

FAA



AviationNews

AVIATION SAFETY FROM COVER TO COVER

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**AirVenture
Oshkosh™**



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FRONT COVER: EAA AirVenture® 2006 picture.
(George Soteropoulos photo)

BACK COVER: Photo of a B-17 at AirVenture®
2006. (Anne X. Graham photo).

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Mark your calendar. The dates for the 2007 Experimental Aircraft Association's (EAA®) annual fly-in convention are July 23-29. Held at Wittman Regional Airport in Oshkosh, Wisconsin, AirVenture 2007™ is the 55th annual EAA fly-in.

EAA's Internet Web site and its AirVenture® Web site provide information on everything from the history of the fly-in to housing to planned events to a "newbie's" guide to surviving the fly-in. All of this information and more can be found at <www.eaa.org>.

For pilots planning on flying their own aircraft to the fly-in, the Federal Aviation Administration's (FAA) *Notice to Airmen* (NOTAM) is available on the FAA's Internet NOTAM Web page <<http://www.faa.gov/NTAP/oshkosh.pdf>> as well as on the EAA's Web page <<http://www.airventure.org/2007/flying/notam07.pdf>>. The effective dates of the NOTAM are from 6:00

a.m. CDT on July 20 to 11:59 p.m. CDT on July 29. The NOTAM outlines the procedures for communication, arrival and departure procedures for various types of aircraft at Oshkosh and surrounding communities, air show airport closure hours at Oshkosh, visual and instrument procedures, special requirements for certain Canadian aircraft, and information about parking, tie-downs, and other fly-in related information.

With more than 10,000 aircraft expected to fly to AirVenture 2007™ this year, it is vital that all pilots flying to Oshkosh, or one of the outlying airfields, during this period review and follow the guidance in the NOTAM for their respective airport of landing. As I like to say each year, finding yourself number 10 in a line of aircraft inbound on one of the designated arrival routes is not the time to read the NOTAM to find out what you are expected to do next in the procedure.



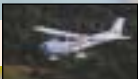
Along with knowing the various procedures for your respective type aircraft—for example turbine, warbird, seaplane, helicopter, ultralight, home-built rotorcraft, no-radio arrival, or operating on an instrument flight plan (IFR)—it is important that you can safely operate your aircraft throughout its normal flight envelope. You need to be proficient in both slow flight as well as flight faster than your normal en route and approach speeds. The reason is you may have to follow in trail aircraft that might be slower or faster than your aircraft's normal operating speeds. Although the NOTAM

AirVenture® 2007

by H. Dean Chamberlain



George Soteropoulos photo





FAA photo by Laurie Zaleski

FAA Administrator Marion Blakey and EAA® President Tom Poberezny.

outlines the different procedures for various categories or types of aircraft such as different routings, altitudes and airspeeds, you must be able to adjust your airspeed and safely maneuver your aircraft in close proximity to other aircraft. The FAA has issued a waiver to reduce the separation standards for Category 1 and 2 aircraft (primarily single engine and light twin aircraft) during the waiver period.

When filing flight plans, pilots are asked to file as far in advance as possible. Instrument flight plans can be filed up to 22 hours in advance. Visual flight plans have no advance time limits. There is an IFR reservation program in effect during the NOTAM period for Wittman Regional, Fond du Lac County, Outagamie County Regional, and New Holstein Municipal airports. The NOTAM tells how to obtain an IFR reservation slot.

Useful flight planning information includes:

- The NOTAM lists the designated Flight Service frequencies for approaching the Oshkosh area.
- Pilots crossing Lake Michigan may want to use the Lake Reporting Service. The

Aeronautical Information Manual (AIM) explains the process and benefits in paragraph 4-1-20(e). This safety flight plan is in addition to any other flight plan.

- Pilots are asked to add 30 minutes to their inbound estimated time of arrival to allow for any delays.
- Pilots are asked to cancel their VFR flight plans while approaching their destinations because parking delays may exceed 45 minutes.
- Pilots are also asked to follow the frequency procedures outlined in the NOTAM to minimize confusion and frequency congestion.
- The NOTAM explains flight plan procedures, the IFR reservation service, and requested filing procedures. The NOTAM states, "All IFR arrivals, except turbojet, turboprop and air carrier aircraft, are strongly encouraged to cancel their IFR flight plan 60 NM from Oshkosh, when the ceiling at Oshkosh is reported at or above 4,500 feet and the visibility is greater than 5 miles."
- A temporary tower will be opera-

tional at Fond du Lac during the NOTAM period.

The NOTAM lists the following safety items for pilots.

- The FISK VFR (Visual Flight Rules) procedure will be used for most aircraft when conditions permit from July 20 through 29. The NOTAM explains the procedure and lists the exceptions.
- Extended periods of slow flight may be required.
- Fuel for unexpected holdings or go-arounds should be included in your flight planning. If you don't have enough fuel, you will have to divert to an alternate airport. If your fuel status becomes critical, notify controllers immediately.
- Plan your arrival to avoid the closing hours for Wittman Regional Airport. The NOTAM lists the closure hours for the daily air show and other periods during the dates of the NOTAM.
- Pilots should maintain single-file flight with at least half mile in-trail spacing through the approach and in any holding.
- Pilots should review and comply with the communications procedures outlined in the NOTAM for the greater Oshkosh area.
- Pilots should use extra caution to maintain a safe airspeed and avoid low turns on landing approach.
- The NOTAM lists the Oshkosh Airport Notes that discuss such topics as movement areas, tie-downs, student pilot training (it is not permitted), and other safety issues during the effective period of the NOTAM.
- In addition to outlining the arrival and departure procedures for Oshkosh, the NOTAM discusses the procedures for the AirVenture seaplane base, and the airports at Fond du Lac and Appleton.

The NOTAM lists the important safety information for flying into and





FAA photo by Laurie Zaleski

through the Oshkosh area while the EAA Internet Web site provides information needed for those wanting to camp along side their aircraft at the fly-in as well as those wanting to find motel rooms and other accommodations while attending the fly-in.

The key to staying in the Oshkosh area is to make all arrangements as early as possible or hope for a cancellation. The reason is thousands of other people are trying to do the same thing. But if you want to see just about any type of aircraft, watch world-class aerial performances, and have a chance to meet and talk to many aviation experts, you need to go to the EAA fly-in.

In fact some people make flying to Oshkosh an adventure in and of itself. Maybe you have heard of one such group, B2OSH. Maybe you are part of that group. The following was submitted by a member of B2OSH. According to Adrian A. Eichhorn, a *Bonanza* owner, former FAA employee and contributor to *FAA Aviation News*, B2OSH is a unique group of Beechcraft owners who gather at an airport en route to Oshkosh and fly in formation to Oshkosh. But let's let him tell the story.

"For the 18th year in a row, *Bonanzas to Oshkosh* 'B2OSH' is set to depart Rockford, Illinois on July 21

for another precedent setting flight.

"Originally organized as a means to fly into Oshkosh and camp with other *Bonanza* and *Baron* flyers, B2OSH has grown into the largest and oldest formation gathering of its kind in the world.

"Having set a National Aeronautic Association (NAA) record in 1995 for the largest general aviation formation of 132 aircraft, B2OSH continues to concentrate on safety and proficiency in its formation flying. We offer regional formation clinics throughout the year, limit the formation size to 120 aircraft, and follow a well-choreographed set of procedures developed between the group, the FAA, and the EAA.

"While at Oshkosh some of those among us who have earned FFI airshow certification will fly a formation demonstration for the crowd on either Monday or Tuesday during the Airventure Showcase of Flight.

"Many participants are repeat fliers, with two thirds having previously made formation flights with B2OSH. This year looks to be the best ever, as many flyers are arriving to participate in the cele-

bration of the 75th anniversary of Beechcraft, the 60th anniversary of the *Bonanza* and the 45th anniversary of the American Bonanza Society" he said.

The B2OSH flight and group gathering is one example of how the EAA fly-in and convention serves as a means for pilots and others to meet, enjoy aviation, and have a great time with fellow aviators.

Just remember, the secret for a perfect fly-in is not having an accident. Pass it on. Enjoy your flight.

Nonaerobatic Formation Flight.

Civil pilots, who wish to conduct nonaerobatic formation flybys in the air show display area for an air show, must possess a current and valid industry formation training and evaluation credential that is acceptable to Flight Standards Service's General Aviation and Commercial Division, AFS-800. This policy does not apply to aircraft carrying jumpers, closed course air racing, dog-fighting, or skywriters (when skywriting). An appropriate industry-issued credential will suffice for any make/model or type airplane. To find where FAA-approved training for these credentials is available, type "formation flying clinics" into your computer search engine and a variety of locations will appear.





FAA AVIATION SAFETY CENTER EAA® AirVenture® OSHKOSH 2007 Forum Schedule

TIME	July 23	July 24	July 25	July 26	July 27	July 28	July 29
8:30 — 9:45	FAASafety.gov / Pilot Proficiency Program <i>Jim Pyles</i>	Flying in Alaska <i>Kieran O'Farrell</i>	Human Factors in General Aviation <i>John J. Hiles</i>	Airspace <i>Mark Grady</i>	Night Flying Safety-What Your CF Didn't Tell You <i>Max Trescott</i>	VFR Charting <i>John Moore</i>	Operating in the Airport Traffic Pattern <i>Gary Pendleton</i>
10:00 — 11:15	Flying Companion Seminar-Airplane Basics <i>Tina Hartlaub</i>	Surviving Forced Landings <i>Eric Basile</i>	Hot Aeromedical Issues <i>Fred Tilton</i>	Reducing Cockpit Stress Between the Sexes <i>Rod Machado</i>	Thunderstorm Dynamics and Gust Fronts <i>Jim Johnson</i>	IFR Charting <i>John Moore</i>	Owner/Operator Aircraft Maintenance <i>Don Brown</i>
11:30 — 12:45	Flight Instructor Professionalism in the 21st Century <i>JoAnn & Sandy Hill, Rusty Sachs</i>	FAASafety.gov / Pilot Proficiency Program <i>Jim Pyles</i>	Is Your Defensive Flying Defensive <i>Greg Feith</i>	FORUM CLOSED - "Meet the Administrator"	Say It Right <i>Mark Grady</i>	Lessons Learned <i>Greg Feith</i>	Protecting our Aviation Freedom <i>Steve Hoogerhyde</i>
1:00 — 2:15	Ditching and Water Survival <i>Robert Shafer</i>	General Aviation Crew Resource Management <i>Rogers Shaw</i>	An Update of FAA Enforcement Activities <i>Michael F. McKinley</i>	Kings on Risk Management <i>John & Martha King</i>	Spatial Disorientation-Deadly <i>Rogers Shaw</i>	Single Pilot IFR <i>Mark Grady</i>	Mountain Flying <i>Lew Owens</i>
2:30 — 3:45	Transitioning of Ultralight Aircraft to Light Sport Aircraft <i>Van Stumpner</i>	Why Engines REALLY Quit: The Top 10 Reasons <i>Bruce Edsten</i>	Regulations, What Every Pilot Should Know <i>Mark Grady</i>	Secrets of the Airplane Whisperer <i>Susan Parson</i>	Excellence in Aviation Safety from Accident Investigation <i>Greg Feith</i>	Airport Situation Awareness <i>Larry Cunningham</i>	
4:00 — 4:45	Failure to Follow Procedures <i>Gary Knaggs</i>	Transportation of Dangerous goods/Hazmat in Air Commerce <i>Aaron Sinder</i>	Everything You Wanted to Know about GPS and WAAS <i>Larry Oliver</i>	Temporary Flight Restrictions - A Must To Know <i>Michael F. McKinley</i>	WAAS Approach Procedures <i>Jimmy R. Snow</i>	Legal Liability for Aviators-Risk Management Toolbox <i>Doug Griffith/Stuart Fraenkel</i>	

All programs acceptable for the Wings Pilot Proficiency Awards Program and Aviation Maintenance Technicians Award Program. Be sure to register at FAASafety.gov for notification of training events in your local area! Become a part of the FAA Safety Team! Submit your application as a volunteer FAASafety Representative at FAASafety.gov!



