebra is there to assure the proper and correct directions are given in the proper time frame.

There are 750 balloons at the Fiesta. There are 60 Zebras. The Chief Launch Director, the Assistant Chief Launch Director, and Section Chiefs run the entire show from a tower at the south end of Fiesta Park. The Chief Launch Director monitors two radios that communicate with each Zebra in the field. As expected, the tower provides an overall view of the launch site. From there, what the Zebras in the field miss, the Chief Zebra catches. In every case, no balloon is allowed to be unpacked, laid out, filled, hot filled, or launched, unless it has been deemed safe by the Zebra on site.

Remember, I said the Zebras were all volunteers? The Zebras I talked with were excited about being there, enjoyed what they were doing, and took their tasks very seriously. Each was proud of the fact that no accident, incident, or injury occurred under his or her watch.

The balloons are launched in groups, or lines. Although 750 balloons launch from the field during "Mass Ascensions," the field has only 208 launch sites—which dictates three separate "waves" of balloons are either "Standing Up" (ready to launch) "Going Cold" (cold inflating and preparing to "Stand Up") or "Laying Out" (getting the balloon and gondola assembled and awaiting the order from the Zebras to "Go Cold"). Depending on the flow and direction of the wind, a group of rows, or lines, is released at one time as the Zebras work their way through the balloons. The Chief Launch Director (Chief Zebra) and the Zebras closely monitor this at the launch site. If there is airspace traffic close by, it is pointed out by the Zebra to the pilot before lifting off. Simple hand signals get the job done and everyone is safe and sure. As stated earlier, not only is the Zebra watching out for the pilot's safety and the surrounding balloons, but also for the spectators who are getting that "up close and personal" view of balloons in action. The time to launch all the balloons spans only a little over one hour filling the skies over the Albuquerque area with a multitude of rainbow colors and shapes.

One of the more interesting aspects of the Albuquerque International Balloon Fiesta® (AIBF) is the public

Mario Toscano photo

participation. There is no "show line" as at an air show. The public (sightseer) is allowed to walk amongst the balloons during preparation for launch, filling, heating, and launching. In some cases, a sightseer may be asked by the pilot or chase crew to assist in holding the balloon solidly on the ground before lift off. This is nothing more then the chase crew and sightseers putting their weight on the sides of the basket to keep the balloon from inadvertently lifting off. At this point, the balloon is almost at a neutral balance between lift and weight. When the pilot is ready to launch, the pilot may get the signal from the Zebra to "walk" the balloon to assure the lifting force is ready. (Walking a balloon is moving a balloon across the ground while it is in the balanced state—not ready for flight, but not solidly on the ground.)

This is an interesting and very different policy from other air events. By the AIBF rules, it is the pilot of each balloon who has the responsibility to assure the safety of the sightseers walking around the pilot's balloon. The pilot is also responsible for the safety of his or her equipment, the use of the fans, and the burners. Many of the sightseers are there for the first time and tend to ask questions of the crews as they are preparing the balloon of launch. As with the Zebras and all of the Fiesta volunteers, safety is first. The pilots and chase crews tend to handle safety in the easiest and most productive manner possible by keeping the sightseers fully informed. While the sightseer observes the phases of the launch, he or she will be briefed about every step taken and why. There is always safety in knowledge, and it provides a great public relations bonus. Each crew I talked to delighted in talking about their balloon, the process of getting it ready for flight, and always the safety concerns and issues.

While the sightseers are mingling with the balloons, the adults and children are collecting balloon cards. Most of the balloonists have business cards printed with a photo of his or her balloon, the name of the balloon, its registration number, and the pilot's name with possibly his or her web site. These cards have become collectable items over the years and the children love them. And what a great way to maintain public relations as well as get the public excited and knowledgeable about balloons!

Every balloon crew that registers for the Fiesta agrees to abide by the rules and regulations set by the Fiesta committee. These rules include requiring United States certificated pilots, or, if foreign certificated, pilot certification for the country of balloon registry. Each pilot must have at least a Private Pilot certificate, and each must abide by all the applicable federal aviation regulations, the Albuquerque International Balloon Fiesta (AIBF) rules, as well the provisions of the Fiesta waiver issued by the FAA's Albuquerque Flight Standards District Office (FSDO). Every pilot and crew

must attend the event operations briefing and the appropriate morning's pilot briefing held on field each morning they intend to fly.

One of my favorite rules issued by AIBF is,

"Pilots and their crews are required to behave in a sportsmanlike manner and to comply with the directions of the AIBF Event Officials. Profanity or unsportsmanlike conduct directed at any official will be grounds for expulsion of the pilot from this event or future AIBF events."

That just about sums everything up in a nutshell. This is the rule that establishes the standard and tone by which all the balloonists must conduct themselves and maintain the safety record that has been building over the years.

That one rule is the backbone supporting the authority behind the actions and commands of the Zebras. Every balloon crew registering for the Fiesta agrees to abide by the rules and regulations set by AIBF. If a Zebra tells a balloonist to hold for inflation and the balloonist ignores that request, the balloonist may be asked to leave the Park for the day! If a balloonist has another infraction, he or she may be asked to leave the event entirely. If the infraction is serious enough or there are repeated infractions, the balloonist and crew may not be allowed to return in the future. Fiesta is a "by invitation only" event, and there are always more balloonists who wish to participate in the 10-day event then slots available. No one wants to be the uninvited balloonist.

In the year 2000, the Fiesta committee allowed 1,000 balloonists to register for the event. All 1,020 (new math?) arrived ready to participate. That was the year the number 750 was determined to be the maximum number operable in a safe environment. Above all, safety is always the most important issue on everyone's mind.

The AIBF organizing body has had over 30 years of practice to get everything under control and keep all this activity safe. And, it is controlled and safe! Everyone working on the Fiesta from the volunteers, chiefs, leaders, section chiefs, promotion personnel, sponsors, security, medical services, city fathers, state officials, and of course, the ever present aviation safety inspectors from the Albuquerque Flight Standards District Office, all have a major hand in maintaining that high level of safety. There is a massive amount of activity planned for the 10 days. And to assure it is all accomplished safely, there are the 60 Zebras. I am including a list of all the scheduled activities to give you a flavor of the scale and amount of activity that seems to be in constant motion. With this, you will understand why the term "controlled chaos" is so apropos. The events include:

Mass Ascensions - all 750 registered balloons launch on Saturday, Sunday, Wednesday, Saturday, and the last Sunday

Balloon Glow - about 400 balloons remain tethered to the ground, and, on command, do a timed burn that presents a fantastic and beautiful color show in the early evening hours on two nights of the 10

America's Challenge Gas Balloon Race® - this is a long distance gas balloon race with the balloons using hydrogen or helium as a lifting gas, and launches on the first Saturday evening. In previous years some contestants have flown as far as the Atlantic coast. The first and second place winners of this event represent the United States in the Gordon Bennett International Balloon Race.

Night Magic - similar event to the Night Glow with 300 balloons

Prize Grab - balloons launch from sites off field and fly to Fiesta Park trying to grab prizes from the top of 30-foot poles on Thursday and Friday

Fly-in Tasks - about 350 balloonists launch from off field sites flying to Fiesta Park where they will try to drop markers as close as possible to a preselected target on Sunday and Monday

Multiple Judge Declared Goal - this is the reverse of the Fly-in Task where about 350 balloonists fly out of Fiesta Park to a pre-designated target area and drop a marker on Sunday, Monday, and Tuesday (for the Special Shapes only on Thursday and Friday)

New Mexico Challenge Hot Air Balloon Long Distance Race - this is limited to three different classes (sizes, or amount of cubic feet of hot air) of balloons. The balloons are limited to 60 gallons of fuel, with the balloon flying the longest distance being declared the winner. Some contestants in the past reached close to 100 miles after launching on Monday

Black Jack - balloonists fly over large playing cards and attempt to drop special markers on two cards to get the best Black Jack hand on Monday and Tuesday

Balloon Fiesta Golf – the balloonist flies over a pre-selected golf green and drops his or her marker closest to the flag on Thursday and Friday

Minimum Double Drop – balloonists flying over designated target areas drop two markers and the two closest markers in the target areas wins. This launches on Thursday

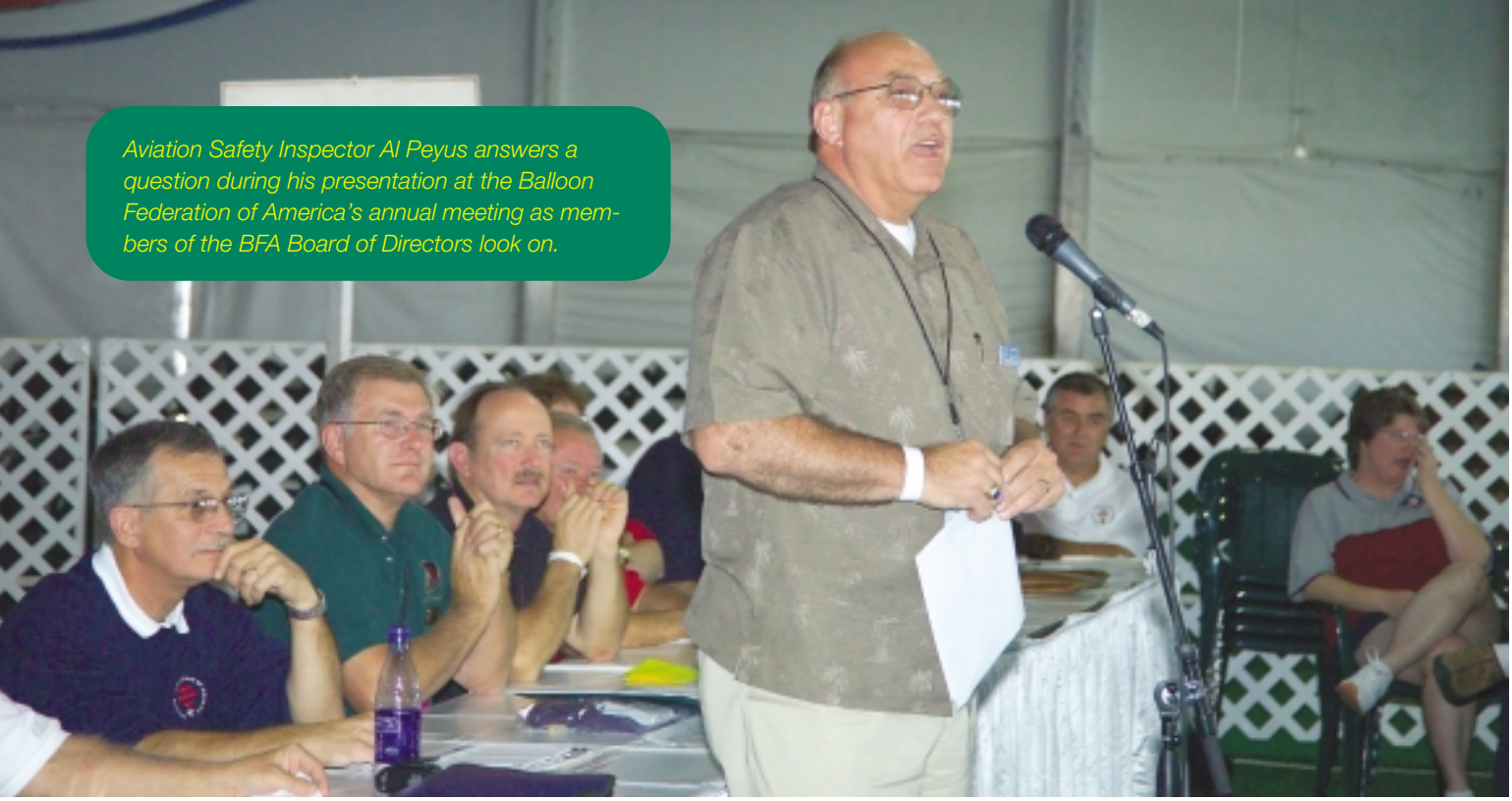
Fiesta Challenge – this is the "roadrunner-coyote" ("Hare and Hound") race that started the Albuquerque International Balloon Fiesta way back in the early 1970's. Now 100 randomly selected balloons chase the "coyote." Where the coyote lands, each chase balloonist must drop his or her marker. The winner is the one closest to the center of a three hundred foot circle. This is done on the first Friday and Saturday.

Special Shape Events – all the special shapes (cows, Greek urns, barns, Smoky Bear, American flags, Brazilian bees, frogs, flying pigs, Marine Corps bulldog, triangles, and cartoon characters) will either launch from, or tether on, the Fiesta Park field on Thursday and Friday

Dawn Patrol – balloonists launch one hour before sunrise each morning

Albuquerque Aloft – is a special program that has balloonists launching from selected elementary schools grounds after an educational lecture is provided to the children on the first Friday of Fiesta

Flight of Nations – no more then



Aviation Safety Inspector Al Peyus answers a question during his presentation at the Balloon Federation of America's annual meeting as members of the BFA Board of Directors look on.

Mario Toscano photo

two balloons from each country are allowed to enter with a maximum of 30 countries represented who launch on Wednesday just before the mass ascension and after the "Balloon of the Day" is launched.

All this activity is interspersed with fireworks. On the first weekend a sky diving team performed as well as a display of antique cars, tractors, and a very unusual "balloon basket roadster." To add further to the chaos, add in over a mile of kiosks featuring a cornucopia of food and drinks, vendors selling everything imaginable from "T" shirts to pins, and special sponsor vehicles providing very special imported foods. As you can see, there is something going on almost continuously for 10 straight days. With hundreds of thousands of visitors to the Park throughout the event, no one was placed in harms way by any balloon or chase crew. Safety is always number one on everyone's "to-do" list.

All this activity requires great planning and control. The control is no good unless the support for the controllers is in place. And, it is. The Zebra tells a balloon to unfold, inflate, liftoff, or hold, and the balloonist must obey. As mentioned earlier, the consequences are not good for the pilot and his or her crew. The Zebras handle all with a terrific sense of humor, a real understanding of all the safety issues, and knowledge of the rules and guidelines set by the Fiesta committee and the FAA waiver for the event.

I cannot complete this article without mentioning the time, manpower and effort invested by the Albuquerque FSDO to assure a safe event. The planning starts about two weeks after the last day of the event and goes through the day before the start of the next year's event. Albuquerque FSDO had every inspector doing something almost every day with only a skeleton crew manning the office. Six additional inspectors from the Southwest Region also helped out. During each mass launching, the FSDO had six inspectors on the field observing the activities and four driving around in vehicles observing the flights and landings.

Every one involved in the Albuquerque International Balloon Fiesta has two primary goals. The first was to have an event that was free from injuries, incidents, and accidents. The next was to make sure everyone had the opportunity to have fun and enjoy the wondrous sport discovered by the first aviators from France. With the exception of security, first aid, and the FAA, the rest of the people running and monitoring the largest international balloon event are volunteers!

My hat is off to the Albuquerque International Balloon Fiesta committee, the volunteers, the Albuquerque FSDO, security, the first aid groups, and everyone involved for all their hard work, great planning, and fantastic public relations that has produced another near flawless event. I saw no interpersonal difficulties that were allowed to go beyond the first words. No incidents occurred on the field that could have placed the sightseers, balloonists, or chase crews in jeopardy. The Albuquerque FSDO assured a safe environment for everyone while allowing a true family event to inspire, teach, and involve all ages of the public.

Anyone thinking of planning a large or small activity could take lessons learned from this event and the people that put it all together. If you want more information about planning and running an event like this, you might want to contact Ms. Pat Brake at the "Balloon Fiesta" office at (505) 821-1000 or search the Balloon Fiesta web site at <www.balloonfiesta.com>.

Al Peyus is an aviation safety inspector in Flight Standards Service's General Aviation and Commercial Division.

Emergency Planning for General Aviation Airports

by Ben Castellano

H. Dean Chamberlain photo

There are approximately 5,200 general aviation (GA) airports serving the general aviation population in the United States. Some of these airports are located in urban and suburban areas, others in rural areas. Some of these airports have a few operations a day; others are quite busy. Some receive operations by reciprocating-engine aircraft, while others receive operations by expensive jets. But one thing they all have in common is the potential for an accident on the airport. To prepare for this, owners and operators of general aviation airports should have an emergency plan in place that is current and updated periodically.

Why Is an Emergency Plan Needed?

GA airport owners and operators have unique problems that larger air carrier airports usually do not. To begin with, these smaller airports, for the most part, have more new and inexperienced pilots than do the air carrier airports. There are also pilots at these airports who own and operate larger and more powerful aircraft than they can really handle since they may not get a lot of hours in them. Also, there may be a lack of discipline in operating around an airport, especially one that is a non-towered airport. By this I mean a lack of communications (pilots not having or failing to use radios), cutting into traffic patterns, and so forth. I do not mean to imply that these airports are unsafe—on the contrary, accident statistics show a marked improvement in their safety. However, accidents do happen and it is not a matter of "if," but rather "when" will one occur. So it is better to be prepared in advance rather than use hindsight and saying, "Had we only known..."

Where to start?

Airport managers must understand the magnitude of the problem.

- What types of aircraft are using the airport: single-engine aircraft or twins, props, or jets?
- Are the operations seasonal, more in the summer or in the winter?
- What is the airport location relative to populated areas?
- What type of wildlife activity is in the area? Is the airport located near a wildlife refuge or near an active landfill?
- Where is the nearest fire station and whether the fire station personnel are volunteers or paid?

The list could go on.

Airport managers should list all the assets in the area that they can use in case of an emergency, such as fire departments (location and the type of equipment available), state police, local police departments and sheriff's offices; hospitals, medical facilities, and ambulance services (both private and public); state departments, such as Department of Natural Resources or its equivalent, Civil Air Patrol; state Department of Transportation; agencies of the federal government, such as the U.S. Coast Guard, the FAA, the Department of Interior; Federal Emergency Management Administration (FEMA), the FBI, etc.; and the military active, reserve units, and national guards units. All of these organizations have assets that may be used in case of a local emergency or disaster.

Additionally, the GA airport owner/operator will find much useful material and ideas in books published on the subject of emergency and disaster planning, such as the *Transportation Disaster Response Handbook* by Jay Levinson and Hayim Granot (Academic Press, 2002) and *General Aviation Firefighting for Structural Firefighters* by William Tackett (Delmar Publishers, 2000). Some other references available are: FAA's advisory circular, AC 150/5200-31A, Airport Emergency Plan, which is based on the FEMA plan used by most local jurisdictions for emergency planning; National Fire Protection Association 424, *Guide for Airport/Community Emergency Planning*; and the International Fire Service Training Association 206, *Aircraft Fire Protection and Rescue Procedures*. This list is not all-inclusive.

Writing the Airport's Emergency Plan

Prior to writing your airport emergency plan, you should contact the

emergency plans person for the governmental body that has jurisdiction over your airport (city, county, or state). This emergency plans person can provide you with information on how that governmental arm has trainers that can provide your airport personnel with information and training in the Incident Command System (ICS). This is a system that the first trained emergency responder will assume command and control of the incident until relieved by a higher authority. You may find that most of the emergency plans for your airport is already written. You should be able to write your emergency plan so that it compliments not conflicts with already written plans. Some of the items to consider:

Jurisdiction - who is in charge? This needs to be worked out before an accident rather than during an accident. An example of a jurisdiction problem involved Air Florida Flight 90 that crashed on Jan 13, 1982, on take off from Ronald Reagan Washington National Airport. The aircraft crashed into the Potomac River during a snowstorm shortly after the federal government had closed down. The river is under the jurisdiction of the Washington, DC, government (to the high water line on the Virginia side of the river). The aircraft took off from National Airport in Virginia and the Airport's Aircraft Rescue and Fire Fighting staff was one of the first to know about the crash. The Potomac River is a navigable waterway and therefore the U.S. Coast Guard also has jurisdiction. Additionally, the land adjacent to the river on the Virginia side is part of the Department of Interior's National Park Service. Police and fire services from Washington, DC, were unable to cross over to Virginia because the bridges were almost at a standstill with local commuters trying to get home. By the time the DC forces did arrive, there was some dispute about jurisdiction. This problem was eventually worked out, but it could have been avoided.

Communications and Coordination. Not only will there be different radio frequencies in use by different jurisdictions, but emergency services in the same jurisdiction may have that problem. Again, this should be worked out in advance. The airport manager can actually be the impetus to ensure there are better communication services between the different agencies that would respond to an accident on the airport. Organizations, such as Air Traffic, state and local police departments, fire departments, medical facilities all have their own common frequencies, some of which are unable to be accessed by the other.

Personnel. There have been times when there have been too many personnel arriving to help rather than not having enough. There may be a need to control people arriving to "help." This may mean assigning police officers not only to cordon off an area, but also to control the crowds. Fire fighting personnel need to be aware of the problems of fighting an aircraft fire. They should have an idea of where battery switches, engine cutoff switches, etc., are located and how to operate them.

Equipment. The airport operator needs to know what type of equipment is available from the different responders. Is there fire-fighting foam available in case of an aircraft fire? Are there rescue boats in the area when the airport is located by a body of water? Can helicopters operate safely in the area? Is there a triage system that is used by emergency personnel, and is it one common to different jurisdictions that may arrive?

The airport manager can act as a catalyst for emergency planning involving aircraft. After all, the public usually looks to the airport manager to prepare for and coordinate an emergency plan regardless of whether the aircraft crashes on the airport or off the airport.

As the emergency plan is drafted, it should spell out who is in charge and should list all the various agencies and their responsibilities. This would include state, local, and federal agencies; utility companies; private and public ambulance services; heavy equipment operators; the Red Cross; local clergy; etc.

The plan also needs to address not only aircraft accidents, but also building and hangar fires, fuel spills, fuel fires on aircraft, as well as in fuel storage areas (remember the Denver fuel farm fire in the early 1990s?), natural disasters (hurricanes, earthquakes, tornadoes, etc.). Consideration needs to be given to having current phone numbers and fax numbers available; maps and directions to hospitals and medical centers for ambulance drivers from other jurisdictions; essentials, such as food, water, dry clothing, heat (in cold weather); lights for nighttime operations; fuel containment; etc.

Training is of paramount importance. The local fire department should be familiar with the type of aircraft using the airport. They should also be familiar with operating in an airport environment, proper communications procedures, and proper gear to wear around aviation fuel fires. They also need to be aware of aircraft that have rocket-propelled parachutes built into the airframe and the dangers of such equipment.

Once the plan is in place and any memorandums of understanding with mutual aid parties have been signed, the plan should be tested. There should be at a minimum an annual tabletop exercise with all the involved parties and a partial full-scale exercise periodically. These exercises need to be followed by a critique. One thing to remember, the exercise is not to show how wonderful your plan is, but to see where it needs to be improved and reworked. While the preparation of an emergency plan may seem to be a major undertaking, it is easier to accomplish if different organizations have an outline to work with and are asked to contribute. The time spent coordinating a plan will definitely pay of when, and not "if," that accident occurs on or around your airport.

Ben Castellano is manager of FAA's Airport Safety and Operations Division.

Cockpit Courage and Preflight Pragmatism

Letting discretion be the better part of valor

by Michael W. Brown

Here's a question you may not have heard in a while…"If (fill in the blank) jumped off a bridge, would you do it too?" While such queries typically end with passing of adolescence, the sentiment still has a place in the very adult business of aviation safety. The inquisitor could have been a parent, a shop teacher, or your first flight instructor, but the conclusion at which they wanted you to arrive was the same. Good judgment is an individual exercise, and one that must never be abdicated, regardless of the circumstances. Of course, the consequences of hurling oneself from a bridge are readily apparent. However, the decision to defer an aircraft squawk, launch in the face of uncertain weather, or fly while suffering through illness, is often mired in uncertainty. These matters are further complicated when they involve two rated pilots, each of whom has drawn different conclusions from a given set of facts. Because all of us will eventually share the cockpit with another pilot, if only to complete our obligatory flight review, it is important to consider how best to resolve differences in aeronautical decision-making prior to every flight.

In the scenario outlined above, what we are really discussing is the critical role conflict resolution can play in cockpit resource management. Unfortunately, there is little guidance concerning how best to handle such matters. What's worse, other segments of the aviation community have even less insight to offer. Airline and military operations are heavily regulated, and the pilot in command is established long before crews reach the flight line. In these cases, go/no-go decisions are determined by strict operational guidelines, and an individual's initiative, personality, or agenda plays a diminished role in the process. This is not so for the general aviation (GA) pilot, who has a burden and a luxury unique in aviation. Unlike the military or air carrier communities, the decision if and when to fly lies solely with you. Sure there are external (and perhaps internal) pressures, but these must be weighed against the greater moral obligation to protect others (and yourself) from the consequences of a poor decision or a lapse in good judgment.

Of course, all of this is a moot point when standing on a ramp at any-airport U.S.A. debating the weather outlook with your fellow pilot. When attempting to resolve such issues, there are two critical forces conspiring against you—perception and risk aversion. While it is best to look at these as opposite sides of the same coin, each carries with it unique challenges. Learning to identify the traits that accompany each may be helpful in recognizing and avoiding potential conflicts.

First, let's look at perception. Perception is focused largely on the hazard side of the coin. For example, one pilot may perceive level-2 storm activity as a hazard. A second pilot may look upon it as simply another factor to be considered, no more or less significant than weight and balance calculations or runway length. An effective way to determine if perceptive differences will be an issue is to discuss a series of typical flight scenarios with the other pilot. What factors do they consider most important when planning and conducting a particular flight? Understanding an individual's operational philosophy can be most helpful in determining when and if you wish to fly with them.

On the other hand, the dynamics completely change when risk aversion enters the equation. In this case, both pilots may perceive a hazard exists, but one pilot may be willing (for a myriad of reasons) to accept the risk, while a second pilot simply will not. As a practical matter, the disconnect brought on by risk aversion is the most difficult to resolve. While it is possible to modify perceptions based on rational discussion, risk aversion tends to be more central to a person's psychological construction. As a result, it is nearly impossible to change. Thankfully, these differences are also the easiest to identify. Just remember, be prepared to stand your ground (no pun intended) when flying with someone "braver" than yourself.

Another difficulty lies in the fact that not everyone views hazards or risks in the same manner. Let's use an obvious example to illustrate this point. A 17-knot crosswind is a hazard in that it poses an element of risk. On the other hand, the degree of risk varies with a multitude of factors, such as pilot experience, aircraft type, etc. A seasoned aviator, flying a familiar aircraft, may not perceive a great risk. On the other hand, a student pilot flying a Cessna 152 is likely to consider this a very risky undertaking—same condition, two different responses. Who is correct? Realistically, both may be. Each pilot has exercised aeronautical decision-making and risk management. The more experienced pilot has decided to conduct the flight because it is within his or her ability to do so safely. The risk can be mitigated through a careful review of weather, the planning of an alternate, etc. The student, on the other hand, chose to eliminate the risk completely by staying on the ground.

All this aside, if you often fly with other pilots, you will eventually encounter a difference of opinion involving a critical go/no-go decision. You

may be the advocate of launching or remaining earth-bound, but in either case, the matter must be addressed. While it sounds elementary, the best way to avoid such difficulties is to adopt an unwavering operational philosophy. If you fly with another pilot, regardless of his or her experience level, make sure it is understood that each pilot has veto authority over the flight. If your aeronautical cohort is unwilling to exercise his or her authority, or is unwilling to recognize yours, it's best to find a new partner.

But how can you recognize the makings of a potentially tragic disagreement? If you tend to be the voice of restraint, you may hear comments such as:

"It will be fine."

This phrase is most likely the result of a perceptual disconnect between you and your flying partner. If you hear this, ask yourself (and your fellow pilot) why will it be fine? Will it be fine because it's always been fine? Will it be fine because we need to get home? Will it be fine because you've witnessed similar conditions in other aircraft? Frankly none of these provide a compelling case for risking one's life. There's only one good response to the question, and that is it will be fine because we have manageable options that may be exercised. If you don't have an out, than all you truly have is the aeronautical equivalent of a coin toss.

"I've been flying for (insert a suitably inflated number of years)…"

Here's a disconnect brought about by differences in risk aversion. This argument will usually arise when flying with a more experienced pilot, and it should immediately raise a red flag. Your concerns have been dismissed, and what your fellow pilot is actually telling you is that in the absence of a compelling argument to support his or her position, you should risk your life simply because he or she is willing to risk his or her life. Again, if someone jumps off the bridge, would you do it too? While I would never discount the value of practical experience, the thickness of a pilot's logbook provides no absolution once a poor decision is made. Is it possible the person has never encountered this situation before? You bet! Is it possible the pilot encountered a similar situation, made a poor decision, yet suffered no ill consequences? Absolutely. Remember, as a pilot, you are only as good as the decision you make *right now*—and the decisions you make are only as good as the options they provide.