2007 NATIONAL GENERAL AVIATION AWARD WINNERS NAMED

In each of the past 44 years, the General Aviation Awards program and the FAA have recognized a small group of aviation professionals in the fields of flight instruction, aviation maintenance, avionics, and safety for their contributions to aviation safety and education.

This awards program is a cooperative effort between the FAA and a dozen industry sponsors. The selection process begins with local FAA Safety Team (FAAS Team) managers at Flight Standards District Offices (FSDO) and then moves on to the eight regional FAA offices. Panels of aviation professionals from within those four fields then select national winners from the pool of regional winners.

Recipients of this year's national awards are Michael Gerard "Mike" Gaffney of Lake Saint Louis, Missouri, Certificated Flight Instructor (CFI) of the Year; Paul James New of Jackson, Tennessee, Aviation Maintenance Technician (AMT) of the Year; Jerry Dee Luttrull of Riverside, California, Avionics Technician of the Year; and Cheryl Ann DeFilippo of Deltona, Florida, FAA Safety Team Representative of the Year. Previously, this award was the Aviation Safety Counselor (ASC) of the Year.

FAA Administrator Marion Blakey will present the national awards in July during a "Theater in the Woods" program at Experimental Aircraft Association (EAA®) AirVenture 2007™ in Oshkosh, Wisconsin. Included in the prize package for all four national winners is an all expense paid trip to Oshkosh for the recipient and a guest to attend the awards presentation.

"These awards highlight the important role played by these individuals in promoting aviation education and flight safety," said JoAnn Hill, General Aviation Awards Committee chairperson. "The awards program sponsors are pleased that these outstanding aviation professionals will re-

ceive the recognition they so richly deserve before their peers in Oshkosh."

2007 FAA SAFETY TEAM REPRESENTATIVE OF THE YEAR

Cheryl DeFilippo is a resident of Deltona, Florida, and has been involved in the FAA's safety program for almost a decade. As the daughter of a Naval aviator, she practically grew up in the hangars of Pennsylvania's Willow Grove Naval Air Station watching the Blue Angels practice their routines. Her interest in aviation was revitalized years later when she met her future husband, Hugh. A long time pilot himself, he decided to become an active aviator again. Getting into the cockpit with him was all it took for DeFilippo to enthusiastically embrace the world of flight.

The two of them began taking advantage of the many safety seminars offered throughout their area. Before long, they were mentored into the FAA's safety program as aviation

safety counselors. Early on, they volunteered at the FAA Production Studios and National Resource Center at the Lakeland-Linder Regional Airport (LAL). Soon, she joined the studio crew starting out in an administrative position. It didn't take long before she moved into public relations where she has served for over seven years.

As a lead representative in the FAA's new safety program, the FAAS Team, DeFilippo spends much of her time promoting the production studio and its aviation safety message. Traveling throughout the country to large aviation gatherings including AOPA Expo, AirVenture, and Sun 'n Fun, she shares the safety program's goals with other interested aviators. As a trained graphic artist, she is responsible for producing the studio's promotional materials, books, Web sites and advertising campaigns. Working with National FAAS Team Production Manager Obie Young, she helps to provide guidance for devel-



Cheryl DeFilippo



oping safety programs nationwide.

The experience gained in her “day job” has contributed to her achievements as a FAAS Team representative. She is the vice president of a management firm that oversees the day-to-day activities and organization of professional and nonprofit associations. Her duties include designing and editing magazines, newsletters, and other promotional materials. She holds Bachelor of Science (B.S.) degrees in business management and commercial art from Florida Technical University.

She now serves as a mentor to volunteers joining the FAAS Team while training new crew members to work in various positions within the production studio. She also develops new strategies to foster growth of the production studio's efforts. Youth activities, such as EAA's Young Eagles and the Boy Scout's aviation orientation program, are also a priority for her. She is a member of Aircraft Owners and Pilots Association (AOPA), EAA, and Women in Aviation. She also supports EAA's Deland Chapter 635.



Michael Gaffney

2007 CFI OF THE YEAR

National Association of Flight Instructors (NAFI) Master CFI Michael Gaffney, a resident of Lake Saint Louis, Missouri, has been flying for 32 years and has been a flight instructor for 28 of those years. He grew up in a house under the final approach path of Griffiss Air Force Base near Rome, New York, and spent hours watching B52s and KC135s flying overhead. Beginning his aviation training in Utica, New York, he soloed on his 16th birthday. That was followed a year later with the successful completion of his private pilot flight test.

Since then, he has earned additional FAA certifications as an instrument and multiengine instructor as well as an advanced and instrument ground instructor. His recent professional development training has led to designations as a Diamond Factory Authorized G1000™ Instructor, a Cessna FITS Authorized Instructor, and a Cirrus Standardized Instructor. Additionally, he has held an Airframe

and Powerplant mechanic (A&P) certificate since 1979.

Gaffney's formal education includes a B.S. degree in aeronautics from Saint Louis University's Parks College and a Master of Business Administration (M.B.A.) from the University of Bridgeport. That training has served him well in his role as president of Skyline Aeronautics <www.SkylineAero.com>. His wife Julie is Skyline's chief financial officer. The company, located at the Spirit of Saint Louis Airport (SUS), is a Title 14 Code of Federal Regulations (14 CFR) part 141 flight school, a full service fixed base operator (FBO) and a general aviation piston aircraft maintenance facility. In his capacity as chief education officer, he designs courses specializing in technology integration in the cockpit that meet the requirements for FAA/Industry Training Standards (FITS). He is also an adjunct professor of aviation Washington University of Saint Louis and Saint Louis University.

An aviation writer, Gaffney's articles have appeared in *FAA Aviation News*, NAFI's *Mentor*, and AOPA's *Flight Training* magazine. He also authored a software program entitled the "The Complete G1000™" that was recently published by Aviation Supplies & Academics (ASA). In January of 2007, Gaffney received the National Air Transportation Association's 2006 General Aviation Education Excellence Award.

Originally appointed as an FAA Aviation Safety Counselor under the old Safety Program, he now volunteers as a FAAS Team Representative. As an aviation safety advocate, Gaffney conducts numerous safety seminars annually. He is one of approximately 500 aviation educators worldwide to hold NAFI Master CFI accreditation. In addition, he has also earned accreditation as a NAFI Master Ground Instructor (MGI). His aviation organization memberships include AOPA, EAA, NAFI, and the Greater St



Louis Flight Instructors Association.

2007 AVIONICS TECHNICIAN OF THE YEAR

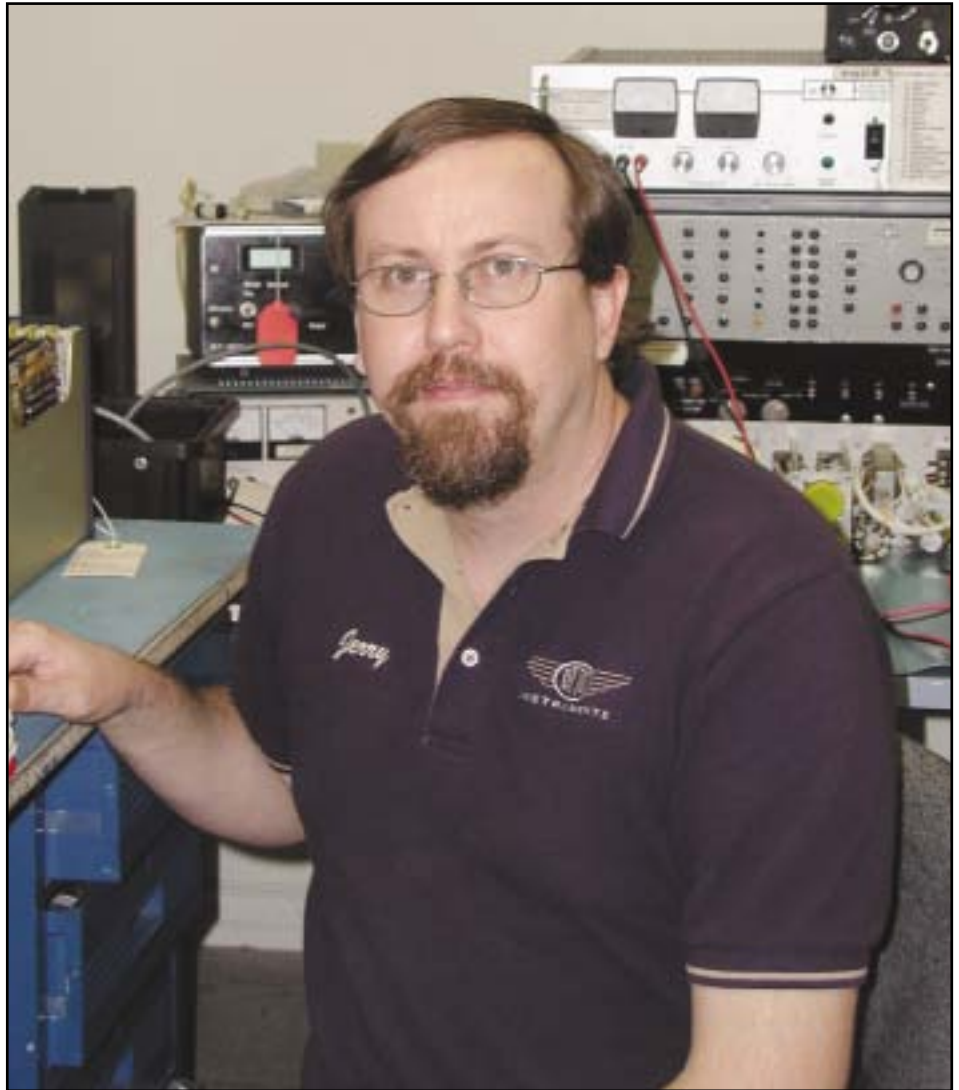
Jerry Luttrull is a native of Artesia, New Mexico. While a youngster growing up in New Mexico and Texas, he would sit near the end of the runway at a local Air Force base and watch aircraft take off and land. His interest in aviation took root at age 14 while a cadet in the Civil Air Patrol. After high school, he was contacted by a recruiter from the Spartan School of Aeronautics in Tulsa, Oklahoma. That led to his graduation with honors from Spartan and earning an Associate of Applied Science degree in aviation instruments and electronics.