"The forecast is always wrong" or "Flight Service always preaches gloom and doom"

This is yet another perception issue. No one can dispute that weather forecasting is an inexact science. We've all cancelled flights, only to have the clouds miraculously part, leaving behind a clear, beautiful day. Similarly, pilots have launched expecting blue skies, only to encounter unforeseen adverse weather conditions. With every flight, we are at the mercy of shortcomings inherent to meteorological science. However, we must not become dismissive or complacent when preparing to make go/no-go decisions. To the best of your ability, identify all potential hazards and assign each of them a strategy to reduce risk. If the risk cannot be mitigated to an acceptable level, then you must seek an alternative. The price of a rental car or hotel room is insignificant when compared to the value of your life.

"How will you ever expand your operational envelope if you are unwilling to take risks?"

A query such as this indicates a differing level of risk aversion. The real question is, "How do you expand your operational envelope without exposing yourself to unnecessary risks?" You do it through sound aeronautical decision-making and risk management. Remember, a hazard only becomes a risk (and thus a danger) if it is handled incorrectly. When you train, do so with experienced instructors who can help you safely broaden your aeronautical horizons.

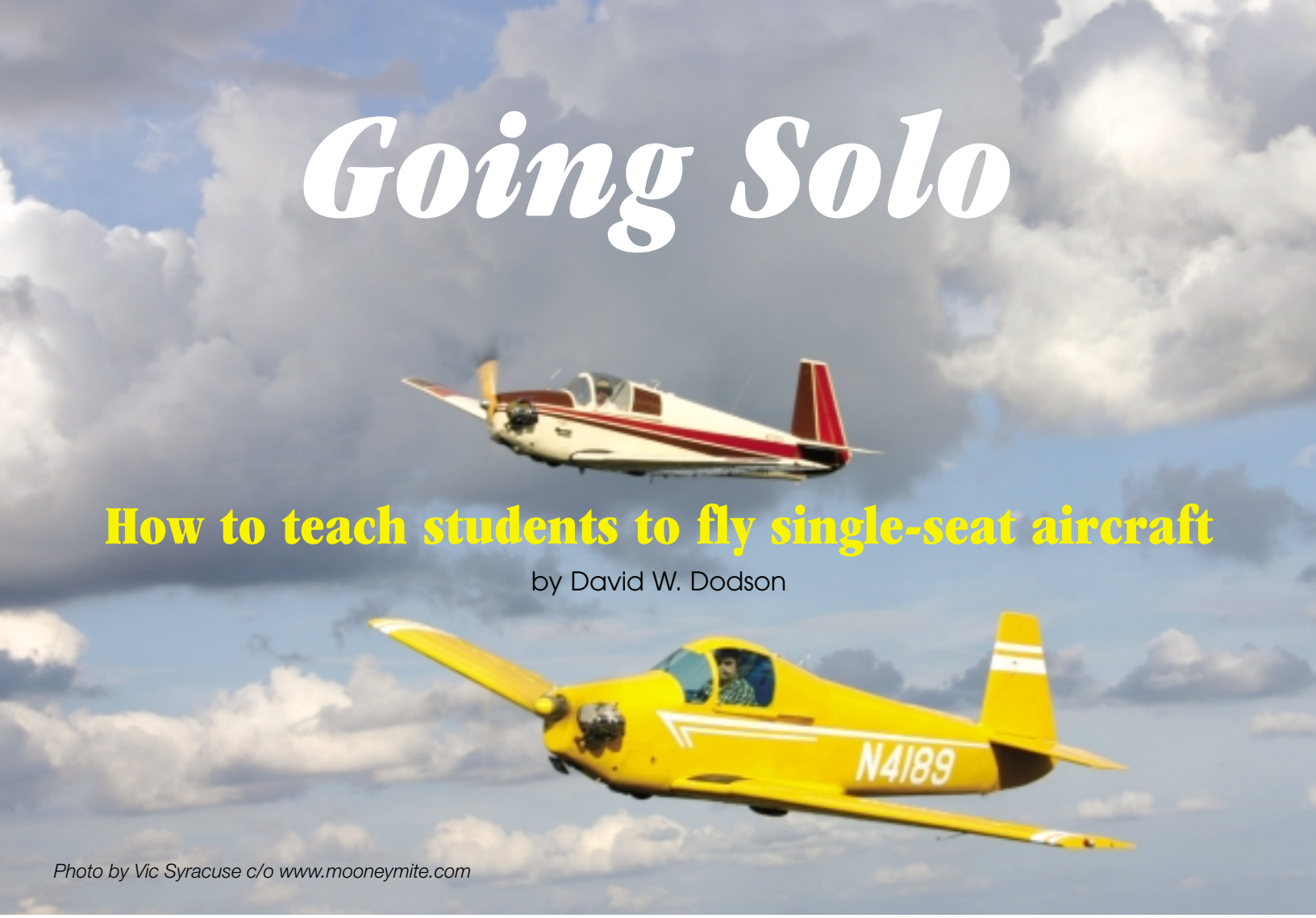
Thus far, all of the guidance provided has been tailored to the more conservative pilot. This most likely results from personal bias. However, if you find yourself flying with someone who is more risk averse, I have two pieces of advice to offer. First, avoid dismissing the concerns expressed by others. They may have experience you lack, or they may just offer a point of view you failed to consider. They may also be the voice of reason trying to keep you from falling victim to "get home-itis." Second, if the person with whom you fly is more conservative and you are not willing to adopt their personal minima, simply find another partner. It will help you avoid frustration, and your fellow pilot to avoid undue anxiety.

Now I don't want to leave the impression that a second pilot's involvement only serves to potentially complicate matters—quite the contrary. Unlike other segments of aviation, GA doesn't benefit from an integrated, multidisciplinary support system, such as meteorologists, dispatchers, crewmembers, flight department, etc. As a result, the ability to openly discuss safety-of-flight issues with another pilot is often very beneficial. It serves to reinforce or challenge your notion of what is and is not safe. This is why determining the philosophical compatibility of your cockpit companion is so important.

In short, we've all heard it said that we should never let an aircraft take us some place we don't want to be. To that I would add it's just as important not to let another pilot take us somewhere we don't want to be. There's simply no reason to jump from a perfectly good bridge, even if someone else is willing to do it first.

Michael W. Brown is an Aviation Safety Analyst in Flight Standards Service's General Aviation and Commercial Division.

Going Solo



How to teach students to fly single-seat aircraft

by David W. Dodson

Photo by Vic Syracuse c/o www.mooneymite.com

Recently, a pilot bought a new (to him) Mooney M18 *Mite* and landed hard on the nose wheel on his first attempt at landing. While he was thoroughly briefed by the previous owner, he did not receive formal "flight" instruction in his new single-seat airplane, so he was not adequately aware of the *Mite's* stall characteristics, ground-effect reactions, and landing-speed requirements. The hard landing bent the nose wheel, struck the prop, and grounded the airplane while the airframe could be repaired and engine examined.

The *Mite*, a production aircraft built from 1949 to 1955, has many of the characteristics of the upcoming light-sport aircraft (LSA), including, in some cases, only one seat. The flight instruction you give a new pilot in this kind of aircraft will be given in absentia—when your student most needs you, you'll be on the ground. As if that wasn't a thrilling enough prospect, the useful load of the *Mite*—and many LSAs—exceeds 50 percent of its empty weight. For that reason, loading, even within its weight and balance envelope, can change the flight dynamics sufficiently to catch the unwary. Good, quality instruction is vital to safe operation

Normally, a pilot who purchases a new aircraft looks for an instructor familiar with that make and model. With many new models coming along or the purchase of a homebuilt or a rare model like the Mooney *Mite*, that's often easier said than done. So, unless you're a noted expert in that type, the pilot may be coming to you as a second choice. If you decide you're up to the job, designing a training program is a slow, deliberate process. First, you'll practice on the ground, then move to the taxiway, and finally, if all goes well, your student will take to the air—a test pilot in his or her new airplane.

Single Seat

More than 30 years ago, I lent my Mooney *Mite* to a local flight instructor, one who had flown only Cessna trainers. I didn't know this and didn't know to ask because all my instructors up to that time had been military, and most could fly anything. He came in a little fast (safety margin) and then pulled back hard on the stick (like flaring the familiar 150). The *Mite* climbed almost 200 feet, approaching the vertical, stalled, and recovered less than a wingspan above the runway. We all stood gaping at what we thought was certain to be his last flight. Thirty minutes later he returned and landed, using almost the entire 6,000-foot runway. He was still shaking as he got out of the plane. I learned a great deal from his flight and never lent the *Mite* to anyone again.

Teaching a student to fly a partic-

ular aircraft goes beyond the numbers. If this were a not so, students could learn from books. Students have to learn how the aircraft feels and performs just before a stall—not just the stall speed. The student must understand how stall speed varies in different flight attitudes and configurations (in turns, with gear or flaps or both, at various power settings, and so on). The student must learn what control inputs must be adjusted for various crosswinds and whether it is better to slip or crab on final. How much rudder it will take to keep the nose pointed straight during that last 5 to 10 feet to the pavement. And how much back pressure will hold the nose off during the final flare. In a single-seater, all of these things can only be talked about, but if you have no experience in the aircraft, how can you explain these more subtle details to your student?

At the very least, find a high-time owner of the make and model and have a three-way discussion with the owner and your student. Get the hard information from the airplane specs and the soft information from the experienced pilot. Help the student gain the needed input to tackle this new challenge.

Then fly some dual in an airplane with performance similar to the single-seater. How similar does training experience need to be? As similar as possible. Every plane is different, but some models have similar characteristics. Pay attention to wing design and control moments (overall length, wingspan, and aileron area). The RV series of homebuilts are all similar, but a *Citabria* won't prepare you for the Pietenpol's lighter weight and parasol wing.

Help your student perform the first preflight. Do a super-thorough job, even if you have a checklist, and look for things others might not. You don't know what the previous owner was willing to live with and risk. It's especially important to make sure the control cables or rods and rod ends are in good condition and all controls move freely, the propeller is in excellent shape, there are no loose items anywhere in the aircraft, and the engine runs well and passes the mag check well within spec.

Next, make sure your student knows the numbers. For older production aircraft, there might not be a pilot operating handbook or approved flight manual, or even a reliable checklist, but the FAA maintains aircraft specifications for certificated aircraft. The current one for the Mooney *Mite* is A-803, Revision 19. It includes all models—L, LA, and C-55–-and provides weight and balance, V-speeds, control limits, required equipment lists, and accessory equipment specifications. The specifications are useful, though not as complete as I would like. For instance, what speeds do you want in the pattern, what speeds for the instrument approach, and does it matter? What's the right climb speed to achieve adequate engine cooling? Most of these numbers are not in the spec sheet and may not be in older manuals, either.

For homebuilts, get the specifications and designer's data sheet. Remember, the aircraft your customer is going to fly will be different. It will have trim differences, it will be loaded specifically for that flight, and it probably won't have the new engine and airframe that the test data was based on. Be prepared to help your student with the edges of the flight envelope during your checkout flying. If an experienced pilot did test-fly this aircraft or there is a previous owner, do a thorough review with that person; again, a three-way with your student works best.

If there is no history for this aircraft, then develop a test-flight plan for the pilot. If you have no experience in this area, contact the Experimental Aircraft Association's (EAA) Safety Programs office and connect with the volunteer EAA Technical Counselor and/or Flight Advisor in your area. Plan for flights safely within the flight envelope with experimentation toward the edges of that envelope as experience is gained. Be clear that following this plan is essential to the safe transition into this airplane, since the edges of the envelope are unknown and the reactions in those flight regimes untried.

Make sure your student memorizes the V-speeds. During the initial flight, especially during takeoff and landing, while climbing over the trees at the end of the grass strip there won't be time to look up the best rate of climb speed (V_y) for the best glide if the engine quits. In a plane as light as the *Mite*, you don't want to be looking up the gear operating or extended speed, V_{GO}/V_{GE} on downwind to find out if they are the same. While they are for the *Mite* (V_G = 109 mph), they may not be for all others. If the engine quits on takeoff, V_y had better be a reaction, not a pained afterthought.

Cockpit Familiarization

With all this information, your student is almost ready to fly, but he or she won't have the luxury of having a CFI point at things on the first flight. There won't be time to search or even think during some phases of flight, so the student should be as familiar with the cockpit as any other airplane he or she has been flying for any period of time. In short, the student should be able to find things in his or her sleep.

Since you don't have the advantage of a military transition simulator, where students can get hours of realistic practice at blowing off the speed brakes at Mach 1.2 or opening the canopy just after rotation, you must rely on the blindfold test. Have pilots take a picture of the instrument panel for home study, or have them sit in the aircraft until they've memorized the location of everything. Make them touch everything, have a visual and a tactile sense of where every gauge, switch, button, and lever is located relative to their right and left hands. Next, simulate a flight, and have pilots do the motions in real time without the distraction of engine noise and a 100 mph wind or power lines rushing up to meet them.

When you think your student is ready, give the "final exam." Use more stringent standards than an FAA knowledge test—100 percent is passing; 99 percent is failure. Disabling the

main power buss on short final could be so distracting that your student could blow the landing—and you won't be there to help. You can't take a chance of the pilot doing anything wrong.

Once the student knows the aircraft's numbers and switchology, he or she is ready for the real world. First, make sure the pilot knows how to start the aircraft. This is where familiarity with the aircraft really helps—the previous owner can be a good reference. With the *Mite*, which has no starter, I prefer to prop it myself from behind. My *Mite* sits so much lower than other aircraft that even experienced hand-proppers aren't likely to have encountered it because of the tricycle gear and size. The tendency is to lean forward during propping, which is inherently unsafe in this aircraft. I also always chock the right main tire. Help your student use his or her aircraft's specific starting instructions.

Once the engine is running, have the student do a thorough cockpit check and run-up. Despite all the time put in so far, this is your student's first time to actually fly this airplane. Not everything may run properly. When I bought my current *Mite*, it had a bad plug, which I discovered just before starting my 900-mile flight home. Make sure the student knows some "red flags," problems that warn pilots to investigate and fix before attempting flight.

Have your student do taxi runs to get the feel for the aircraft. This is easier at a little-used, nontowered airport. If your airport has a tower, explain what you are trying to do, and the controllers may work with you. Call ahead, and find a time when the traffic is slow, because the pilot will need some runway time.