For the past 20 years, Luttrull has been employed by Otto Instrument Service in Ontario, California. During those 20 years, he worked his way up from instrument technician to Otto's vice president of quality and compliance. Otto Instrument Service is a 14 CFR part 145 repair station located two blocks from Ontario International Airport (ONT).

An Otto employee since 1987, he began his avionics career performing inspections, maintenance, preventive maintenance and alterations for aircraft instruments and accessories on general aviation, air carrier and military aircraft.

Ten years later, he became the company's quality assurance manager where he performed internal quality system audits and corrective actions as well as writing and revising quality system manuals, instructions, forms, and procedures. He worked with the FAA, Joint Aviation Authorities (JAA), and customers as well as vendors to maintain quality system requirements. In 2000, he was given the added title of Vice President of Operations and assigned responsibility for the day-to-day company operations.

In 2003, Jerry was tapped to become Otto's vice president of quality and compliance. In that capacity, he works with the FAA as well as customers and staff on technical and quality issues. His job requires writing quality manuals, training employees,



Jerry Luttrull

evaluating the company's capability to repair components, customer training programs, technical assistance, warranty evaluations, overseeing the test equipment calibration program, and training inspectors as well as technical personnel. Another significant component of his work is overseeing the company's FAA drug and alcohol testing program.

The FAA's Los Angeles Manufacturing Inspection District Office has appointed Luttrull a designated manufacturing inspection representative (DMIR). He chairs the database committee for a non-profit product evaluation coalition. Through his ongoing regimen of continuing education and training, he continues to enhance his professional skills. He has also been a contributor to AEA's *Avionics News*

magazine.

2007 AMT OF THE YEAR

Paul New of Jackson, Tennessee, has been an Airframe & Powerplant (A&P) technician for almost 20 years and has held inspection authorization (IA) for 15 of those years.

The seeds that grew into his three-decade long involvement in aviation were planted early in life by his father, a WWII B-29 mechanic. New grew up riding his bicycle to the airport after school and on Saturdays to help his dad rebuild airplanes. What started out as a father and son hobby soon became the family business in a hangar at Jackson's McKellar-Sipes Regional Airport (MKL).

When not helping his father repair aircraft, he worked at the local FBO





Paul New

towing and fueling planes. The day after his 16th birthday in 1975, he soloed in a Cessna 150. Little more than a year later, he earned his private pilot certificate followed shortly thereafter by multi-engine and instrument ratings.

Early in his aviation career, he put his formal avionics training to work by serving as the avionics manager at repair stations in Illinois and Kentucky. His heart, however, was in airframe and powerplant maintenance and repair. In 1987, he purchased his father's rebuilding and repair business, renamed the company Tennessee Aircraft Services, and now serves as the company's president.

During Christmas of 2004, fire brought disaster to Tennessee Aircraft Services. One building and all of its contents were a total loss, a second hangar was substantially damaged, many customer repair projects were

destroyed and three employees, including New, were injured. Since then, a new building has been constructed, repairs were made to the damaged building, the injuries have healed and the company is once again serving the needs of its customers.

The business specializes in major repairs to piston single- and twin-engine aircraft. New's daily workload includes management and operation of the company, supervision of seven technicians, training apprentice technicians, design of structural repairs, systems and electrical troubleshooting, and post maintenance flight checks. A favorite part of his work is owner-assisted inspections and helping owners better understand how to safely and efficiently maintain their aircraft. He also monitors several aircraft type-specific Internet forums responding to owners' technical questions.

A member of AOPA, EAA, Cessna

Pilots Association (CPA), International Comanche Society, and the American Bonanza Society, he is also a newly appointed FAA Safety Team (FAASTeam) member at the Memphis FSDO. New recently became an off-site instructor and technical representative for the Cessna Pilots Association and will be writing monthly articles on Cessna airframe issues for the CPA magazine. He also holds the FAA Diamond Award.

General Aviation Awards Program Information

Information about the General Aviation Awards Program as well as applications for next year's awards is available on the FAASTeam Web sites at www.faa.gov/safety/awards.



Reno 2007

by H. Dean Chamberlain



Sometimes, life's most important rules are the simplest: For example, what could be simpler than the "Reno Rule: Fly Low—Go Fast—Turn Left."

The hard part is doing it fast enough to win at the 44th National Championship Air Races and Air Show from September 12 -16 at Reno Stead Airport, Reno, Nevada. That will be the challenge facing this year's six classes of aircraft competing in the world's fastest motor sport. Located about 15 miles north of Reno, Reno Stead Airport is the home of the Reno Air Racing Association (RARA) which sponsors the annual races and air show at the airport.

From the excitement of the final Unlimited Race with its thundering unlimited engines and highly modified aircraft, many World War II-era warbirds, to the small Formula One experimental aircraft screaming around their course, there is something for everyone at the races. The remaining classes are T-6, Sport, Biplane, and Jet.

Each class has a designated course around the airport designed to accommodate the speeds of each class as well as providing the necessary safety areas to protect persons and property on and around the courses. Although the best seats for watching the races are in the grandstand, for those with pit access, being able to check out the aircraft and get

a chance to talk with the pilots and crews may be the best "seat" at the races.

For those who have never been to the Reno races, this is pylon racing at its finest. Pylons, made from telephone poles and large oil barrels, mark the boundaries of the courses to help the pilots stay on their respective course. Pylon observers stationed at each pylon watch for any aircraft "cutting" inside a pylon. After each race, the observers report any aircraft that cut inside a pylon. Pilots are then penalized for each cut by subtracting time from their finish time. In some cases, the first aircraft across the finish line did not win the race once the aircraft's time was adjusted for a pylon cut or cuts. The secret to pylon racing is finding the "groove" around the course that maximizes an aircraft's "effective" speed by providing the shortest distance around the course without cutting inside a pylon at a given speed and altitude. When a pilot is in the "groove" the aircraft looks as if it is glued to the course.

Racing at Reno is more than just fast aircraft. With military-like precision, the different class races operate on a very tight time schedule from getting ready to race to the actual time on course to recovery. In the case of some of the smaller aircraft, they may be hand towed from the RARA hangar to their respective engine start and

warm up area in preparation for their next race. The larger aircraft are towed from their respective pit areas to their engine start areas. The same precision occurs when each race is over and the aircraft are landing and being recovered to their respective hangar or pit areas. Add in refueling the aircraft, and you can start to appreciate the coordination between race officials, pilots and crews, and all of the ground support crews needed to keep the races on schedule. All of this movement is coordinated by race officials to minimize the risk of accident or incident. Safety is the most important aspect of race week.

In addition to the races, the air show segment of the event features some of the best aerobatic performers, military flight demonstration team, and both military and civilian flight demonstrations. Both current and vintage military and civilian aircraft will also be on static display.

When you add in some great food vendors and people selling everything from aircraft artwork to T-shirts to the latest high energy soft drink, you can begin to understand "Reno."

But what makes the Reno air races great is the cooperation shown by the pilots and support teams while competing in head-to-head racing each day. Reno is an invitational event. Pilots have to be qualified and invited to participate. Air racing is a



potentially dangerous sport. At the speeds and low altitudes flown by these aircraft, there is no room for errors or for someone who poses a risk to the other pilots. From the morning general safety and weather briefings to the individual class safety briefings, pilots share their knowledge, experience, and safety concerns about the course or the day's flying for the benefit of all. Whether it is responding to a "Mayday" on the race course with the overhead "cover" aircraft following the distressed aircraft or the crash-rescue crews ready to roll to help or the medical crews and evac helicopters preparing to launch, if needed, safety is a key element that is included in all phases of the race planning process.

Although safety is the keystone of Reno, another important key element is the many volunteers who come to Reno each year at their own expense to work at the races for their love of the sport. From being pylon observers—Pylon 8 has "belonged" to one family for three generations—to those who tow aircraft each year, to those who time the aircraft, to all of the many volunteers working the races, Reno is as much a love affair of the sport for the volunteers as it is for the competitors. It is not an understatement to say, racing may be the heart and soul of "Reno," but the volunteers make it happen.

From replacing a blown *Merlin* P-51 aircraft engine in a few hours to adding that last touch of wax to a wing, pilots and crews work throughout Race Week to complete their races as they compete to be in the final races of the week and year. Although every pilot and team wants to go home a winner, only one pilot will win the class championship race.

Since RARA sponsors the Races, RARA is responsible for ensuring compliance by all participants of the special FAA waiver for the event issued by the Reno Flight Standards District Office (FSDO). However, the FSDO provides oversight and support of the event as do other FAA organizations. As noted in past articles about the Races, the working relationship between RARA and the Reno FSDO is

outstanding. Both work hard promoting safety throughout Race Week in September and during the Pylon Racing Seminar held in June.

The 10th Pylon Racing Seminar (PRS) was held this year on June 13-16, at Reno Stead Field. For those not familiar with the PRS and wonder how someone qualifies to race at Reno, the following information was copied from the RARA Web site, "...RARA has sponsored the Pylon Racing Seminar as a unique and productive opportunity for race pilots to prepare, practice, and become certified to race in the National Championship Air Races." The Web site says the "...objective of the Board of Directors of RARA is to assemble the most experienced, skilled, best-trained, and race-certified pilots to compete at the Reno National Championship Air Races in September. To accomplish this objective, RARA and the individual racing class organizations make available the Pylon Racing Seminar [PRS] to provide race practice time and to educate, train, and certify pilots to race with maximum competitiveness and safety at the Reno National Championship Air Races."

"Pilots and alternate pilots certified to race in the Reno National Championship Air Races must have competed in the same racing class in Reno within the past three races, or received Race Class Pilot Certification during the Reno Pylon Racing Seminar, including:

1. Ground School
2. Formation Flying
3. Reno Pylon Race Simulation Flying
4. Passing the check ride by the FAA Certified Race Class Check Pilot

The Pylon Racing Seminar attendance will be required for a pilot or alternate pilot who falls into one of the following categories:

1. Never raced at the National Championship Air Races in Reno.
2. Raced in a different race class at the National Championship Air Races in Reno.

3. Not raced in the same race class in Reno within the past three races.

"This is a pilot certification program, not an aircraft qualification period. Although it is recommended, a pilot need not fly the plane he/she will race; however, any aircraft used must be of the same class for which the certification is being sought.

"All phases of the certification must be completed during the Pylon Racing Seminar for any pilot who has never raced in Reno. There will be no exceptions to this rule.

"RARA makes no guarantees that there will be time available in September for a pilot to become certified in a new class or re-certified in a class in which he/she has previously raced at Reno. If time is available in September, pilots who complete the Ground School portion of the Pylon Racing Seminar will be given a priority to become certified.

"With an increase in the number of aircraft entered to compete in all classes, the time available for pilot certification during qualifying periods in September may be reduced or even eliminated. If the race class fields are filled by certified pilots, who need to practice and qualify their aircraft, they will be given a priority over pilots who need to complete the certification process."