On the runway, have the student accelerate to just under V_S (stalling speed) to feel the aircraft's dynamics. Advise the student to pay close attention to the aircraft's ground attitude; this is what the pilot will want to see at the end of the flight. Next, have the student pay attention to the attitude at speed (this applies more to a conventional gear aircraft) to feel the dynamics of slowing from a high-speed taxi to turning off the runway. Eventually, have the student pilot lift off a little, and then let the plane settle back onto the runway. When it settles, that will be the airplane's landing attitude, and the student pilot will use it on the first landing. Have the pilot do this more than once, so that it feels comfortable. Then he or she will be ready to fly.

First Flights

For the first flight, have your student do a normal takeoff and leave the pattern. If the aircraft has retractable gear, it should remain extended. Tell the student pilot to do some normal maneuvers, including slow flight, to feel the aircraft aerodynamics, the weight of the controls at various airspeeds, and the rates of change in pitch, yaw, and roll. This will help the student determine lead times for making corrections to attitude deviations, which is important on landing.

To simulate that first landing, have the student do a straight-ahead stall, using that settling attitude experienced during the taxi test. Have the student do a forward slip in case there is some crosswind upon the return. Then let the student come back and land as practiced on the last couple of high-speed taxi runs.

The *Mite*, and lots of other single-seat aircraft, doesn't land like the planes your students may have trained in or are currently flying. Remember, this is a machine that weighs 800 to 1,200 pounds at maximum gross weight, so it's more like an ultralight than a Cessna. Even though the *Mite*'s wing is laminar and loading higher than most ultralights and LSAs, the *Mite* has little inertia on approach and landing. This affects the dynamics in two major ways. First, when the aircraft if flared to land, it will slow down much quicker than an M20, the "Heavy Mooney," but it won't have the lift of a fat-winged Cessna 150 or 172. If the *Mite* stalls near the ground, the nose will drop. It will land hard on the nose wheel and likely ding the prop.

Second, while the wing is so low to the ground that surface friction should reduce wind effect greatly, it doesn't take much to lift the wing of an 800-pound aircraft. The pilot must be ready to correct in all three dimensions. This will come naturally to tailwheel pilots, but Cessna and *Warrior* drivers will probably not be ready to react as quickly as needed to correct an instantaneous attitude change just before touchdown. This is why your student practiced response times at altitude.

Remind your student to remember the attitude practiced during the high-speed taxi and liftoff runs. If your student does whatever it takes to maintain that attitude, he or she will make a perfect landing. Because of the aircraft's light weight, little braking effort will be needed, and the student should easily make the first turnoff on most runways.

That wasn't so bad, was it? Your student has successfully completed the first flight.

Debrief your student to relive the flight and implant reactions, feelings, and emotions. This will become his or her training basics to return to when difficulties arrive or workload goes up. That's why it's so important to do it right—we always return to our basics at difficult times. Basic flying skills and reactions often save a problem flight or break an aircraft.

Now your students can expand their experiences closer into the corners of the flight envelope and experiment some. If they pay attention to operating limitations, they can have many long and rewarding hours boring holes in the sky in their single-seat aircraft.

David W. Dodson is a NAFI Master Instructor, an aviation safety counselor for the South Bend FSDO, and the standardization/evaluation officer for the Indiana Wing of the Civil Air Patrol. He has two aircraft, a 1955 Bonanza *and a 1949 Mooney* Mite. *Dave has been a flight instructor for 30 years and concentrates on advanced instruction.*

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Safety First

Winter Icing Conditions

by Patricia Mattison

It's always the small things that sneak up on us and clean our clock. We in the aviation industry are full of hangar stories that run the gamut. One-upmanship is an art when it comes to hangar tales. Most situations discussed are a compilation of small factors that blossom into, in the vernacular of the FAA, occurrences, incidents, or accidents. The outcome is usually dependent on how far things get along before one of the small factors is recognized for the danger it brings.

Since it is still winter, I suppose the first thing we think of is airframe icing. We beat this subject to death each winter and still, folks go out and fly in conditions where icing can occur. How much ice on the airframe is safe for take off? The answer is none. I have seen pilots take a broom or a rag and try to wipe off frost and ice before flight. That really doesn't work, the only real way to keep ice from accumulating is either cover the wings, de-ice, or hangar the aircraft.

What about un-forecast icing conditions? It happens and when it does there is really only a couple of things that you can do. You can try to find an altitude where it is warmer and ice is not a factor or land the aircraft, especially if the pilot is not fortunate enough to have de-ice or anti-ice systems on the aircraft.

Another wintertime problem is that of ice and water in the fuel system. Engines do not run well on water or ice. Moisture can become trapped in the fuel tanks of aircraft that have been sitting out in the weather. That moisture can be in the form of ice or water and can be trapped in baffles inside the tank. We all check our fuel for color and contaminants after each fueling and before flight. Water in the frozen state would not show up as water and has been known to melt in flight and flow to the fuel lines causing fuel starvation.

In the accident I read about recently the problem just might have been ice in the fuel system. The engine stopped about a half an hour into the flight just after the pilot had made rather a steep turn and then leveled off. Shortly after the turn the engine quit. The pilot landed in a field where water was found in the fuel sump.

Another item of concern is ice in the hinges of the aileron, flap and especially the elevator. When ice forms in control surface hinges the control surface cannot be moved. A student pilot recently experienced a trim problem. There was no evidence of any discrepancy with the trim tab after the student landed. I know just how the student struggled to land the aircraft. I had a similar situation myself several years ago and believe me when I say it is nigh on impossible to control an aircraft with a frozen trim tab. It can be done, but you lose a lot of calories in the process not to mention perspiration. The best thing to do is to move the control surfaces periodically during a flight into cold moist air. By moving the control surfaces moisture is not allowed to freeze the hinge solid.

Of course it is best not to fly when the weather is threatening to be cold and wet enough to cause ice, unless you have an aircraft capable of flying in icing conditions. With that said it is safe to say that I have only just touched on some of the winter weather-related subjects that could cause problems.

Fly safely, and please, both you and your airplane, try to keep warm and dry this winter.

Patricia Mattison is an Aviation Safety Inspector and the Aviation Safety Program Manager at the Juneau (AK) Flight Standards District Office.

Circling Approaches and Their Conduct During Instrument Proficiency Checks

by Michael W. Brown

As part of an ongoing effort to improve regulatory compliance, clarity, and safety, the Federal Aviation Administration (FAA) occasionally finds it necessary to implement changes to existing policies and guidance. While such changes are typically very effective in achieving their desired safety goals, clarity (and with it compliance) may not always fare as well. This recently became evident when the FAA published the new *Instrument Rating Practical Test Standards (PTS),* FAA-S-8081-4D. Effective October 1, 2004, version "Delta" has raised questions concerning the requirement to conduct circling approaches as part of the instrument proficiency check (IPC).

Specifically, this latest version of the PTS includes a new paragraph (page 16, following the Rating Task Table) that states in relevant part, "*The person giving the check shall use the standards and procedures contained in this PTS when administering the check*." Some viewed this language as mandating tasks that were voluntary under the previous PTS, version "Charlie." While version "Charlie" lacked the explicit text cited above, the FAA always intended for the table to be used in the conduct of IPCs. Of course "intent" lacks the precision to which the FAA aspires, so version "Delta" was modified to clarify existing Flight Standards policy. In short, the FAA always expected instructors to conform to the task table when conducting IPCs, and version "Delta" now makes that clear.

Since the publication of the new PTS, some instructors have expressed concern that clarification of established policy impinges upon the discretion afforded flight instructors under 14 Code of Federal Regulations section 61.57(d). However, section 61.57(d) outlines the requirements for an IPC, stating in relevant part that pilots must pass "…an instrument proficiency check consisting of a representative number of tasks required by the instrument rating practical test." Those tasks are outlined in the rating task table of the PTS, thus section 61.57(d) provides a clear regulatory basis for this requirement. Although instructor discretion is not mentioned anywhere within this section, instructors *do* have considerable latitude in the conduct of an IPC. The difficulty comes from the fact that many within the flight training community have come to view the PTS as a flight training guide, which was never its intent.

As its name implies, the PTS merely outlines the standards to which an applicant must perform. There are an infinite number of approaches (no pun intended) available to instructors in testing or preparing their applicant. A quality flight instructor will find innovative techniques for integrating the necessary items into a comprehensive IPC.

This brings us to the main point of contention mentioned earlier. Similar to its predecessor (issued in 1999), version "Delta" of the Instrument PTS contains a task table that includes a column for the IPC. While some of these tasks vary between versions "Delta" and "Charlie," both specify circling approaches under Area of Operation VI. However, because some flight training institutions consider circling approaches to be a new requirement, they are concerned they may no longer exclusively use FAA-approved Flight Training Devices (FTDs) to conduct IPCs.

Again, the PTS change poses no additional burdens on flight schools, instructors, or pilots. The FAA never envisioned, nor has FAA policy ever allowed for, the use of FTDs and other similar devices for a complete instrument proficiency check. Flight training devices need not contain a visual system, and those that do lack the visual cues necessary to replicate a circle-to-land procedure (circling approach). As a result, it is inappropriate to credit a complete IPC in such a device absent supplemental flights in an actual aircraft. As a practical matter, it is difficult to imagine that any ground-based training aid, short of a full level-qualified flight simulator approved for circling approaches, could substitute for instruction received during actual flight operations. That is not to say FTDs have no place in the pantheon of instrument flight instruction, or for that matter IPCs. In fact, many of these devices serve as excellent procedure trainers and are a proven means of evaluating certain piloting skills. However, as with all such resources, it is important they be used in a manner consistent with their design and limitations.

For more information regarding the areas of operation for which a FTD or simulator may be used, one need only check Appendix 1-2 of the PTS. Notice that no flight simulation device, short of a full level-qualified simulator, is approved for circling procedures. This too has not changed, further emphasizing the benefit to both training institutions and students alike of familiarization with the equipment (and its limitations) to be used in their recurrent training program.

Some instructors have also expressed concern that requiring their clients to conduct circling approaches as part of an IPC may deprive them of an opportunity to complete an IPC in instrument meteorological conditions that preclude a circling procedure.

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Night Flying

by Adrian A. Eichhorn

Sectional charts are great for VFR navigation when the sun is shinning. But when flying at night, they don't have all the information pilots need for safe operation. Instead, other publications may be necessary to ensure there is complete and accurate information in the cockpit. Perhaps the most important of these is a current FAA *Airport/Facility Directory* (A/FD).

The A/FD contains data on public- and joint-use airports that cannot be readily depicted in the graphic form used on charts. This data includes an airport's hours of operation as well as details on runway lighting, airport beacons, and appropriate frequencies to use to operate them. Since the A/FD is published every 56 days while the VFR sectional and Terminal Area charts are generally revised only every six months, the A/FD has more current data. And, as we shall see, sometimes even the A/FD is not enough.

Here are six examples of why you should *never* fly at night without at least a current copy of the A/FD serving your geographic area in addition to the appropriate charts. 14 Code of Federal Regulations section 91.103 requires pilots to become familiar with all available information concerning a flight. These examples show why having only a current sectional chart does not guarantee you have all of the information necessary to safely conduct a night flight. You should also check current *Notices to Airmen* (NOTAM), file a flight plan, and when in doubt, you can call your destination airport and ask the operator for information.

Maryland Airport (2W5), Indian Head Md.

Although the Sectional chart depicts runway lighting is available, this airport is closed at night. While most airports are open 24 hours a day, some are closed at night. An airport's hours of operation can be found in the "Airport Remarks" section of the A/FD.

Rock County Airport (RBE), Bassett, NE

The frequency for the pilot-controlled Medium Intensity Runway Lights (MIRL) and the Precision Approach Path Indicator (PAPI) is not shown on the Omaha Sectional chart for RBE. The common traffic advisory frequency, 122.9, is shown on the chart. The frequency for the pilot-controlled lighting systems, 122.8, is only shown in the A/FD.

Merritt Island Airport (COI), Merritt Island, FL.

The rotating beacon at COI does not operate continuously from sunset to sunrise like at many airports. Instead, the beacon is pilot-controlled, as are the airport's Medium Intensity Runway Lights (MIRL). At any given airport, the runway lights, visual glide path indicators, approach lighting systems, and rotating beacon may be pilot controlled.

Maryland Airport (2W5), Indian Head Md.

Rock County Airport (RBE), Bassett, NE

Merritt Island Airport COI), Merritt Island, FL.

Roanoke Regional Airport/Woodrum Field (ROA), Roanoke, VA.

Sebring Regional Airport (SEF), Sebring, FL.

Tampa North Aero Park (X39), Tampa, FL.

Roanoke Regional Airport/Woodrum Field (ROA), Roanoke, VA.

Takeoffs on Runway 33 and landings on Runway 15 are not authorized at night because of terrain. This information is in the A/FD, but it is not shown on the Cincinnati Sectional chart.

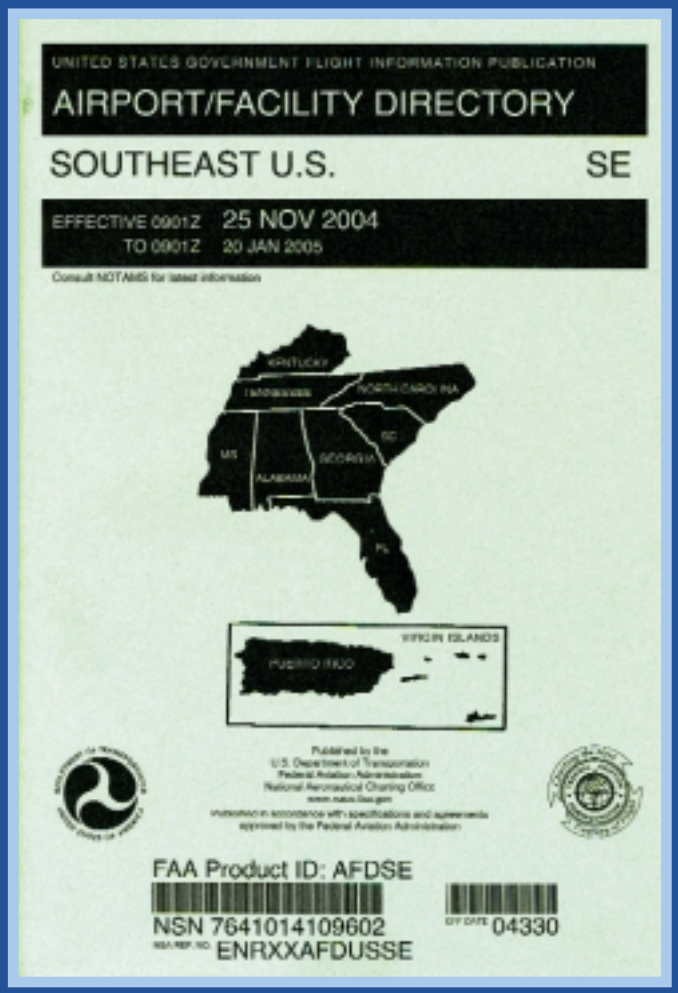
Sebring Regional Airport (SEF), Sebring, FL.