As RARA officials have said in the past when discussing the races with *FAA Aviation News*, they realize the significance and uniqueness they enjoy at Reno Stead. The local community support of the Races in the decades since the first race was run in 1964 has enabled the "Reno Air Races" to develop into the world-class event it is today. Everyone, the community, RARA, the participants, and the FAA work together to make the races not only the most exciting and fastest motor sport in the world, but also as safe as possible.

For more information about the Reno area, the Reno National Championship Air Races, RARA, and how to attend the races, you can check the RARA Internet Web site at <<http://www.airrace.org/indexJS.php>>





AOPA photo

The Changing Face of the FIRC

by Gregory T. French

With few exceptions, all flight instructors must renew their flight instructor certificates every 24 calendar months. This requirement is clearly outlined in the Title 14 Code of Federal Regulations section 61.197. Attending a Flight Instructor Refresher Clinic, or FIRC, is one of the ways that they can accomplish this. There are other ways, such as through flight training activity or receiving another instructor rating (with some conditions), but, by far, the most common method is via the FIRC, either on-line or by attending a two-day, 16-hour, in-person, stand-up presentation, at the end of which the instructors are presented

certificates of graduation that they can take to their Flight Standards District Offices (FSDO). A few weeks later they get their newly minted, good-for-another-two-years, certificates. Some FIRC providers make it a bit easier by taking care of the FSDO part, but the attendee still needs to do the 16-hours. For many instructors it's become a time-honored ritual that must be endured, time after time, year after year.

Attending FIRCs have been met with varying opinions by flight instructors. Some are interested and enthusiastic, others perhaps less so. Part of the problem that some "less-so" in-

structors have had involves the course subject-matter presented in the FIRCs. FIRC providers in the past have had their hands pretty tightly tied by Advisory Circular (AC) 61-83E which defines, in great detail, what they can and cannot present. Much of what is required is pretty basic. In its original inception in 1965, the FIRC was meant to accomplish just what its name implied—to refresh instructors in the basics and keep their fundamental knowledge base sharp. The idea of the AC offering guidance toward this end was a good one: standardization. It's important that there be some kind of uniformity in what is being pre-





Gerry Fairbairn, an AOPA FIRC instructor addressing a group of flight instructor renewal candidates.

sented to flight instructors and the AC provides that guidance. In furtherance of that goal, 13 of the 16 required course hours of the FIRC must be devoted to 15 Core and Special Emphasis topics that include such things as aerodynamics, Federal aviation regulations, practical test standards, fundamentals of instruction, weather, etc. While not exactly "Private-Pilot 101," it is still pretty basic stuff. The truth is, frankly, we all would like to think that most flight instructors, whether or not they're current, pretty much know that thrust equals drag, and that Class B airspace is not Class E airspace—even if they do rhyme.

The latest version of the AC was written in 2001, and in many respects carried on the "tradition" of many prior iterations of the guidance that came before it. However, since then, changes in general aviation have been accelerating at a pace that hasn't been seen in 60 years. Sport Pilot, FITS (FAA/Industry Training Standards), IACRA (Integrated Airman Certification and/or Rating Application), the Pilot Proficiency Program, TSA (Transportation Security Administration), VLJ (Very Light Jets) are but a few of the dynamic changes that have appeared or evolved in the six years since that last AC was written and will

directly affect how flight instructors do their jobs.

Clearly, as they say, times are a'changing. The problem with the current AC in today's dynamic flight environment is its rigidity and emphasis on fundamental basics. After presenting all of the AC-required 15 Core and Special Emphasis topics, a typical FIRC provider is left with only three hours to present timely and geographically germane material or to cover information about the latest and greatest technology—certainly not nearly enough time to fully cover the new advances in technology and technique mentioned above.

The FAA is very aware of the limitations and constraints of the current version of the AC and is actively rewriting it based on a new philosophy. That new philosophy is more in tune with that of the professional medical doctor attending a conference. Professional doctors do not attend conferences to relearn basic anatomy or biology. It's assumed that they already know this. Instead, they attend to learn about the latest techniques and technology in their fields. So, rather than a rehash of what a flight instructor is reasonably expected to already know, the intent of the new-and-improved FIRCs will be to emphasize new and ever changing topics. The minimum 16 hours of classroom/training time will be retained. However, the plan is to allow much more flexibility to the FIRC provider in the new version F of the AC, allowing them to decide what the most important topic of the day is and to allow them to decide for themselves how much, or how little, time to spend on it. There will also still be 15 core topics, but they can be incorporated into their Training Course Outline (TCO) however they think best. This means that, for example, some core topics can be combined into a single session provided that inclusion of the required topics is clearly identified. The plan is to remove any individual core module time constraints, although a minimum of 30 minutes each will be recommended, totaling 7.5 hours, whereas the old AC explicitly required a minimum 13 of the 16



hours be devoted to Core and Special Emphasis topics. This new freedom is expected to allow significantly more time to devote to topics that are more in tune with what is happening in the field at that moment.

What's happening to those old Core and Special Emphasis topics? If approved, they will all, every one of them, be relegated to the Recommended Electives Appendix of the new AC, where they will join approximately 25 other recommended topics that, if selected by the FIRC provider in their TCO, will automatically be approved to be used in conjunction with the 15 new Core topics. The provider will, nevertheless, be able to submit proposals to cover other topics, if they wish, and they will be examined by the FAA on a case-by-case basis. If they exhibit merit and relevance, then they too will be approved. The point here is just that the FAA needs to be informed of what's being covered in a particular FIRC presentation.

Just what are these new Core topics? ("Special Emphasis," by the way, is going away.) We can't list them all here as the new AC is still not fully approved, but they certainly are expected to include those items listed earlier, such as the Sport Pilot. Many consider the Sport Pilot certification to be one of the most significant changes to the airman certification structure to have occurred in over 50 years. Manufacturers are getting on board with a multitude of new aircraft, and flight instructors are going to be asked for information and possibly training for this new certificate. The instructor must be made aware of the requirements for and the privileges and limitations of the certificate, particularly the medical requirements.

Use of the Integrated Airman Certification and/or Rating Application (IACRA) is expected to become the certification application method of choice in the near future. It will be critically important that the instructor is well versed in the use of this new Internet-based form of FAA Form 8710-1 submission.

The FAA/Industry Training Standards (FITS) model of training is be-

coming widespread throughout the flight training industry, and flight instructors should be familiar with its basic tenets and be able to apply them in their every-day training, particularly when training in Technically Advanced Aircraft (TAA), which is another area where flight training is changing. "Glass Cockpit" aircraft are becoming the norm for virtually all new light general aviation aircraft being manufactured today. Many manufacturers have stopped producing "round-gauge" aircraft altogether, and certain issues universal to all of the brands of TAA aircraft should be considered by instructors when training in such aircraft. It's only a matter of time before any given instructor will be faced with one of these things. They need to at least know what one looks like.

Post 9/11 airspace is a new issue. Information about concepts entirely new to many GA pilots, such as the Washington, D.C., FRZ (Flight Restricted Zone) and ADIZ (Air Defense Identification Zone), must be fully understood by instructors before they can effectively transfer that knowledge to their students. "Floating" TFRs (Temporary Flight Restrictions), particularly during election years, are a significant problem to pilots. New regulations regarding power plants and stadiums are now in place. And pilots had better know proper intercept procedures—just in case.

The old Aviation Safety Program has undergone a major overhaul. Now it's the FAA Safety Team (FAASTeam). While the goals are the same (aviation safety), the approach has been revamped and improved. Instructors need to know how to effectively use the resources now available to them through the FAASTeam program in their own programs of training.

While the fundamentals of instruction will remain as an elective, Effective Teaching is a new planned core topic which will strive to emphasize, on a more personal and practical level, how to actually communicate and work with pilots-in-training. For example, the course should bring up such potential issues as young (sometimes

very young) instructors teaching older clients who might be highly successful in their own fields, learning how to perceive and deal with frustration with the learning process both for the student pilot and the instructor, and how the learning process can be affected by their demeanor and dress.

GPS navigation has become a common tool for cross-country flying. Even the Piper *Cub* pilot can be seen pulling a Garmin 395 color moving map GPS out of her pocket before she lights up the engine. Instructors need to be aware of the pitfalls of teaching in aircraft with advanced avionics, be able to recognize and teach when GPS use is and is not appropriate, and to be able to recognize when a student is becoming over-dependent on it. Safe use of the GPS is dependent upon accurate and up-to-date data. Where and how those data are acquired and verified should be taught to all pilots who use the GPS system.

Runway incursions and takeoffs/landings continue to present problems and how to minimize those events will continue to occupy the training spotlight. Risk intervention strategies and safety trends in GA have been covered in the past and will also continue to be topics of interest.

Another significant planned change in the FIRC content will be the option to cover the topic of "Business Practices" for flight instructors. The old Version E of the AC explicitly forbids coverage of that topic. Opinions have changed over time and it is now felt that an instructor who better understands the business end of being a flight instructor, be they self-employed or working for a school, will be more effective in their ability to do their jobs.

No longer will it be necessary for a FIRC provider to print out and physically submit the (currently) required two complete copies of everything to the FAA for approval. In the current procedure, the FIRC provider submits duplicate paper copies of their TCOs and any supporting documentation via some form of physical delivery. The FAA then reviews it all, stamps each page "approved..." and returns





AOPA FIRC instructor Gerry Fairbairn discusses what to look for on the CFI certificate.

one copy back to the provider, again via physical delivery. And woe be unto the provider who makes a mistake! For then the TCO is rejected, returned to the provider with a letter of disapproval and (possibly) instructions on how to correct it, and the process starts all over again. That's all changing. In compliance with the Paperwork Reduction Act, and to simply make life easier for all involved, in the future all material is going to be submitted and approved in electronic format. The FIRC provider will submit their TCOs via electronic mail along with scanned images of any supporting material that does not easily lend itself to conventional document formats. The FAA reviews the material and, if there's a problem, calls the provider on the telephone to discuss the problem. The provider then corrects the error and resubmits, again via electronic mail. Upon final acceptance, the FAA sends a letter of approval via return electronic mail. The entire process now could typically take less than a week instead of multiple

weeks, more typical of the past.

There's a new FIRC Web site, <<http://www.faa.gov/pilots/training/firc>>, where all of the latest information on FIRCs will be available, including a FIRC newsletter, *FIRC FACTS*. The new, more dynamic AC version F is not expected to actually include the Core Topics or Recommended Electives. Instead, they will be in appendices located on that Web site so that they can be changed and updated as required. FIRC providers will be required to periodically check the Web site for the latest information on FIRCs and related regulatory issues. There will also be links to resources where providers can download documents, PowerPoint® presentations, and videos that they think may be useful in their programs.

Some of the changes identified here have already been implemented. Others will be put in place when the approval process for the AC is formally completed within the FAA, expected sometime later this year. The bottom line here is that it is the FAA's intent to

make the FIRC more than just a ritual that is practiced every two years by the flight instructor. Instead, it is the hope that the flight instructor will come to look forward to the FIRC as a dynamic means of "getting up to speed" on the latest and greatest of what's happening in the world that has direct effect on his or her field. No longer should it be perceived as a test of endurance as it might have been by some. Doctors all over the world voluntarily and eagerly attend their conferences so that they can be safer, more effective, and thus, ultimately, more profitable, in their fields. It is the hope of the FAA that the flight instructor will treat the FIRC with equal enthusiasm in the future.



Gregory French is an Aviation Safety Inspector in Flight Standards Service's General Aviation and Commercial Division in Washington, DC, and the National FIRC Program Manager.



by
Larry W. Clymer



What really happens to your transitioning "Two-Place Ultralight Trainer" on January 31, 2008?

The Light Sport Aviation Branch receives many inquiries from ultralight pilots each month concerned about transitioning their "Ultralight Trainers," which do not meet the requirements of Title 14 Code of Federal Regulations (14 CFR) part 103. The process of registering and certificating your machine can be a daunting task! The good news is it has been simplified by "How To" instructions that are available from your ultralight organization. The FAA has been tracking the progress of this transition since the beginning of 2006. This is the last, and certainly the most important, transition date in the Light-Sport Transition Program. Section 21.191(i)(1) of 14 CFR states, in part, that an operating light-sport aircraft will not be issued an experimental certificate after January 31, 2008. On this date, the FAA is withdrawing the "two-place" ultralight training exemptions that allow an ultralight instructor to provide training in a machine that does not meet the requirements of 14 CFR part 103.

This will require owners of ultralight trainers to transition their machines to an experimental light-sport aircraft before this date. Failure to meet this milestone will mean your machine can never be issued an Experimental Light-Sport Airworthiness Certificate and may significantly reduce the value of your two-place trainer as it will be illegal to fly in the United States without an airworthiness

certificate. To avoid this scenario, you will need to contact your ultralight organization or the FAA's Light Sport Aviation Branch for information on how to make this transition successful. To date, the FAA has appointed 102 Designated Airworthiness Representatives (DAR's) to issue airworthiness certificates for these machines. Over 1,600 ultralight owners have started this process by registering their ultralight trainers as Experimental Light Sport Aircraft (ELSA). Over 900 owners have completed this process and now have ELSA aircraft. The FAA believes there are approximately 1,000 to 1,500 more two-place trainers that still need to complete the conversion process, and these owners need to start this transition now to ensure they meet the cutoff date.

You may contact one of these four FAA recognized ultralight organizations with questions about this transition:

- Aero Sports Connection (ASC) at <www.aerosports.org> or phone

(269) 781-4021

- Experimental Aircraft Association (EAA) at <www.eaa.org> or phone (920) 426-4800

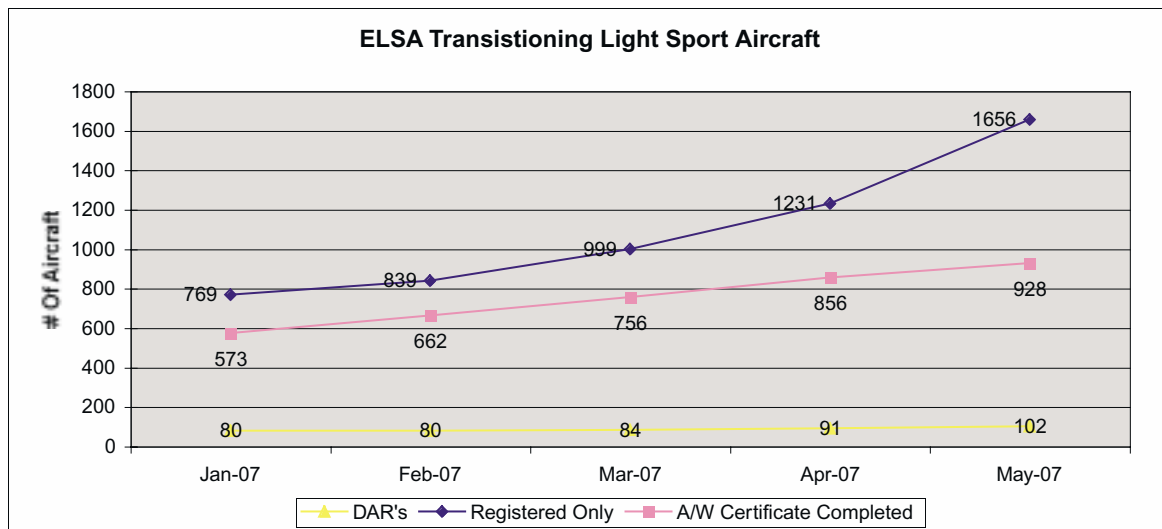
- United States Hang Gliding and Para Gliding Association (USHPA) at <www.usHPA.aero> or phone 800-616-6888

- United States Ultralight Association (USUA) at <www.usua.org> or phone (717) 339-0200

While there has been some confusion about this transition for both ultralight pilots and vehicles, it is important that you understand the process and how it will affect you, especially if you are an owner of a transitioning ultralight. The Light Sport Aviation Branch, AFS-610, will answer any questions concerning light sport aviation topics, please contact us at (405) 954-6400.



Larry W. Clymer is the Manager of Flight Standards' Light Sport Aviation Branch.




The chart above shows the number of ultralight transitioning machines that have started the process (blue line), the number that have completed the process (purple line) and the number of DAR's (yellow line).



Secrets of the Airplane Whisperer

story and illustrations
by Susan Parson



Miss Marple does her preflight planning.

An airplane is a machine. It is not possible for it to be alive. Nor is it possible for it to wish or to hope or to hate or to love. There is no secret, no dark magic, there are no incantations said over any airplane in order to make it fly...yet there are a few airplane pilots who somehow want to believe that this machine is an animal, that it is alive.

- Richard Bach (*A Gift of Wings*)

Admit it. Your brain knows that an airplane is, as Richard Bach's essay notes, made of "steel, aluminum, nuts, and bolts"—or perhaps a high-class composite material, if you happen to

fly an airplane of more recent vintage. But somewhere in your heart, some part of you quietly and stubbornly believes that your airplane, like your dog, will reward the love and care you lavish upon it with love and loyal service in return.

You're not entirely wrong in thinking so. Over the years, since I first sat proudly (albeit nervously) at the controls of the sturdy little Cessna 152 that patiently carried me to pilot-hood, I have come to believe that those of us in the general aviation community would be much better—and much safer—pilots if we got to know and treat our planes with the same kind of care we lavish on our pets.

As you may have seen on television, people seeking to solve behavioral problems with their pets sometimes turn to an expert trainer—also known as the "dog whisperer"—to help them get on track. For pilots who want to establish a better working partnership with their planes, the equivalent of the dog whisperer is your favorite "airplane whisperer." Known more formally as a certificated flight instructor, a qualified "airplane whisperer" can teach you the secrets of handling your airplane with the mastery and authority that befit a pilot in command.

Interestingly, pups and planes have quite a lot in common, and so



the secrets of a skilled dog whisperer are much like the secrets of a skilled airplane whisperer. Let's take a look.

Secret Number One: Provide the Basics

One thing that pups and planes have in common is that both have certain basic needs. A dog's basic needs include food and water, shelter, regular exercise, basic grooming, and periodic visits to the vet. A plane's basic needs include fuel and oil, hangar space or tie-downs, regular exercise, basic cleaning, and periodic visits to an A&P mechanic. To meet these basic needs, both the dog and the plane depend on the human.

The similarity doesn't end there. When a dog's basic needs are fulfilled, its owner gains a loyal, devoted, and predictable companion. In the case of airplanes, Richard Bach's essay on "Steel, Aluminum, Nuts, and Bolts" contends that:

"There is no sentence, no word, no hint in any technical manual ever printed that even remotely says that this machine's performance can possibly change because of a pilot's hopes or his dreams, or his kindness to his airplane...the airplane that you fly is a machine. If you love it and treat it well, it is (still) a machine."

Maybe so—but I still believe that a pilot who ensures that the plane is properly nourished with fuel and oil, regularly exercised, and periodically taken to the mechanic will, in all likelihood, be rewarded by many years of loyal, solid, and safe service.

Now consider a different case. A dog who is starved, beaten, tied down, and deprived of necessary trips to the vet may be slow to anger...dogs are, after all, renowned for their patience and willingness to forgive. Eventually, though, an abused or mistreated canine will bite—hard. An abused airplane is no different. It is a testament to strict certification standards and aeronautical engineering that even the most modest trainer can take a great deal of punishment without complaint. Sooner or later, however, an abused airplane will find a



way to bite its pilot—most likely at the least expected time and place. That's why you must heed your airplane whisperer's advice to take care of your airplane, so that it can take care of you.

Secret Number Two: Demand Obedience

If you have ever participated in obedience training for dogs, you know at least two important things. The first is that you must ensure that the dog does exactly what you want it to do. The second is that dog trainers often spend as much time and energy training the person as they do the pup—because it is, after all, the pet owner who will have to follow through on a

day-to-day basis.

The same concepts apply to flight training. When you first begin learning to fly, the focus is primarily on "obedience training" for the airplane—otherwise known as stick-and-rudder skills for basic airplane control. Obedience training for airplanes is all about making the airplane do exactly what you want it to do—beginning with the command to "STAAAAAY" straight and level (yes, at the same time). There's another interesting parallel here with canine obedience training: your CFI "airplane whisperer" is, of course, focused not on training the airplane, but rather on training you, the pilot, to consistently control the airplane with firmness, precision, and confidence.



One caution: it may be a good trick for your dog, but unless you're Bob Hoover, you probably do not want to ask your airplane to roll over and play dead.

Secret Number Three: Know the Breed

Nobody who knows dogs would say that all canines are alike: every breed has its own unique characteristics and behaviors. If you want to be a good dog whisperer, you have to put some real effort into learning as much as you can about the specific breed you're dealing with.

The same is true for anyone who hopes to be a good "airplane whisperer." All airplanes have wings, but a Piper *Cub* is very different from, say, a new *Lancair*.

You might think of the *Cub* as the aeronautical equivalent of a cocker spaniel: cute, affectionate family pet who is (mostly) docile and eager to please. The *Lancair*, on the other hand, is the airplane version of something like a Rottweiler: big, powerful, and potentially aggressive. You might get into more trouble more quickly with a *Lancair*, but as the old saying goes, any kind of flying is "terribly unforgiving of carelessness, incapacity, or neglect." Even a cocker spaniel can snap and growl, and even a cute *Cub* can be dangerous if the pilot doesn't take the time to learn its capability and its systems, inside and out.

Secret Number Four: Be the Leader

If you have ever watched people walk their dogs, it quickly becomes obvious who's in charge. As any dog trainer will stress, you never want to let the dog take you for a walk. You have to be the leader and final authority as to the pace, direction, and duration of



Bob completes the passenger briefing.

the exercise.

Similarly, any CFI "airplane whisperer" will no doubt remind you that you must never let the airplane take you for a ride – you are, after all, supposed to be the pilot in command, and not the "passenger in command" of the trip. As the regulations (Title 14 Code of Federal Regulations section 91.3) say, the pilot in command is the final authority as to the safe conduct of the flight and therefore you—not the airplane—must direct the pace, the direction, and the duration of the flight.