The Miami Sectional chart shows multiple runways at SEF in addition to runway lighting. Yet, pilots attempting to land there at night might be surprised because only Runway 18/36 is lighted with Medium Intensity Runway Lighting (MIRL). There is no other runway lighting information published in the A/FD other than information on the Precision Approach Path Indicator (PAPI) for Runways 18/36.

Tampa North Aero Park (X39), Tampa, FL.

This airport has a pilot-controlled airport beacon which is not illustrated on the Jacksonville Sectional chart airport symbol. However, the A/FD states the beacon is available, and that it is pilot-controlled.

Adrian A. Eichhorn is an FAA pilot based at Ronald Reagan National Airport. He is also a volunteer Aviation Safety Counselor for the Washington Flight Standards District Office.



Preparing for the Future

Automated Flight Service Stations and A-76

Due to the sharp decline in the Aviation Trust Fund, which pays for much of the Federal Aviation Administration's (FAA) budget, the agency must look for opportunities to conserve. This document explores steps the FAA is taking to save money in the costly operation of Automated Flight Service Stations. It also details how the FAA is addressing the needs of its employees during times of change.

Federal Aviation Administration's Challenging Times Ahead

The FAA and the aviation industry are facing a period of tight budgets. The Aviation Trust Fund—which provides the majority of the FAA's budget from taxes on airline tickets, fuel, and airfreight—continues to decline.

As low cost carriers increase their market share, the average ticket price declines, which, in turn, also reduces the Trust Fund revenue. As a result of decreasing enplanements in recent years and in an effort to reduce costs, carriers are also adding more midsize jets to their fleets. This affects the FAA in two ways: First, more planes means an increased workload. Second, lower ticket prices result in less Trust Fund revenue.

As the agency's budgetary allotments continue to shrink and operating costs continue to rise, we find ourselves in the position where cost savings aren't just a good idea—they are a necessity. The agency must find savings wherever it can. The only thing that can't be compromised is safety.

Finding Safety in the FAA's Automated Flight Service Stations

The FAA's Automated Flight Service Stations are a logical place to save money. These facilities provide weather briefings and flight planning services, largely to general aviation pilots. Automated Flight Service Station specialists do not separate or control airplanes. Increasingly, their services are provided at a distance by telephone or computer.

The workforce for these stations is unevenly distributed. Often, specialists

The Bottom Line: The A-76 Saves Money

Historically, competitive sourcing has saved taxpayers an average of 30% on costs regardless of whether private contractors or the government agency's own employees, the Most Efficient Organization (MEO), do the work.

Differentiating Automated Flight Service Stations and Air Traffic Control Towers

Automated Flight Service Stations are an important network of facilities providing information to mostly private pilots. Specialists employed at 61 Automated Flight Service Station facilities around the country and in Alaska, Hawaii, and Puerto Rico provide weather briefings, flight planning services, en route communications, and Notices to Airmen.

Air traffic control towers separate and control aircraft in the air and help aircraft avoid accidents on the ground. Controllers give instructions to pilots while taxiing and during takeoffs and landings. They also deliver radar information to pilots.

Competitive Sourcing is NOT Privatization

Competitive sourcing occurs when the government retains ownership and control of an operation no matter who performs the service. In competitive sourcing, the service provider's performance is monitored by the government regardless of who does the work. The government maintains primary responsibility for assuring that the winning offeror meets service quality expectations. As required by OMB's A-76 program, a quality assurance surveillance plan sets in place metrics and methods of surveillance to be carried out by government evaluators. In the case of Automated Flight Service Stations, the performance requirements summary includes 21 unique metrics that ensure safety and efficiency. The FAA also included quality incentives in the contract, such as extensions based on successful accomplishment of objectives.

Privatization is NOT Competitive Sourcing

Privatization takes place when government divests itself of a commercial function, including the real property associated with it. When government relinquishes control of an operation, the government becomes a customer, and purchases the services from a commercial source.

are not located in areas where services are most needed. Of the 2,500 employees being looked at under this competition, more than half are eligible to retire.

General aviation supports the FAA's revenues with a federal fuel tax. According to the Aircraft Owners and Pilots Association, the total tax collected on the type of fuel burned by most general aviation pilots is $60 million a year—hardly enough to offset the annual cost to operate and maintain these stations.

Many Automated Flight Service Stations are located in old buildings in need of repair. They contain outmoded equipment and out-of-date technology. Among these facilities, some have $1 per year leases that are nearing expiration. These leases must be renegotiated at today's market prices, costing the agency over $10 million annually.

These stations already cost the taxpayer $502 million per year—which translates to an average of $25 for each contract with a pilot. The cost is simply too expensive.

Studies conducted by the FAA and outside experts, including the Department of Transportation's Inspector General, have selected these stations as likely candidates for savings. The Inspector General, in an impartial study, also emphasized savings could occur without diminishing safety.

Tools to Save Already in Place

The federal government has a longstanding tool in place to help determine if its services are being performed in a way that provides the best possible value for the taxpayer. The Office of Management and Budget Circular A-76, created during the Eisenhower Administration, sets forth policies and procedures used by executive branch agencies to manage a competition for services.

In addition, the Federal Activities Inventory Reform Act (FAIR Act) requires government agencies to review activities annually to differentiate inherently governmental activities from commercial activities.

Inherently governmental activities are those best provided by the government because they are so lined to the public good that they are required to be managed by government. In other words, it is appropriate and necessary that government do the job. Law enforcement and the military are examples of inherently governmental activities. Commercial activities are those activities that can be performed by the private sector or a commercial vendor.

A-76 encourages competition as a way of bringing efficiency and cost effectiveness to services provided by the federal government. A-76 provides a fair, open, and orderly method to manage a competition for services, whether the government offeror or the private sector wins the award.

Implementing A-76

The FAA Administrator created the Office of Competitive Sourcing in February 2003 to ensure that the competition is carried out fairly.

Once determination has been made to compete a service outside the agency, A-76 competitive sourcing competition determines whether the taxpayer is better served by the government employees doing the work. A performance work statement is developed describing the activities. A team formed by the government agency's own employees, called the Most Efficient Organization (MEO), prepares an offer to perform the activities. The MEO can work in partnership with a vendor to develop its offer. The proposal is then compared to those from the private sector or other government organizations. Finally, a decision is made whether the activity will be performed by the MEO or a vendor.

A Study of Automated Flight Service Stations

In July, 2002, the FAA retained the services of a contractor to conduct a feasibility study. The results indicated that the Automated Flight Service Station functions could be performed by an outside vendor from the private sector. A separate assessment by the FAA's Chief Financial Officer confirmed the finding.

Fifty-eight of the 61 stations are involved in the A-76 study. Three stations in Alaska are exempt from the study because of the unusual environmental factors within the state. The 2,500 employees working at the 58 stations represent over 90% of operating costs. Of those, 54% will be eligible to retire at the time of the performance decision.

Prospective Service Providers

On August 3, 2004, technical proposals were received from five prospective service providers: the agency's own employees (MEO) in partnership with Harris Corporation, Computer Sciences Corporation, Lockheed Martin, Northrop Grumman, and Raytheon. Cost proposals were received September 3, 2004. The performance decision deadline will be no sooner than January 1 and no later than March 17, 2005.

The solicitation requires a plan which will save no less that 22% of the annual cost to operate these stations, which represents a savings of more than $478 million over the first five years of a contract and $95.7 million for each year thereafter. The agency could achieve 30% in savings, which is the historical average for this type of competition.

Awarding the Contract

The government will evaluate proposals in terms of four technical factors, one past performance factor and one cost factor. The MEO is not required to submit past performance information and will not be evaluated on it. The technical factors are phase-in, staffing and management, service delivery, and performance management.

The FAA's Vice President of Acquisition and Business Services will determine the winner of the competition based on the combination of impact

of overall benefits, risk, and cost for the delivery of effective flight services to support safe and efficient flight.

The overriding factor in making the decision will be who provides the most efficient services as the best value. The performance decision must be made no later than 15 months after the announcement of the A-76 study is made which is March 17, 2005.

Impact of a Decision on FAA Employees

If the MEO wins the competition, employees will remain in government service, but the number of positions and facilities will most likely be reduced. If a contractor wins the competition, employees will be separated from government service, but will have the Right of First Refusal at the prevailing wage (as protected by the Service Contract Act) for positions in the newly reorganized program. In this instance, employees who are eligible to retire may have an opportunity to earn a second income. In addition, outside vendors are not subject to the government's age 56 mandatory retirement rule so employees who would otherwise retire could continue to work.

FAA Supports Employees

We are committed to providing the support needed to help our employees through this transition, whether the MEO or the contractor provides the service. The FAA will provide information and assistance that they need.

Representatives from the Office of Human Resources Management made site visits to all Automated Flight Service Stations between August 15 and October 31 to answer questions and provide information on career transition and benefits;

A web site, developed specifically for employees affected by the A-76 process, is up and running. The site provides answers to questions regarding employee rights and benefits, and answers frequently-asked questions, <www.faa.gov/ahr/competitive.cfm>;

Negotiations between the FAA and the National Association of Air Traffic Specialists (NAATS), to define benefits if a reduction in force occurs, are being concluded now;

A review of Official Personnel Folders has been completed to ensure accurate, up-to-date data is available for each employee for the purposes of correct accounting of years of service and veterans' preferences;

Employee Assistance Program services are available to those employees who feel the need for personal, professional assistance;

Future FAA placement opportunities are being researched; and

Career transition assistance will be offered to all affected employees.

The Outcome

Given that the FAA's operating costs continue to escalate and the Aviation Trust Fund continues to decline, the agency must find savings where possible. Regardless of whether the government's MEO or a contractor wins the award, the taxpayer will save hundreds of millions of dollars. This is a smart business decision that will improve service to the flying public.

For more information, you can visit the following web sites: The Office of Competitive Sourcing, <www.faa.gov/aca> and Human Resources A-76, <www.faa.gov/ahr/ competitive.cfm>. This article was originally published on the FAA web site at <www.faa.gov/publications/ a76_brochure.cfm>.

Circling Approaches and Their Conduct During Instrument Proficiency Checks

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This situation is analogous to any other flight testing situation that does not allow for a complete evaluation of the applicant. The task that cannot be completed must still be tested, and that sometimes requires an additional flight. This is no different than if an applicant undertook a flight in IMC, only to find the requisite instrument landing system (ILS) was out of service. Again, the fact that the applicant managed the flight with great proficiency does not absolve him or her from the obligation to complete this required item.

And finally, for those who say circling approaches are too dangerous and shouldn't be emphasized, consider these facts. Currently there are over 1,100 instrument approach procedures with only circle-to-land minima. Combine this with literally thousands of other approaches with published circling minima, and it's clear that an instrument pilot needs to possess such skills to be a complete aviator. Moreover, the skills needed to transition from instrument to visual flight while maintaining precise aircraft control are critical—at least as critical as those required to execute a hold or recover from an unusual flight attitude. Again, circling approaches provide for the maintenance of these skills. Also, it should be noted that most accidents involving circling approaches were attributed to poor piloting technique and failure to maintain the requisite visibility and cloud clearances for a given procedure. This fact alone provides a clear and compelling incentive to make circling approaches a part of any instrument training and proficiency regiment, thus the FAA's rationale for their inclusion as part of a comprehensive IPC.

Michael W. Brown is an Aviation Safety Analyst in Flight Standards Service's General Aviation and Commercial Division.

Sport Pilot

On July 16, 2004, FAA Administrator Marion C. Blakey signed the Sport Pilot and Light-sport Aircraft Rule. It went into affect on September 1, 2004. To help our readers to understand the rule, the FAA Aviation News *plans to publish an ongoing question and answers (Q&A) column about the rule.*

What is an Experimental Light-Sport Aircraft (E-LSA)?

The E-LSA airworthiness certificate was created to allow certification of three distinct types of aircraft:

- Ultralights and unregistered aircraft that fit the definition of a LSA (until January 31, 2008)
- Kit-built aircraft that do not meet the experimental amateur-built rules (e.g. a 90% complete kit)
- Aircraft that were originally built as a Special-LSA

What is the process of converting an existing unregistered aircraft to Experimental Light-Sport Aircraft?

Although the FAA is not yet ready to support the process, [Editor's Note: This was written before FAA published the forms and procedures needed for this process. For more detailed information see FAA's sport pilot web site at <http://afs600.faa.gov/AFS610.htm>.], the process is as follows:

- Apply for an N-Number
- Prepare a weight and balance report for your aircraft
- Install an emergency locator transmitter (ELT) on all two-seat airplanes (powered parachutes and weight-shift not required); single-seat is optional
- Prepare your aircraft for inspection
- Make an appointment with a FAA airworthiness inspector or a designated airworthiness representative (DAR).
- Have your aircraft inspected.

What is the deadline for converting my unregistered aircraft to an E-LSA?

The deadline for receiving an E-LSA airworthiness certificate for an existing unregistered aircraft is January 31, 2008. (Note that the dated was amended from August 31, 2007 to January 31, 2008 to coincide with the expiration of EAA's two place ultralight trainer exemption).

Who can perform maintenance on an E-LSA?

No certificate or rating of any kind is required to perform maintenance on an Experimental Light-Sport Aircraft.

Who can perform the annual condition inspection an E-LSA?

The annual condition inspection on E-LSA can be completed by:

- A repairman (light-sport aircraft) with a maintenance rating; or
- A repairman (light-sport aircraft) with a inspection rating only on your own aircraft; or
- An appropriately rated mechanic (A&P), or
- An appropriately rated repair station.

I will be instructing in my E-LSA. I want to rent my E-LSA to my students. Any issues?