There are two keys to being a good leader for your airplane. The first, which is related to Airplane Whisperer Secret Three, is to make sure that the machine is a match for the mission. A cocker spaniel is a great family pet, but you might prefer a Rottweiler if your primary goal is home security. Similarly, a Piper *Cub* is a great airplane for flying low and slow, but a new Cessna 182 with glass cockpit and weather datalink is a far better choice for hauling your family and its bags to your beach vacation spot.

The second part of being the leader for your airplane is to look, think, and act ahead. When I walk my dog (who, by the way, happens to be

a cocker spaniel), I am always trying to spot and mitigate hazards to our mutual safety. It's my job to keep her clear of the cars zipping through the neighborhood and to steer her clear of unpleasant encounters with my neighbor's pit bull.

When I fly my airplane (which, by the way, happens to be a C182), it is up to me to spot and mitigate hazards to our mutual safety. It's my job to keep us clear of terrain, to avoid other airplanes, and to steer clear of weather and situations that the pilot/aircraft team does not have the training, experience, equipment, or performance to handle successfully.

So Now You Know...

"But such are the terms that flying lays down for pilots: Love me and know me and you shall be blessed with great joy. Love me not, know me not, and you are asking for real trouble."

— Richard Bach (*A Gift of Wings*)



Susan Parson is a Special Assistant in Flight Standards Service's General Aviation and Commercial Division.



A More Efficient Flight Service for the 21st Century

by Mike Orkiszewski

While you read this, dramatic changes are taking place in the United States' Flight Service System. These changes have been occurring for months and will soon culminate in a near-total transformation. Antiquated equipment and ways of providing service are being cast out to make way for what is projected to be an unprecedented level of efficiency and superior access to information.

But just as it is with all major transformations, a period of instability and adjustment is bound to take place before long-term benefits can be enjoyed.

It's still less than two years since the Lockheed Martin Corporation began providing flight services to pilots everywhere in the National Airspace System, except Alaska. Although the company moved aggressively to improve pilot briefing response times following the transfer of responsibility, its more far-reaching efforts won't be fully realized until the new FS21 Flight Service System is completely integrated. That time is fast approaching and users should benefit from a system that is only expected to get better with time.

Despite its promising future, Flight Services for the 21st Century, from which the FS21 System takes its name, is undergoing some growing pains. An aggressive schedule to get the new system up and running nationwide, which requires a rapid consolidation of facilities and the wholesale retraining of personnel, has generated some concern about service among pilots.

Rest assured. The FAA and Lockheed Martin are aware of the issues



Green Bay AFSS Operations Area

and are working tirelessly to complete the transition safely, quickly, and with the least amount of trouble for system users.

John Staples, FAA's director of Flight Services Program Operations, notes that pilots were pleased with Lockheed Martin when it first began providing service using existing FAA equipment in October 2005. It wasn't until April 2007, when the company began its conversion to the FS21 system in earnest, that less desirable effects of the transition were felt. However, considering the enormous amount of change being effected, growing pains are not unexpected.

"These problems basically fall into two categories, human adjustment and FS21 System problems," Staples said in an interview shortly after user complaints arose. "Many of the FS21 System problems have been resolved."

Human adjustment, on the other hand, takes a little more effort. Flight service personnel have a great deal of experience using older, more familiar, FAA systems. Converting to FS21 requires retraining everyone. As each facility consolidates into the new system, that station's workforce is split into two groups. One leaves to train on the new system at one of Lockheed Martin's hub Flight Service facilities, while the other group temporarily runs the closing facility using

the old equipment.

The FAA is diligently monitoring customer complaints and making recommendations to Lockheed Martin for improving service. As specialists and the organization's new management gain familiarity with FS21 equipment, the time pilots spend on hold and the number of lost flight plans should diminish quickly. Staples said the FAA will help where it can while continuing to hold Lockheed Martin accountable for its service throughout the consolidation.

Once the transition to FS21 is complete, pilots can expect to benefit from numerous innovations made possible by the system. Some of those improvements will be immediately obvious to users, while others are less likely to be perceived except in terms of system efficiency.

Jeanne Giering, FAA's manager of Flight Service Safety And Operations, emphasizes that long-standing government requirements for providing weather briefings remain in effect. FAA Order 7110.10, Flight Services, is almost entirely unchanged. Where changes have been made, they were done to accommodate some of the new equipment being used to provide an improved service, such as broadcast weather information.

Two forms of broadcast, the Telephone Information Briefing System (TIBS) and the Hazardous Inflight



Weather Advisory Service (HIWAS), will soon be entirely automated as the transition to FS21 is completed. Lockheed Martin has been automating these products through the use of text-to-voice software, which has been used by Flight Service stations in Alaska for several years. Where formerly specialists had to extract, organize, and summarize weather information from databases before recording the TIBS or HIWAS, the new technology automatically updates weather information in recordings whenever changes are received.

The result is that broadcasts will not only be delivered in a complete and timely manner, but they will have a consistent voice and speaking rate. What's more, specialists will no longer suffer the aggravation of the equipment prematurely cutting off their recordings on days with complex and rapidly changing weather conditions. With the recordings taking care of themselves, specialists will be free to take care of other critical tasks.

Foremost among those tasks is preflight weather briefing, and this is where pilots are most likely to experience one of the changes being introduced by the new system. When Lockheed Martin assumed responsibility for providing flight services, the company began to aggressively manage the distribution of calls from pilots to flight service stations, lowering the time it takes for a call to be answered by balancing the workload among facilities.

"As soon as Lockheed Martin took over, they implemented a call off-load plan based on historical data which they could tweak if they needed to," Giering said. "They had a plan in place on a nationwide level that dropped call wait times."

Aggressive consolidation of Flight Service stations into the FS21 system temporarily interrupted the effectiveness of that plan. According to Giering, completing the transition to FS21 will make the call distribution process much more effective.

Although the number of U.S. Flight Service stations outside of Alaska will soon be reduced to 19, the concept is for them to operate as a single national facility. Given the number of facilities that have already transitioned to FS21, many pilots may already have experienced the new way in which their calls are received and handled when dialing 1-800-WX BRIEF (1-800-992-7433).

"When pilots call," Giering said, "they are prompted to say what state they are departing from and, after doing so, they are routed to the first available specialist who is certified and rated for that flight plan area."

The problem related to cell phones connecting to specialists who are far removed and unfamiliar with the intended area of flight will soon be a thing of the past.

Of course, some people would just as soon bypass call answering systems that use voice recognition software, and the new Flight Service

Call Distribution System is designed to accommodate that preference. Pilots seeking such a short-cut need only state "any available specialist" or press the "1" key on their phone three times to connect directly to human assistance.

But outside of a new answering system and the automated weather recordings, what's

the big deal?

To fully understand that, you have to examine FS21 from within a fully transitioned Flight Service system rather than focus on outward changes in its products.

Don Hilton, the operations manager at Lockheed Martin's new Washington hub Flight Service facility in Ashburn, Virginia, points out that the old equipment used by the FAA had become a mixture of systems: an older system called Model 1 Full Capacity and a newer one called OASIS (Operational and Supportability Implementation System).

"Each of those computers was kind of like an island," Hilton said. "With the exception of Service B messages—an antiquated form of communication based on the old teletype messages—they didn't talk. You could send messages back and forth between computers, but they couldn't exceed 22 lines."

The FS21 system, on the other hand, will allow every computer in the system to talk freely back and forth. By doing so, specialists all across the country will have equal access to information contained anywhere in the system. Where once specialists had to waste time contacting another facility just to change the proposed time on a flight plan, they will be able to simply pull up the flight plan out of a national database to make any changes themselves. Similarly, local *Notices to Airmen* or NOTAMs (such as taxiway closures) that were once only available by contacting the Flight Service station responsible for the location can be called up by any facility.

Fewer calls to service flight plans. Local NOTAMs for any destination without making an extra call by phone or radio. What's not to like? The new equipment will even be capable of alerting briefers who are talking to pilots that new weather hazards have come out since the last time the pilot was briefed.

"It's important for you to understand what our architecture is," said Mike Chambers, manager of Lockheed Martin's FS21 Eastern Flight Service Area. "All of our computers, at all





FS21 In-flight position

the individual workstations at all our facilities, tie back to one central data center.”

To avert any catastrophic loss of system capability, two data centers are constantly updated. One is located at the Washington hub, and the other is at a second hub facility in Fort Worth, Texas. Despite a glitch or two early in the transition to FS21, the system is now capable of being rapidly switched from one to the other.

Operationally, having a single nationwide database provides a significant benefit in conducting search and rescue on overdue aircraft. Before FS21, a facility initiating search and rescue had to contact the stations along the overdue aircraft’s presumed route of flight and have them search their computers for contact. These requests were made incrementally starting with the departure station, then stations along the proposed route of flight, and ending with an alert notice asking all stations to check for contact

with the aircraft.

Using FS21, all recorded contacts with an overdue aircraft can be accessed at the very start of search and rescue. That saves valuable time and could be the difference between life and death for flyers involved in an accident; or it could minimize the time spent needlessly searching for an aircraft whose pilot simply decided to change plans without properly notifying those who were keeping track of its flight.

The new computer system will also benefit pilots by allowing Flight Service specialists to more efficiently access pilot briefing information. A pilot’s proposed route of flight can be depicted graphically, permitting a briefer to more accurately determine if weather or other restrictions will affect a flight. Although this capability is not entirely new to specialists who previously used the OASIS system, the FS21 display incorporates a “rubber band” feature that lets specialists click

on a proposed route and move it to avoid hazards. If the pilot decides the new route is preferred after being briefed, FS21 will automatically file that route in the proposed flight plan.

Access to flight planning publications should improve, too. In the past, specialists had to search for publications stored on shelves or in bookcases at various locations within a facility’s operations area. The most commonly used publications, such as *Airport/Facility Directories* or navigational charts, were typically close at hand, even though a complete set might not be available because part of it had been used and inadvertently placed elsewhere. Less frequently used publications might only be found at just one or two locations. In all cases, care had to be taken to make sure that the publications were current.

To improve information access for Flight Service specialists, Lockheed Martin has incorporated a subscription



service into FS21 that displays electronic versions of publications that are updated automatically. Information once scattered about the room is now available to specialists at the touch of a screen, although at least one hard copy of all publications is still made available for those who prefer flipping through paper products.

For pilots, the new system introduces a time-saving option that involves registering a personal profile via the Web. Through the registration process a pilot's name, ratings, phone numbers, and the airplanes he or she flies can be recorded, along with roughly 20 flight plans that can be stored for retrieval.

"When that person subsequently calls in to Flight Service," Chambers said, "the first thing the system does, through caller ID, is check the phone number against the phone numbers we have registered. If it gets a match, it pops up the profile of that pilot, immediately, before they even commence talking."

Pilot registration is secure and totally voluntary. Chambers says it will reduce specialists' workload and provide users with quicker and more accurate briefings, which in turn will reduce the time it takes to answer calls from other pilots. In short, everyone benefits. Registration will also allow pilots to get weather updates from Lockheed Martin via personal digital assistants, although that capability has not yet been implemented.

Another innovation that Lockheed Martin has been looking forward to offering, and which is expected to be in service by the time this article is published, is the pilot portal. Using that capability, pilots should be able to check weather and file a flight plan on their own prior to a proposed flight. Then, closer to departure, they can contact Flight Service for a standard briefing and the FS21 will pull up the pilots earlier actions, revealing the weather the pilot received and the flight plan filed. The briefer can then act on that information, providing relevant updates more effectively.

Once airborne, pilots will find little apparent difference in who they con-

tact for Flight Services. Despite the consolidation of facilities brought about by the conversion to FS21, the nation's "radios" live on intact. Charts and other publications continue to list the same Flight Service radio contacts that existed prior to operational transition from the FAA to Lockheed Martin.

"Every Flight Service station that was out there has an inflight sector [in FS21]," Operations Manager Hilton said. "If you call Altoona Radio, we answer as Altoona Radio."

Hilton explains that all the Flight Service stations for which Lockheed Martin assumed responsibility have an equivalent sector in one of their three hub facilities at Fort Worth, Prescott, or Washington. That includes the "legacy" facilities that are being converted to FS21, making it possible for the hubs to assume their radio traffic at night or in the rare event of a system failure.

"We aren't really closing facilities," Chambers adds. "The facilities belong to the FAA and we are transferring their operations to the hubs. All the radios were brought over, and in many cases the people, too. They conduct the same operations using the same call signs, with the same resources, here at the hub."

With respect to those resources, the newer FS21 equipment presents some significant advantages over earlier equipment. The old radio panels being replaced by FS21 contained large arrays of lights and switches for literally scores of frequencies at each position. Pilots attempting to contact a station might illuminate several communication outlets at one time when using a common frequency, or they might light up a single frequency that was difficult to see on the panel. In either case, the frequencies would cease to be illuminated within a second or two after the pilot called, making it difficult for a busy specialist to select an appropriate frequency on which to respond.

Using the FS21 system, specialists can choose to recreate the old panels on a computer touch screen by using an "all frequencies" view. But better than that, an "active" frequency

view can be used in which pilot transmissions will cause the screen to display only the most strongly activated circuit. No more need for specialists to search across the radio panel, attempting contact on one outlet after another, or broadcasting over several at the same time.

And what of the instances in which a specialist is busy talking to one pilot when another call comes in? Specialists will no longer need to divert their attention away from a task to see which frequency is illuminating. The active view will keep the frequencies for new calls displayed on the touch screen until they are answered and cleared by the specialist.

According to Chambers, Lockheed Martin has been using a rapid-prototyping approach in the creation and deployment of FS21, which presents some challenges. The company is introducing a totally new system while using extant systems, integrating the old into the new while ensuring they continue to operate properly.

"We have a basic capability here that can provide an efficient, safe service," Chambers said. "As we go forward we'll be adding new things, making the system more efficient to reduce briefing time and add functions."

Considering Lockheed Martin's plan to reduce the number of Flight Service stations outside Alaska from 58 to 19, efficiencies are critical to the new system. The consolidations that are nearing completion will eventually lead to fewer Flight Service specialists operating the system. Such changes are only possible through adjustments in the way services are handled.

Specialists are rapidly being held accountable for knowing larger areas of the country. Many flight plan areas, or areas of responsibility as they are now called, have grown from a single state or portion of a state, to a geographic area encompassing several states. The call distribution system used with FS21, as well as the ability to expand or contract the number of available radio sectors, should ensure that calls are only handled by knowledgeable area-rated specialists. The





Washington Hub Operations Area

system will also balance the workload of all specialists nationwide.

According to Chambers, standardization will be a key factor in making the FS21 system work. He notes that under the old system there were many locally developed procedures, both regionally and at the facility level, to the point that it seemed everyone was doing things just a little differently.

"Now we're going to effect national procedures, national configuration management," Chambers said. "You can't operate an integrated system if you do something one way in one place, and another way in another place. [Under FS21], everything is integrated together."

But ensuring that it is integrated and operated in a way that meets established service standards remains the responsibility of the FAA, even as Lockheed Martin provides the service.

Lauren Grace, FAA's manager for Flight Service Quality and Performance, says there is now more oversight of flight services than ever existed in the past. Twenty-one performance measures have been established to track just how well Lockheed Martin is performing, a degree of measurement previously unknown in the Flight Service system. Just coming

close to doing the job right is not good enough. The service provider has to meet all established government requirements, and any single failure is considered unsatisfactory.

"It's a performance-based contract," Grace said. "[Lockheed Martin] can receive awards for achieving and exceeding acceptable performance levels, or they can lose money. It's awards and incentives."

To judge whether the job is being done right, the quality assurance program relies on a combination of evaluations made by both the FAA and Lockheed Martin, along with validations of those evaluations. Among the many categories of performance being measured are things such as the time it takes to acknowledge a radio contact and initiate service, or how much time is used to put a pilot report into the system. Grace's quality assurance staff alone anonymously monitors almost 700 pilot briefings per quarter for quality control.

Not surprisingly, customer complaints are also measured.

"We depend on Lockheed to advise us of them," Grace said, "but the FAA has a Web site < <http://www.faa.gov/contact/>> with a link that allows pilots to submit a complaint to

the FAA without having to go through Lockheed Martin." You can also e-mail the comments directly to < 9-AWA-ATO-SYSOPS-FS@faa.gov >.

Despite this increased degree of scrutiny, assessing whether Flight Service performance has improved over what was traditionally offered by the FAA is not a simple task. Giering, who provides FAA oversight from a safety and operations perspective, notes while the standards remain the same, the measures of performance currently applied to Lockheed Martin did not exist previously, making a direct comparison impossible.

"We really have nothing to compare it to," Giering said. "As we move [through] Lockheed Martin standing up all of their facilities with FS21, we're probably going to see some inefficiencies."

Lockheed Martin is expected to get better at the job over time and the metrics will ensure more standardization of flight service products. It may not happen all at once. There's still training going on while the consolidation of facilities is completed, much of which will be happening during the busy convective weather season, and people will need to adjust to the new system. But in the end, the contract should do what it was intended to do — improve the quality of service to pilots while garnering cost and operational efficiencies.

"After completion of the adjustment period," Giering said, "pilots should expect to have their phone calls answered more quickly, they should receive airborne responses more quickly, and the quality of service should improve."



Mike Orkiszewski is with Communications Services in FAA's Air Traffic Organization.



If We Knew What We Were Doing, It Wouldn't Be Research



by Michael Lenz

An aircraft for all missions—from pistons to helicopters to turbojets—a wide variety of aircraft are at-the-ready for research

That rock-solid, accurate, and reliable GPS signal we're all used to did not start out that way. A lot of work went into it — starting in the mid-80's. At that time, the military was building a space-based navigation system. The popular sentiment among aviators was such a system may be worth a look for use in aviation, but there was no way a space-based navigation system is going to replace our beloved, ground-based system. This historical perspective on GPS is astounding considering that GPS is the mainstay of ground, sea, and air navigation today.

This reflection comes from Keith Biehl, and he would know. He is one of the flight test pilots employed in FAA's Flight Test Program at the William J. Hughes Technical Center, located in Atlantic City, New Jersey. "In the early days, there were only nine R&D satellites up there. It was a far cry from today's system. Every time

they launched a new satellite the receivers would fail to lock on. This was because no one had updated the software to accommodate the new satellite."

"In the early tests, we'd see things like "scallops" or "bumps" in the GPS signal. During our test flights, these bumps would occur at the same time every day, then they were just gone. We never figured it out."

Biehl is an Aerospace Engineer and has piloted FAA R&D aircraft since 1985. He points out that his travels for FAA research have taken him all over the world — Kevlavic, Iceland; Rome; Singapore; Santiago, Chile; Rio de Janeiro; Midway Island; Wake Island; Adak, Alaska; San Juan, Puerto Rico; and Panama, to name a few. Some of these were just fuel stops, but others were visits to research GPS signal coverage.

Biehl continues, "You, of course, know about GPS and solenitization,

don't you?" That is a phenomenon that occurs with the 11 year cycle of the sun. It causes GPS outages after sunset for about four hours. It's most pronounced at the magnetic equator, where GPS blockage can be the worst. We flew flight tests out of Rio de Janeiro to quantify this."

"Things have come a long way," adds Larry Vanhoy, another flight test pilot. "One of the most amazing things I've experienced was a GPS Local Area Augmentation System (LAAS) demonstration done at Minneapolis-St. Paul. The GPS/LAAS equipment was set up and within five hours we were flying Category II approaches to all of their runways — in VFR conditions, of course."

Vanhoy joined the FAA Technical Center after flying for Eastern Airlines for 16 years. He is rated in Boeing 727's, B-757's, and Airbus A-300's. Vanhoy actually flew the FAA B-727 (N40) when it was owned by Eastern



Airlines. "The joke around here is that I got out of the box with the airplane when it was delivered."

GPS research involves flying lots of approaches. When you do odd things with large aircraft, people notice. The crews have stories to tell that result from flying the B-727 and the Convair 580 aircraft, where they're not expected, in ways that aren't ordinarily seen.

An airport in South Carolina was chosen for multiple approaches using both the B-727 and the Convair-580. This city did not have commercial air service at the time. Both aircraft were flying the requisite 40 approaches. Forty approaches provide enough data for the statisticians to do their number crunching.

The Convair crew noted that as the approaches continued, there seemed to be quite a growing crowd gathering at the airport fence. After the last approach, the Convair taxied into the fixed base operator (FBO) and the Boeing departed for another airport.

As the Convair crew entered the FBO, there were lots of people there and quite a buzz in the air. It seems



The venerable FAA Convair 580 and the "Hard Point" where the lightning rod was mounted for the thunderstorm research.

that the city's emergency services telephone lines were lighting up with callers concerned as to "Why those big airplanes were having trouble landing!" There was even a suggestion that they should probably close the schools. The crowd had gathered at the airport to see how it all turned out.

Sometimes it's all about who gets on and off the aircraft. One summer, a

project called for the B-727 to be in New Orleans with some follow-up work to be done in Washington state. According to Vanhoy, "we had a mechanical problem in New Orleans with the Boeing, and the flight mechanic took off his rather warm flight suit in favor of shorts and a tank top as they did the troubleshooting and repair on the ramp in the hot, humid New Orleans afternoon sun. After a sweaty five hours, the problem was corrected and we flew to Washington.

"The next morning we checked in with our aircraft scheduling office and told them that we were in Washington with the repairs complete and back on schedule. The response was, 'Oh, we know all about where you are!' It seems the mechanic had chosen to remain in his cool clothes for this flight and when he disembarked, followed by the flight crew, the FAA Administrator's Hotline had received a call asking 'Who is so important that the FAA sends a 727 to pick them up?'"



It's all smiles this time as Vanhoy and Biehl remember the EMAS test



Biehl's FAA career started with a bang—and that bang could be traced to lightning. "A bolt from the blue, or 60 of them to be exact!" reports Biehl. "I was co-pilot and that was the number of lightning strikes the Convair took over the course of one of my first projects.