You, as an instructor, are allowed to rent the aircraft to students that you are providing flight instruction to until January 31, 2010. Pure rental of the aircraft is not allowed.

Also, the annual condition inspection and 100 hour inspection is limited to:

- A repairman (light-sport aircraft) with a maintenance rating; or
- An appropriately rated mechanic (A&P), or
- An appropriately rated repair station.

I built the ultralight I'm currently flying. Can I certificate it as Experimental Amateur-Built or does it have to be an Experimental Light-Sport Aircraft?

If you (or other amateur builders) built 51% of the aircraft for recreation or education, the aircraft meets the requirements to apply for certification as an Experimental Amateur-Built Aircraft.

In addition, you will need a builder's log that documents the construction of the aircraft. If it was built from a kit, you will need a bill of sale from the kit manufacturer to you.

The primary advantage of going Experimental Amateur-Built is that you can receive the repairman certificate for that aircraft without any additional training

Can I fly an Experimental Amateur-Built (homebuilt) aircraft as a sport pilot?

Yes, as long as the aircraft meets the performance definition of a light-sport aircraft.

Who can perform maintenance on an Experimental Amateur-Built Aircraft?

No certificate or rating of any kind is required to perform maintenance on an Experimental Amateur-Built Aircraft.

Who can perform the annual condition inspection on an Experimental Amateur-Built Aircraft?

The annual condition inspection on Amateur-Built Aircraft can be completed by:

- The primary builder of the aircraft who has applied for and received his repairman certificate for that aircraft; or
- An appropriately rated mechanic (A&P), or
- An appropriately rated repair station.

I'm building an aircraft that is just outside the definition of an LSA. Can I, as the builder, modify the aircraft so that it meets the performance definition of an LSA and fly it as a sport pilot?

Yes. For a homebuilt, you have complete freedom of design and material selection. Therefore, if you can modify the aircraft so that it meets the definition of an LSA from initial certification on, you can fly it as a sport pilot.

We caution against making any modifications to the structure of the aircraft without the approval of the designer. In some cases, it may be just a question of assigning a lower gross weight than what the aircraft was designed for that will allow you to meet the LSA definition.

These Q&A's were reprinted with permission from the Experimental Aircraft Association.

EAA photo by Jim Koepnick

"Now Hear This!" U.S.N. Boatswain's call for attention

from NASA's Aviation Safety Reporting System Callback

Cooperative Communications

Two-way communication is one of the most important aspects of air traffic control. But, as the controller who submitted this ASRS report found, a radio is like the old two-man crosscut saw...you need somebody on each end.

• The *Skylane* was maneuvering in the Class C outer area, receiving traffic advisories on my frequency. He had been at 5,000 feet west of the arrival corridor where the jet arrivals transition at 5,000 feet. [Then] I noticed that the *Skylane* had turned eastbound, putting him on a converging course with a B737. I asked the *Skylane* if he was continuing in that direction. He replied that he was. I instructed the pilot to either reverse course, or climb to 5,500 feet for traffic. There was no response. I issued the traffic to the B737 (approximately four miles away). The [B737] pilot replied that he was looking. I called traffic to the *Skylane* and instructed the pilot to climb. There was no response. I issued traffic to the B737 again, and advised him that the other aircraft was not listening. The pilot of the B737 did not see the aircraft. As my airspace lower limit is 5,000 feet, I quickly coordinated with the adjacent sector, issued the B737 a traffic alert, and descended him to 4,000 feet. The aircraft passed within 1/2 mile laterally and approximately 300 feet vertically. When I finally regained radio communication with the *Skylane*, he apologized for not hearing my calls.

A controller's only tool is a frequency. If [pilots] are not listening to their radios, it is impossible for us to do our jobs.

Wrong Number

Even if everyone on the radio frequency is listening, they may not be hearing the same things. Similar call signs can add another dimension to the problem. The conversation in this ASRS report approaches the comic confusion of the "Who's on First" routine, but the consequences could have been serious.

• Taxiing to runway 7L, prior to the hold short line, Tower cleared our flight for takeoff. The First Officer responded that we needed two minutes...Tower then told us to hold short. We read back the clearance and held short of the runway. When we told Tower that we were ready for takeoff, we heard Tower say, "Aircraft X23 cleared for takeoff." The First Officer responded, "Roger, Aircraft X23 cleared for takeoff." Tower then said, "Aircraft Y23, cancel takeoff clearance." Aircraft Y23 said, "The other aircraft thinks he has takeoff clearance." Tower then said, "Aircraft X23, you are cleared for takeoff." Aircraft Y23 said, "Who's cleared for takeoff?" Tower had apparently cleared Aircraft Y23 for takeoff previously. I had heard, "Aircraft X23 cleared for takeoff." The First Officer read the clearance back...The problem of similar call signs remains a constant source of confusion.

Listening Versus Hearing—It's a Matter of Degree

The Cessna 172 pilot who submitted this report was departing from an airport where terrain clearance was a consideration. With less visibility and a slower reaction to the heading/intercept disparity, this pilot might have heard a more angelic "harping" than the controller's down-to-earth admonition.

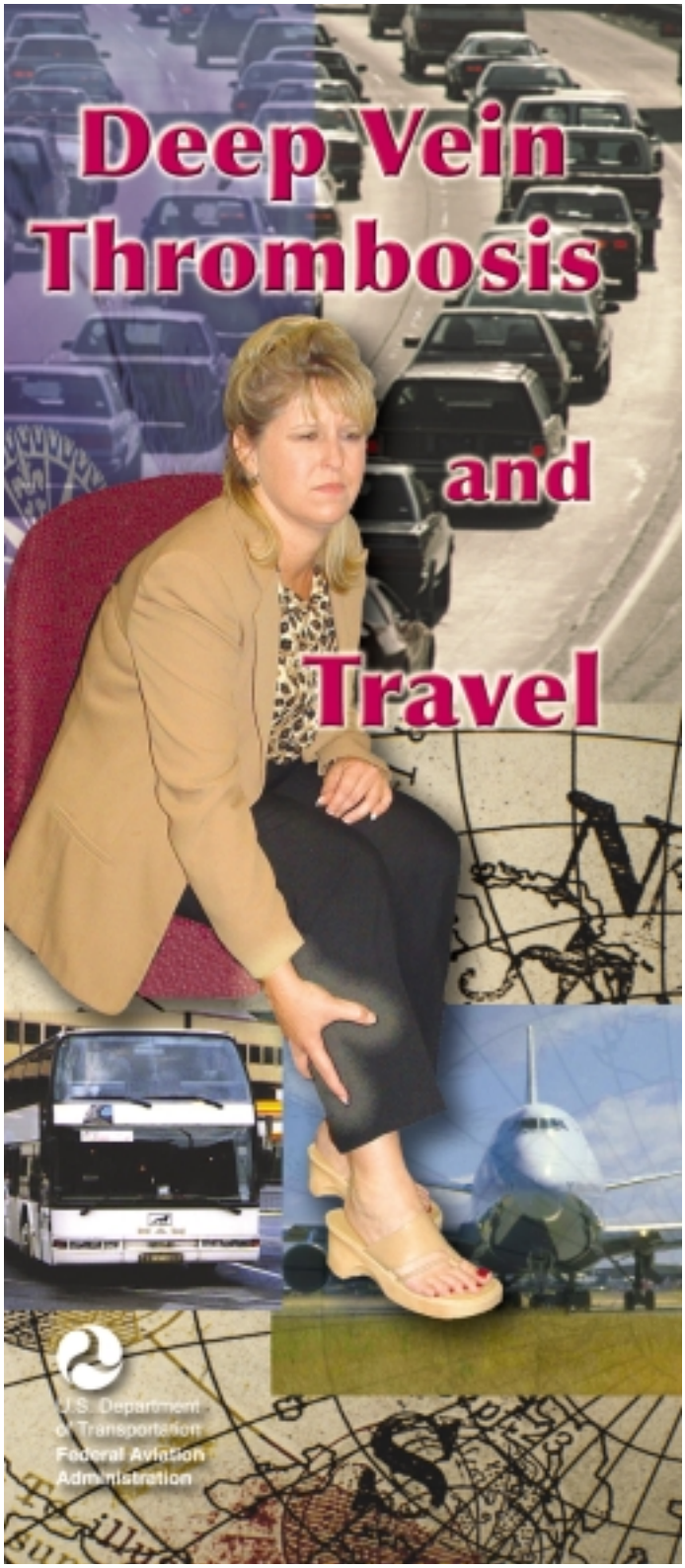
• My takeoff instructions from Tower were, "Fly runway heading." Tower handed me off to Departure. On calling Departure, I was given a heading and told to intercept [the airway]. I wrote down a heading and confirmed it on the radio. I was not corrected. The heading I thought I heard was 260 degrees. Apparently ATC said 360 degrees. As I turned towards 260 degrees (from an initial heading of +/-50 degrees), I realized I wouldn't be able to intercept [the airway], so I called ATC and asked him to repeat the heading. He said, "360," which I repeated, and began my turn back toward 360 degrees. ATC said, "Say your heading," and I gave my current heading. Then ATC said, "Say your heading before you asked me to repeat." I said, "I'm not sure. It was in the 200's." He said, "In the 200's could be very dangerous one mile from the airport." I said, "Roger." In the future I will listen closer and ask quicker.

In another incident, a busy air carrier crew conducting a missed approach apparently failed to read back an ATC clearance correctly, and ATC didn't catch the readback error. From the First Officer's report:

• On arrival a missed approach was required to resolve an abnormal cockpit indication. While executing the missed approach, Tower instructed us to climb to 3,000 feet MSL. Apparently they also instructed us to fly runway heading. However, we flew the published missed approach procedure, which diverges, from runway heading. Neither the Captain nor I...recall hearing it [runway heading clearance]. What we believe happened was that the runway heading clearance was issued and we acknowledged it. However, in a very busy two-pilot cockpit while executing a missed approach in IMC weather with windshear advisories and...an abnormal cockpit indication to deal with, actually we failed to "listen to" the whole clearance ("fly runway heading, climb to 3,000 feet"). Tower later advised us over the telephone that there had been a potential conflict with another aircraft.

The Aviation Safety Reporting System's (ASRS) web site can be found at <http://asrs.arc.nasa.gov/main.htm>.

Deep Vein Thrombosis and Travel



by Alex Wolbrink, M.D.

Deep Vein Thrombosis (DVT) is a condition in which a clot, or thrombus, typically forms in a deep vein in a leg. People with a DVT may notice pain and swelling in the leg where the clot has formed, though smaller clots may not cause any symptoms. The major problem occurs when a part of the clot breaks off and flows to the lungs. This condition, called a Pulmonary Embolus (PE), can cause severe injury or death. DVTs are known to occur in about 1 out of 1,000 people in the general population from all causes.

Traveler's Thrombosis

The condition has been erroneously dubbed *Economy Class Syndrome* by some people because of the perception that passengers in the more restrictive coach or economy class of the aircraft are more likely to develop DVTs. Recent research, however, has found that passengers in any seating class of the aircraft may develop a DVT. Research indicates that any situation where one's activity is limited for long periods—a long automobile drive or train ride, for instance—may contribute to a DVT. For this reason, the term *Traveler's Thrombosis* is more appropriate.

Cause

The precise cause of Traveler's Thrombosis, while currently not clear, appears to be related, in part, to long periods of sitting and inactivity. The decrease in activity may lead to inadequate circulation of the blood in the legs. In addition, the veins may be slightly constricted, which could also impair circulation in the legs.

Other conditions that alter blood flow or normal clotting mechanisms may make some people more likely to develop a deep vein thrombosis (DVT). Some of these risk factors include a prior DVT, certain heart diseases, cancer, pregnancy, smoking, older age, and some blood clotting disorders. Recent major surgery or trauma is also a risk factor.

Certain medications may also contribute to formation of the thrombus. Birth control pills and related hormones have

been found to make some people slightly more susceptible to forming DVTs.

Symptoms

Not all DVTs cause noticeable symptoms, but the most common are swelling and redness in the affected leg, often associated with some pain in the same area. Severe chest pain or problems breathing may indicate a pulmonary embolus and should be evaluated immediately.

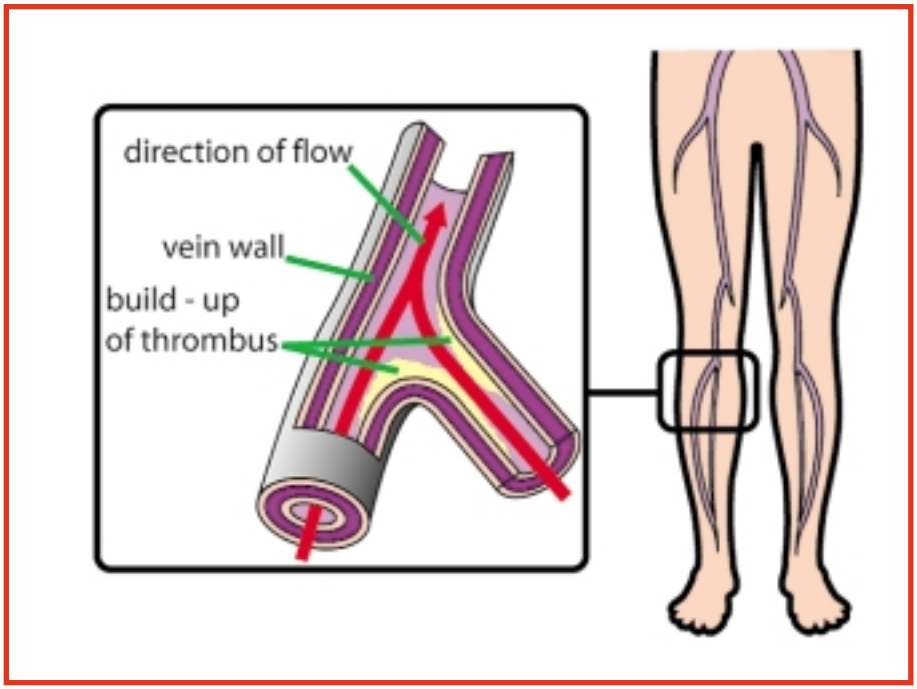
Treatment

If you suspect that you may have developed a DVT, you should immediately contact your physician or go to an emergency room. Be sure to mention that you have recently completed a long journey, as that information may aid in making the correct diagnosis. Different procedures will be used to check for the presence of a DVT and to evaluate a possible pulmonary embolus, if indicated. If a DVT or PE is found, then you will usually be started on a blood thinner to help prevent the clot from becoming larger while it slowly resolves.

Prevention

Since it has not been scientifically established that there is a direct relationship between DVT and flying, there may be no need for specific preventive methods. However, some practices may be found to be beneficial:

- Increasing leg muscle activity during long periods of sitting improves blood flow in the legs. This may include walking around the cabin or exercising your lower legs and ankles while seated.
- Drinking adequate fluids and avoiding alcohol and caffeine may also help by preventing dehydration.
- Loose-fitting clothing may be beneficial in avoiding constriction of veins.
- Some recommend taking short naps, instead of long ones, to avoid prolonged inactivity.



If you have any of the risk factors for DVT, consult your physician before long trips. If indicated by a physician, special support socks or stockings can reduce blood pooling in the legs and blood-thinning medications may be prescribed.

For more information, we encourage you to read "Traveller's Thrombosis: A Review of Deep Vein Thrombosis Associated With Travel," published in Aviation, Space, and Environmental Medicine, Vol. 72, No. 9, September 2001.

Summary

1. A Deep Vein Thrombosis (DVT) is a clot that forms in a leg vein.
2. A DVT can cause harm by obstructing blood flow to a limb or if a part of the clot flows to the heart or lungs.
3. A DVT can be caused by some medical problems, medications, and long periods of inactivity.
4. The risk of developing a DVT can be reduced by:

   - Occasional muscular activity
   - Maintaining hydration
   - Limiting alcohol and caffeine intake
   - And, if indicated by a physician:
     - Support socks or stockings
     - Blood thinning medications

Medical Facts for Pilots Publication AM-400-03/2 was prepared by the FAA Aerospace Medical Institute's Aeromedical Education Division in Oklahoma City, OK. Check its web site at <www.cami.jccbi.gov/aam-400A/400brochure.html> for a list of other pilot safety brochures. To order copies of this brochure, write to the above address or call (405) 954-4831.

Aviation Maintenance Alerts

DOUBLE ENGINE FLAMEOUT BE-400

(The following is printed as it was received.)

On July 12, 2004, a Beech (BE-400A) with PWA JT15D engines (without engine fuel heaters), while cruising at 41,000 feet with the outside air temperature of -59°C, was directed by ATC to descend to 33,000 feet. At approximately 39,000 feet, with engine power reduced for the descent, both engines experienced a flameout. After several start attempts, the crew was able to restart the number 2 engine at approximately 14,000 feet. The fuel, from the BE-400, was tested for density, specific gravity, anti-icing additives, freezing point, and flash point. The density, specific gravity, and flash point were normal, however, the content of the anti-icing additives and freezing point were not normal. The test showed a reading of 0.023 parts per million of Prist anti-icing additives. The normal percentage by volume should have been 0.10 to 0.15 parts per million.

The AFM states that fuel additives, to lower the freezing point, are required to allow the aircraft to operate at a minimum outside air temperature of -65°C with a -40°C minimum fuel temperature. The operator is responsible for the overall safe operation of an aircraft. When a flight crew lands at an airport and requests a fuel load with Prist, they may not always know the quality of product they are getting. The following factors could have a significant affect on the quality of the fuel being delivered:

- If the fuel and Prist was premixed, was the fuel tested for concentration of Prist in accordance with an industrial standard?
- If the Prist in the fuel was dispensed by an external delivery device, was the delivery system calibrated to an industry standard?

In order to prevent a potentially catastrophic accident, due to the possibility of an improper fuel load, operators should establish procedures that would provide for the following:

- A method for auditing and if necessary, approving fuel vendor facilities.
- Checking the fuel vendor's quality control/records system that verifies the fuel test results and calibration of delivery systems.
- Specific procedures for the crew to follow in the event that the aircraft is refueled with improper fuel.
- Detailed procedures to guide the pilot when monitoring fueling operations and reviewing quality control records.

Cessna; Model 177; Loss of Aileron Control; ATA 2710

While in flight, the pilot lost aileron control. He applied force to the control yoke and discovered that a total seizure of the ailerons had occurred. He landed the aircraft with rudder control only.

The technician removed the tube assembly (P/N 1767030-13) from the firewall and discovered that the shaft and bearing (P/N 0760633-1) were severely worn.

The submitter implied a dislodged needle bearing jammed the system, preventing yoke rotation for aileron control.

A search of the FAA Service Difficulty Reporting System database revealed two reports of worn bearings; one reported with aileron control binding in flight. Part total time: 2,598.6 hours.

Piper; Model PA-28R-200; Landing Gear Downlock Cracked; ATA 3230

During an inspection for an intermittent in a transit light, the technician discovered the nose landing gear downlock assembly (P/N 6715003) was cracked. Half the inboard perimeter of the actuator rod-attach point was broken off. The remaining half had several cracks emanating from the bolt hole. He replaced the broken assembly with a newly manufactured part, which has substantial structural improvements.

The submitter reported that sev-

eral more gear actuations would have resulted in complete separation. He recommended giving additional attention to this area (including drag-brace attach area). He also warned against ignoring intermittent landing gear indication lights by investigating the problem thoroughly. Part total time: 6,854 hours.

Service Difficulty Report Data

Sorted by aircraft make and model then engine make and model. This report derives from unverified information submitted by the aviation community without FAA review for accuracy.

Control Number Difficulty Date	Aircraft Make Aircraft Model	Engine Make Engine Model	Component Make Component Model	Part Name Part Number	Part Condition Part Location
2004FA0000671 3/11/2004		CONT O300D		CRANKSHAFT ENGINE	MAKING METAL

ENGINE WAS DISASSEMBLED AND INSPECTED. INSPECTION REVEALED METAL CONTAMINATION OF CRANKSHAFT MAIN, CONNECT ROD BEARING INSERTS. ENGINE WAS REASSEMBLE WITH NEW BEARING INSERTS AND REPLACEMENT STARTER ADAPTER, WHICH WAS DISASSEMBLED AND INSPECTION BEFORE INSTALLATION ON ENGINE. DISCREPANCIES FOUND DURING INSPECTION OF STARTER ADAPTER THAT CAUSED METAL CONTAMINATION OF ENGINE DURING TEST RUN. BRASS SHAVINGS IN WINDINGS OF THE STARTER ADAPTER CLUTCH SPRING. STEEL BURRS ON THE CLUTCH SHAFT GEAR SERRATIONS. CLUTCH SHAFT SIZE OF 1.899 WITH A TAPER OF .006. SPRING HAS PREMATURE WEAR PATTERN. NR 1 CONNECT ROD BEARING WAS DAMAGED DUE TO METAL CONTAMINATION, CORRESPONDING CONNECT ROD JOURNAL. MATERIAL FOUND IN OIL FEED CHANNEL OF SHAFT GEAR, MORE BRASS AND STEEL.

2004FA0000704 9/8/2004	BEECH			HYDRAULIC SYSTEM B300	CONTAMINATED

DURING THE INITIAL PHASE 1 AND 2 INSPECTION BEING COMPLETED ON AC, ROUTINE INSPECTION OF HYDRAULIC SYS COMPONENTS REVEALED THAT THE HYDRAULIC SYS FILTER HAD RETAINED A LARGE AMOUNT OF RED PLASTIC MATERIAL AND THE (GEAR DOWN) PORT SCREEN WAS FOUND TO BE ALMOST COMPLETELY BLOCKED WITH LARGE PORTIONS OF SAME MATERIAL. PORT SCREEN WAS ITSELF DETACH FROM HOUSING ASSY. PLASTIC MATERIAL APPEARED TO BE CONSISTENT WITH MATERIAL THAT LINE CAPS AND PLUGS ARE MADE OF. REVIEW OF MAINTENANCE LOG REVEALED THAT NO MAINTENANCE HAD BEEN ACCOMPLISHED ON THE HYDRAULIC SYSTEM SINCE THE AIRCRAFT WAS NEW. THE FOD WAS LIKELY INTRODUCED INTO THE SYSTEM DURING PRODUCTION ASSEMBLY OF THE HYDRAULIC LINES FOR THE LANDING GEAR SYSTEM.

2004FA0000554 6/25/2004	CESSNA 172S	LYC 10360A1A	LOCK MM201057	BROKEN SEAT BACK

PILOT SEAT BACK CYL LOCK ASSY ROD BROKE AT SWAGED ROD END. AC RETURNED TO AIRPORT. MFG RESCINDED SB DUE TO PROBLEMS WITH CYL LOCK ASSY. ANOTHER SB04-25-02 WHICH IS SUPPOSED TO TAKE CARE OF ANY PROBLEMS. ELECTED TO REMOVE ALL CYL LOCK ASSY, INSTALL SOLID RODS IAW SB04-25-02 UNTIL SUCH TIME AS ALL NEW CYL LOCK ASSY ARE RECEIVED FROM MFG, SEATS ARE RETURNED TO ORIGINAL CONFIGURATION. OFFSET ATTACHMENT AT BACK OF SEAT CONTRIBUTES TO BENDING MOMENT BEING APPLIED TO ROD END AND SIDE LOADS CYL LOCK ASSY. IT IS IMPOSSIBLE TO OBSERVE ROD CRACKING AT SWAGED END PRIOR TO FAILURE DUE TO PLASTIC COVER OVER END THAT IS NOT REMOVABLE. THIS IS SECOND CYL LOCK ASSY ROD END TO BREAK SINCE SB04-25-01 WAS INCORPORATED.

16970704 7/19/2004	CIRRUS SR22	CONT IO550N	EXHAUST HEADER 15070001	CRACKED ENGINE

THIS AIRCRAFT HAD THE NR 1,NR 3,NR 5 HEADERS REPLACED WITH NEW PARTS AT 154.0 HRS. THE AIRCRAFT THEN EXPERIENCED A

CRACK IN THE NR 5 HEADER AT 180.0 HRS. THERE DOES NOT SEEM TO BE ANY ABNORMAL STRESS ON THE PART/INSTALLATION. AIRCRAFT EXHAUST SYSTEM WILL BE MONITORED TO INSURE INTEGRITY.

2AUG04	CNDAIR	GE	TIRE	SEPARATED
8/2/2004	CL6002B16	CF343A	256K433	MLG

APPROXIMATELY 1 TO 2 SECONDS BEFORE TAKEOFF, PILOT REPORTED A SLIGHT FORWARD LURCH TO AIRCRAFT AS IF IT WAS GOING THROUGH A PUDDLE. CHECK ALL FLT PARAMETERS NO ABNORMALITIES NOTED. CALL TOWER TO ASK FOR RUNWAY INSPECTION, GROUND PERSONNEL REPORTED FINDING PIECES OF TIRE AND WHAT LOOKED LIKE AN ANTENNA (IT WAS THE IB WOW INPUT PROX SWITCH). THE ENTIRE TREAD SEPARATED FROM THE CASING AND CAUSED CONSIDERABLE DAMAGE TO AIRCRAFT.

2004FA0000590	DIAMON	LYC	SELECTOR VALVE	SEPARATED
6/5/2004	DA40	IO360A1A	3F20M	FUEL SYSTEM

DURING FLIGHT, THE FLIGHT CREW MADE A FUEL TANK SELECTION CHANGE AND NOTICED THE FUEL WAS BURNING FROM THE PREVIOUS TANK EVEN THOUGH THE SELECTOR HAD BEEN MOVED TO THE NEW TANK. AFTER LANDING, MAINTENANCE PERSONNEL FOUND THE FUEL SELECTOR SHAFT HAD BECOME SEPARATED FROM THE SELECTOR AT THE UNIVERSAL JOINT. THE UNIVERSAL JOINT RETAINING PINS ARE PRESSED INTO THE UNIVERSAL JOINT BODY AND HAD BECOME LOOSE ALLOWING THEM TO FALL OUT. THIS SHAFT IS PART OF THE FUEL SELECTOR ASSEMBLY AND HAS NO UNIQUE P/N.

07092004	MOONEY	LYC	LANDING GEAR	COLLAPSED
7/9/2004	M20F	AEIO360*	4196001C	MAINS

LANDING GEAR CIRCUIT BREAKER POPPED, ATTEMPTED TO RESET IT AND SAW SPARKS. PILOT ATTEMPTED MANUAL EXTENSION OF GEAR BUT WAS UNABLE TO GET DOWN AND LOCKED INDICATION. PILOT REPORTED GEAR PROBLEM TO TOWER. GEAR APPEARED TO BE DOWN AND THE PILOT FLEW BY TOWER AND THE CONTROLLER ALSO STATED THAT GEAR APPEARED TO BE DOWN. LANDING WAS MADE AND LANDING GEAR COLLAPSED CAUSING MINOR DAMAGE TO FUSELAGE AND PROPELLER. MECHANIC IDENTIFIED STRIPPED SPLINES ON EMERGENCY EXTENSION SHAFT WHICH WOULD NOT ALLOW THE GEAR TO FULLY EXTEND MANUALLY. IT IS UNCLEAR WHEN THE SPLINE WAS DAMAGED AND WHY. THE MECHANIC DID PERFORM A SUCCESSFUL MANUAL EXTENSION DURING THE ANNUAL INSPECTION LAST JULY.

The Aviation Maintenance Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those who operate and maintain civil aeronautical products and can be found on the Web at <http://www.faa.gov/avr/afs>. Click on "Maintenance Alerts" under Regulations and Guidance. The monthly contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports, Service Difficulty Reports, and Maintenance Difficulty Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Aviation Data Systems Branch (AFS-620); P.O. Box 25082; Oklahoma City, OK 73125-5029.

RUNWAY SAFETY CORNER

10 Ways to Help Prevent Runway Incursion

- ***See the "Big Picture"***
  Monitor both ground and tower communications when possible.

- ***Transmit Clearly***
  Make your instructions and read backs complete and easy to understand.

- ***Listen Carefully***
  Listen to your clearance. Listen to what you read back. Do not let communications become automatic.`

- ***Copy Clearances***
  Clearances can change. Keep a note pad and copy your clearance. If needed, refer to your notes.

- ***Situational Awareness***
  Know your location. If unfamiliar with an airport, keep a current airport diagram available for easy reference.

- ***Admit When Lost***
  If you get lost on an airport, ask ATC for help. Better to damage your pride than your airplane.

- ***Sterile Cockpit***
  Maintain a sterile cockpit until reaching cruising altitude. Explain to your passengers that talking should be kept to a minimum.

- ***Understand Signs, Lights, and Markings***
  Keep current with airport signs, lights and markings. Know what they mean and what action to take.

- ***Never Assume***
  Do not take clearances for granted. Look both ways before entering or crossing taxiways and runways.

- ***Follow Procedures***
  Establish safe procedures for airport operations. Then follow them.

• Only in America

Well said in the September/October Editor's Runway in the *FAA Aviation News*. I have always believed the legal system can manipulate virtually any situation. Someday we are going to run out of companies to put the blame on.

As pilots of aircraft big and small, no matter what the situation, YOU FLY THE AIRPLANE! In most cases, it will take you back to the basics of needle, ball, and airspeed. VFR or IFR, if you do not fly the airplane, it will fly you. Basic airmanship. You do not get that from all the "magic boxes" your aircraft may have.

Thanks for a great magazine.

Ed Hasch
via the Internet

Thanks for your comments. A pilot should remember that the first priority is to fly the airplane.

• Drop Zones

I have been a reader of your magazine for many years and normally agree with your articles, but in your September/October issue you have one article that is of great issue to me.

Your article on "Drop Zone Flying for the GA Pilot" is wrongly named. It should be "Get Out of My Way—Here I Come." I realize this article was written by a member of the U.S. Parachute Association (USPA) and she will do whatever necessary to promote this very hazardous sport. Please check the USPA web site and you will find that almost three people per month are killed in USPA accidents, not to mention skydive groups that do not report, or innocent people in other aircraft that are not counted on their tally sheet of death.

My concern is not for the person who elects to jump out of an airplane, but the innocent flying public who are affected by skydiving over or around active airports. Please refer to the FAA Accident/Incident Data System reports of aircraft/parachute accident and incidents. There are thousands of such reports.

When you mix student pilots and student skydivers you are promoting accidents. When we HAD a skydiving club at our local airport, jumpers would land all over the airport—sometimes on the runways, sometimes across the fence on the highway, and occasionally in a local lake. Sometimes they actually hit the jump zone.

The FAA promotes SAFETY, SAFETY, SAFETY. I do not understand how the FAA could possibly allow, much less promote, skydiving on or around active airports.

What if you had a commercial airline that has killed three people per month for the last ten years? How long would the FAA allow them to operate? Skydiving over or on to active airports must be banned. Period!

Gary F. Jones
Paris, TN

Thank you for your comments. Although I disagree with your choice of wording, I respect your comments. Skydiving is a sport that has its own unique risks. Skydivers assume those risks when they decide to learn how to jump.

You are right, FAA is concerned about safety in parachute jumping; both for those involved in the sport and those on the ground. That is why there are federal regulations for parachute jumping. That is also why FAA recognizes the important safety role the United States Parachute Association (USPA) plays in the sport through its safety and training standards for drop zone operators, instructors, and jumpers as a condition of membership in USPA.

However, unless there is a specific safety issue involved to restrict access, skydivers have the same right of access to a public airport as any other aviation group. Parachute jumping is regulated by 14 Code of Federal Regulation part 105. As long as jumpers abide by part 105 and pilots comply with part 91, each should be able to see and avoid each other. The greatest danger in skydiving is impact with the ground, not hitting an aircraft.

A search of the FAA's Accident/Incident Data System, (AIDS) for the words parachute, skydiving, and parachuting revealed only 375 reports since 1978.

In checking the USPA's web site, although USPA lists reported fatalities for the years 1992 through 2003, these numbers do not show the number of jumps nor the number of jumpers involved in the sport during those years. So, it is hard to develop an accident rate for the sport although based upon the USPA site; the average is about 33 fatalities per year. Skydiving is a sport. As a voluntary sport, FAA does not hold it to the same standards as a commercial airline operation. Nor does, FAA hold other segments of general aviation to the same standards as a commercial airline operation.

The key to aviation safety is responsible standards designed for each segment of aviation. Then each segment can enjoy its unique aspect of aviation to its fullest extent with due regard for the other users of the National Air Space System.

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 referred to their local Flight Standards District Office or Air Traffic facility. Send letters to H. Dean Chamberlain, Editor, FAA AVIATION NEWS, AFS-805, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267-9463; e-mail address:
Dean.Chamberlain@faa.gov

INSTRUMENT PROCEDURES HANDBOOK

The FAA is pleased to announce that the FAA-H-8261-1, *Instrument Procedures Handbook* (IPH), is available on the FAA web page at: <http://av-info.faa.gov/terps/IPH.htm>. The IPH has been an extraordinary undertaking for the FAA with its scope, depth, and quality of content. The Instrument Procedures Handbook is a now a reference for the Practical and Knowledge tests. The IPH will be available from GPO also.

The IPH expands upon information contained in the *Instrument Flying Handbook* and introduces advanced information for IFR operations that will help pilots and flight crews keep up with the changes that are taking place in the National Airspace System. The IPH is designed as a technical reference for professional pilots. Flight instructors and instrument students may find this handbook a valuable training aid since it provides detailed coverage of instrument charts and procedures including IFR takeoff, departure, en route, arrival, approach, and landing. Safety information covering relevant subjects such as runway incursion, land and hold short operations, controlled flight into terrain, and human factors issues also are included. Although the emphasis of the IPH applies to airplane operations, helicopter specific IFR operations are included.

If you have any questions please contact Steven E. Winter in AFS-420 at <steven.e.winter@faa.gov>.

2005 AVIATION SAFETY COUNSELOR OF THE YEAR

FAA, in cooperation with the General Aviation Awards Program, recently named NAFI Master CFI Michael Church as the 2005 National Aviation Safety Counselor of the Year. A resident of Costa Mesa, California, he has been a flight instructor for 35 years and has served as an Aviation Safety Counselor (ASC) for more than 10 of those years. Church is the chief CFI and president of Sunrise Aviation, a Part 141 flight school and Cessna Pilot Center, at Santa Ana's John Wayne-Orange County Airport (SNA). Holder of both NAFI's Master CFI and Master CFI-Aerobatic designations, he represented the Long Beach Flight Standards District Office (FSDO) and the FAA's Western Pacific Region.

Each year, a General Aviation Awards competition is held on the local, regional, and national levels to identify the Aviation Maintenance Technician of the Year, Aviation Safety Counselor of the Year, Avionics Technician of the Year, and Certificated Flight Instructor of the Year. The four national winners each receive an all-expense-paid trip for him/herself and a guest to AirVenture, the world's largest aviation gathering, in Oshkosh, Wisconsin. In addition, the winners are provided with a rental car, weeklong AirVenture admission and parking passes, plus cash, gifts, and prizes. FAA Administrator Marion Blakey presents the actual awards during an evening AirVenture "Theater in the Woods" program.

The General Aviation Awards Committee would also like to recognize this year's other regional ACS's of the Year:

Joseph R. Brigham, FAA's New England Region.

Dennis R. Gardisser, FAA's Southwest Region.

Brian L. Robbins, FAA's Eastern Region.

John R. Scott, FAA's Northwest Mountain Region.

John Paul St. Peter, FAA's Great Lakes Region.

James E. Trusty, FAA's Southern Region.

Contact your local FAA Aviation Safety Program Manager for more information on the General Aviation Awards Program.

NEW LOOK FOR WWW.FAASAFETY.GOV

The FAA Aviation Safety Program is honoring its commitment to continuously improve its services to airmen over the web and via e-mail. This commitment to pursuing its mission via the web is based on a national survey of airmen conducted in 2003. Here's what was learned:

- 96% of you have access to the Internet
  - 72% from home
  - 12% at a library
  - 16% at an airport

Your preferences for delivery of safety information
  - 36% E-mail
  - 29% Web site
  - 20% Postal service
  - 8% Industry seminars
  - 6% FAA sponsored seminars
  - 1% Purchased materials

The latest release of the Safety Program's web site <www.faasafety.gov> contains many new features and sources of safety information. The home page for the faasafety.gov web site has changed quite a bit, to include more information about the safety program and give you easy access to online resources. On the left side of the home page, you'll see a heading called "faasafety.gov News." These will be updated from time to time to include articles of interest to airmen. By clicking on the header or "See All News," you'll be taken to a page that shows a list of all news items. By clicking on the header of a news item, you'll see its contents.

Three areas of the faasafety.gov site are highlighted just below the picture of the airplane. Click on the headers and the "Click Here to Enter" text to go to the featured areas of the site. The two new areas are "Online Resources" and "About the Safety

Program." "Online Resources" links to other sites on the web that are of interest to pilots and mechanics. It is organized by category and has brief descriptions of the sites. Clicking on the links will take you to the sites. The other new site, "About the Safety Program," includes some new content to explain the purpose of the Safety Program, its mission, and awards.

SPANS is an online event notification system. Many of you now have taken advantage of FAA-sponsored events and seminars to increase your skills as airmen. The FAA has launched the SPANS system to provide better seminar and event information notification in a timely manner and easy access for Airmen. The SPANS system is taking the place of the current paper-based snail mail system. This transition will provide better service to Airmen at the same time as reducing costs.

There have been two enhancements made to the SPANS site. When registering for an event, you can now specify the names of up to 10 additional attendees you want to bring along. These people do not need to go through the entire registration process—you just need to indicate their names. They will not be included in any e-mail or flyer notifications. The second enhancement involves the event icons and status display. Instead of using color-coding in the output of event searches, icons are now used to indicate the status of events. A legend is displayed above event lists to explain the meaning of the icons. A red hue is used to indicate events that have already passed, and a blue hue is used for currently active events. Holding your mouse over an icon will display its purpose. Clicking on icons will have no particular effect (except that clicking anywhere within an event brings up its details).

The next release of web site improvements will go live around the first of the year and include an online library and improved educational center.

INTERNET-BASED PILOT REPORTS FROM NOAA

Airline dispatchers and National Oceanic and Atmospheric Administration (NOAA) National Weather Service have worked together over the past year to enhance the collection of critical weather data that will help improve air travel safety through more accurate forecasting. The National Weather Service's Aviation Weather Center (AWC) in Kansas City, Missouri, led the charge with a simple change: allow airline dispatchers to file their pilot reports (colloquially called PIREPs) through the Internet for relay into the FAA's weather information system. NOAA is an agency of the U.S. Department of Commerce.

"Timely, accurate and focused environmental information for pilots will help assure safety for the aviation industry," said retired Brig. Gen. David L. Johnson, director of NOAA's National Weather Service and former U.S. Air Force pilot.

"At the Aviation Weather Center, we live and breathe PIREPs. In-air reports from pilots are one of the most important pieces of information our forecasters have," said Jack May, director of the Aviation Weather Center. "Real-time reports of conditions such as icing and turbulence are critical in determining future conditions."

According to May, the AWC received more than a thousand pilot reports via the new Internet method in October, and those reports increased the total number of PIREPs by seven percent. Alaska Airlines and Southwest Airlines have become the most active participants.

In mid-November, Southwest will stop logging PIREPs on its internal system and will, instead, enter them through the AWC web page.

"This is a major step and boost to the project by Southwest," May said, "because it will make thousands of more Pilot Reports readily available to those who need them, such as airline dispatchers, aviation weather forecasters, and the aviation weather research community."

Rick Curtis, manager of dispatch automation for Southwest Airlines, said, "During the past few months, our dispatchers have made the transition from entering PIREPs in our internal reporting database to the national system by using the AWC PIREP reporting interface. The transition has been very smooth, and now we can share these PIREPs with the entire aviation community. This is a great tool and we're proud to be on board."

PIREPs are submitted to the AWC over a secure web site to protect the integrity of the reports. The aviation community has easy access to this information from wherever PIREPs are obtained, including FAA Flight Service Stations, FAA's Direct User Access Terminal System (DUATS), NOAA's Aviation Digital Data Service, and a variety of commercial flight preparation packages.

NOAA's National Weather Service is the primary source of weather data, forecasts and warnings for the United States and its territories. The NWS operates the most advanced weather and flood warning and forecast system in the world, helping to protect lives and property and enhance the national economy.

This information came from a NOAA press release. More information can be found on the Internet at the following addresses: on NOAA at <http://www.noaa.gov>, on the National Weather Service at <http://www.nws.noaa.gov>, on the Aviation Weather Center at <http://aviationweather.gov>, and on the AWC Aviation Digital Data Service at <http://adds.aviationweather.gov/pireps/>.

Editor's Runway

from the pen of H. Dean Chamberlain

FAA Aviation News: A Time of Change

In our September/October 2004 issue's Flight Forum section, we published Patrick Thorne's e-mailed request not to abandon the HTML format we had been using for the magazine's Internet web site. His request resulted from our use of an Adobe Portable Document Format (PDF) ® file to upload our special July/August issue to the web site. In our response to his e-mail, we said we would return to our traditional HTML format. We did return to that format in the following issue. However, because of the implementation of the new FAA national management policy for all FAA web sites as outlined in FAA Order 1370.93, the *FAA Aviation News* web site will be converting to the use of PDF files. We are doing this in part to ensure that we can continue to provide you, our readers who visit our web site, with all of the graphics and photographs we use in the print version of the magazine. Failure to convert to PDF would have severely limited the size of the files we could have uploaded to our web site. Because of the file size restrictions, our web site would basically have become a text only site.

This change to a PDF format should have minimal impact on most readers. One result of the change is that we plan to include the complete magazine as a PDF file on the web site.

For those readers who may want to copy portions of the magazine, the process remains one of selecting the respective text or image toolbar button on the PDF reader, selecting the text or image desired, copying it, and then pasting it into a new document. This may or may not require some reformatting once the material is copied into a new document.

For those who may not have a copy of the Adobe Reader® needed to view and work with our new file format, a free copy of the software needed for viewing and printing PDF files is available from Adobe. The Adobe web site for downloading the software is http://www.adobe.com/products/acrobat/alternate.html. Adobe's homepage is www.adobe.com.

In addition to our web site format change, *FAA Aviation News* is working on a plan to conduct a reader survey in 2005. Although details are pending, we will announce our plans and date when available. The survey will be designed to do two important things. One is to determine what you, our readers, want to see in the magazine, and if we are meeting your expectations. The second item is to learn how you read the magazine. For example, do you subscribe to the magazine or get a copy from your local FAA office or do you read it electronically on the Internet. These are only a few of the answers we are seeking. Our goal is to let you tell us what you want to read in the magazine.

Although our mission is aviation safety, without your readership and support, we can't be successful without your interest. This is a time for change. We will depend on you to tell us how we must change. We hope you have a great new year. Let's all work together to make the *FAA Aviation News* the best safety magazine we can.

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