"Where else would you go to find thunderstorms, but Florida. And we sure did find them. The controllers were familiar with what we were doing and, predictably, there wasn't much competition for the airspace near the storms. One day when some storms had become mature, we requested a routing to the area. Another aircraft on the frequency chimed in with, 'Where are those guys going? Don't they know what's over there?'

"One of the objectives was to see if two aircraft in close proximity could sustain the same lightning strike. We flew with an F-106 fighter. It was much faster than the Convair and we were lucky to be in the same state with him. This was a joint project with FAA, NASA, U.S. Air Force, U.S. Navy, and the French Civil Aviation Authority. We took all of the hits and NASA got the credit on that project."

When asked if he's ever been scared, Biehl responds, "Once, in a Cessna 172 used for auto fuel re-

search. We had auto fuel in one tank and aviation fuel in the other. We took off and landed on the aviation fuel and then did our research at altitude over the airport, while drawing auto fuel. One of the important tests related to auto fuels' propensity for vapor lock and a determination was needed regarding whether this would be a show-stopper and prevent us from using it in aircraft. We used high vapor pressure auto fuel and heated it to simulate a worst-case vapor lock condition. Since the fuels couldn't mix, we isolated each tank in the specially modified Cessna. This aircraft had a small check-valve to prevent excessive fuel siphoning and the high tank pressures caused the valve to close. It was only after we landed that I looked at the aircraft and saw both wings were severely warped! I couldn't believe that I wasn't able to feel it in the aircraft's flight characteristics during the test."

During our conversation, Vanhoy brought another project to my attention. He pulled a Web page document <http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=6279&print=go> from his printer titled Engineered Materials Arresting System (EMAS). This is the soft ground arresting system that is being installed at

airports to stop or greatly slow an aircraft that overruns the runway. To date, there have been four incidents where the technology has worked successfully to keep aircraft from overrunning the runway and in several cases has prevented injury to passengers and damage to the aircraft. They were in:

- May 1999: A Saab 340 commuter aircraft overran the runway at JFK
- May 2003: Gemini Cargo MD-11 was safely decelerated at JFK
- January 2005: A Boeing 747 overran the runway at JFK
- July 2006: Dassault *Mystere Falcon* 900 airplane ran off the runway at the Greenville Downtown Airport in South Carolina

During the testing of this material, not all aircraft stops were "gentle." Larry Vanhoy was pilot in command of the B-727 that was to be used for one of the early tests. He took one look at the height of the lip of the material that the aircraft would have to climb as it entered the EMAS and said the nose wheel is going to break as it strikes this. The engineers assured him it would not break.

Nonetheless, Vanhoy spent 15 minutes briefing the crew and observers on board the aircraft on the emergency procedures that were to be followed in the event the nose wheel broke. In true Boy Scout fashion, Vanhoy was prepared. The photos below tell the story as the nose wheel did break. "The white things that you see in the front window of the Boeing are our knuckles as we braced during the deceleration. In defense of the engineers who assured us the nose wheel wouldn't break, there was some corrosion found which contributed to the nose gear failure. "The people in the back of the aircraft said they didn't even know the nose wheel had broken." (photo at left)

Currently, EMAS is installed at 23 runway ends at 18 airports in the United States. There are plans to install eight additional EMAS systems at six more U.S. airports.

Aviation research areas run the gamut of aviation programs and are





The wingtip smoke generators and (center) the oil tanks, or "kegs" as they're called, containing the oil used for the smoke.

linked to the safety and procedures that we follow today, and FAA's William J. Hughes Technical Center flight test pilots have been in the thick of it.

According to Larry Vanhoy, "TCAS (Traffic Alert and Collision Avoidance Systems) is saving lives today and the procedures were developed right off shore," pointing to the nearby Atlantic Ocean. "In those tests, we used multiple aircraft and flew towards, over, and under each other with careful planning for safety related to the "'miss"' dis-

tances. The procedures were carefully planned, but I think the confidence to carry out the tests came from knowing the flight crews of the other aircraft. I don't think I would have done it with unknown pilots in the other planes. When I hear TCAS phraseology used today or read about traffic alerts and resolution advisories (TA and RA), I remember how it all had to be built from scratch."

"Another important area of testing was wake turbulence. We put smoke

generators on the 727 so the wake could be visualized. Boeing initially said they wouldn't be able to modify the aircraft to mount the smoke generators to accommodate this type of testing. We knew of a previous "mod" that involved installing bomb racks on a 727 and asked Boeing if they could do the same for ours. They agreed."

It was amazing to watch the wake behave in ways that were ghost-like—almost with a mind of its own. Vanhoy remembers seeing one vortex wrap itself around the other. "Each day's test was unique with the atmospheric conditions driving what we saw. The wind direction and speed played a key role, but atmospheric stability also determined how the wake behaved. One day we observed the wake remaining stationary at altitude and not descending. We figured out the wake stopped descending at an altitude where a temperature inversion existed."

The pilots, technicians, and staff all take pride in their work. The testing successes sometimes slip quietly into new procedures, regulations, and guidance. Other times it is with much fanfare that both the accomplishments and the setbacks are cast. One of the most revered flight test pilots was Joe Tymczynszyn (pronounced tim-chiz-in). Joe has retired and passed on, but the current crews remember him for his work and enthusiasm. It's been said that the price of progress in aviation is high and Joe put it this way, "In this business, one must never, ever, get discouraged, but it is perfectly acceptable to sit in the middle of the hangar floor and cry once in a while!"

Where will the next projects take them and what will they be? The answer is probably in the future capabilities of automation and the associated aviation testing. Accidents sometimes drive research if the current standards are inadequate. As fast as the future is evolving, there's still plenty of work to be done.



Michael Lenz is a Program Analyst in Flight Standards Service's General Aviation and Commercial Division.



Research was conducted based on a 1994 accident involving a Boeing 737 near Pittsburgh, PA. It was thought that a wake encounter may have initiated the upset event. The T-33 (background) was the photo aircraft. Its speed brakes are extended.





Battery “Bewareness”

Fires can potentially erupt from lithium batteries in-use and carried onboard aircraft

by Terry Pearsall

Aerospace manufacturers are taking advantage of the new lithium battery technology to power everything in their new luxury airliners. Portable equipment manufacturers and the general public alike are using lithium batteries to power the latest notebook computers, DVD players, digital cameras, portable drills, cellular phones, and many more devices like these. In aircraft, lithium batteries provide power for aircraft, lighting, and electronic equipment such as avionics, emergency and standby systems. In portable equipment, lithium batteries furnish hours more capacity than their predecessor power sources of lead oxide, nickel cadmium, alkaline, and other disposable batteries. The weight savings and increased capac-

ity lithium batteries provide, however, does not come without risks of fire that can erupt from mishandling or misuse.

An increase in incidents involving the National Transportation Safety Board's (NTSB) investigation of battery fires and failures has prompted the industry and the FAA to seek remedies to reduce the potential for such fires. At present, there is very limited experience regarding the use of lithium metal (Li) designed for single use and lithium ion (Li-Ion) rechargeable batteries in applications affecting aviation. However, other users of this technology ranging from wireless telephone manufacturers to the electric vehicle industry have noted significant safety concerns regarding the use of

these types of batteries.

In December 2005, FAA first learned of fires erupting from laptop batteries and issued a Safety Alert for Operators, SAFO 05008, alerting crewmembers to be aware that the potential for smoke emission and fire propagation from high-energy batteries, of any kind, could result from internal short-circuit failures. FAA Advisory Circular (AC) 120-80, *In-flight Fires* instructs crewmembers on recommendations for actions and training on handling cabin fires. The SAFO was recently replaced by the more general Information for Operators (InFO) titled “Mitigating Risks Associated with Batteries and Battery-Powered Devices” that announces the availability of advisory guidance for the safe transport of





Left photo shows fire damage caused by a burning battery in an air carrier overhead storage bin. Above, a close-up of batteries after a fire.

batteries and battery-powered devices in the cabin. One notable deficiency of this InFO is that it fails to alert pilots and operators of general aviation aircraft using portable GPS or electronic flight bags (EFB) that their exposure to fires from Li or Li-Ion batteries is just as significant as a passenger on an airliner using a DVD player.

Chemistry Class

By design, all batteries operate through a controlled chemical reaction, which generates electrical energy and, in the process, some degree of heat. Batteries are designed to generate an electrical current and transmit power through terminals made of a conductive metal. It is their capacity to perform that basic function that

makes them useful, but, if not properly handled, designed, or manufactured, poses a risk of overheating and fire.

External short-circuiting of a battery can occur from contact or close proximity of metal objects or other batteries near exposed terminals. The newest generation of batteries using Li or Li-Ion technology pose particular risks, based on their energy density and chemistry, and because fires involving these batteries are more difficult to extinguish or suppress. Even nickel cadmium and nickel metal-hydride batteries can generate large amounts of current and heat when short-circuited.

Passenger Precautions

Recently, the U.S. Department of

Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), which regulates the carriage of batteries in the cabin, published advisory guidance intended to minimize risks associated with transportation of batteries and battery-powered devices. Title 49 Code of Federal Regulations section 173.21(c) forbids the transportation of electrical devices which are likely to create sparks or generate a dangerous quantity of heat, unless packaged in a manner which precludes such an occurrence. This rule charges airline passengers responsible for carrying batteries or electrical devices in carry-on or checked baggage with ensuring appropriate steps are taken to protect against dangerous levels of heat that can be generated by inadvertent acti-



vation or short-circuiting of these devices while in transportation. Published PHMSA guidance suggests practices to assist in compliance with the regulation, including:

- Keep batteries installed in portable electronic devices. Passengers can safely carry electronic devices with installed batteries, such as, cellular phones, notebook computers, cameras, camcorders, entertainment devices, and medical equipment, in the passenger cabin of an airplane. When replacing with a spare battery during flight, handle batteries with care and pack spare batteries safely.

- Pack spare batteries in carry-on baggage. Conditions that could lead to an incident are easier to detect in the passenger compartment of an aircraft. Flight crews have access to fire extinguishers in the event of an in-flight incident involving batteries.

- Keep spare batteries in the original retail packaging. Batteries purchased from retail stores are packaged in plastic and cardboard packages intended for the transport of those batteries. This packaging prevents unintentional activation and short-circuiting by effectively isolating the batteries from contact with each other and other objects.

- If original packaging is not available, effectively insulate battery terminals. Effective insulation of battery terminals will ensure batteries do not short circuit from an external source. Travelers can effectively insulate battery terminals by isolating spare batteries from contact with other batteries and metal objects. If the original packaging is unavailable or damaged, place each battery individually in its own protective case, plastic bag or package. A sturdy, re-sealable plastic bag (e.g., a freezer bag or sturdy re-sealable sandwich bag) is suitable for this purpose. Covering the battery terminals with insulating tape, such as electrical tape, is another effective method. PHMSA recommends using both measures in combination for batteries that have protruding or sharp terminals (e.g., standard 9-volt batteries).

- Do not carry on board a plane recalled, damaged or counterfeit batteries. Passengers should only use batteries purchased from reputable sources.

- Leaving batteries in battery-powered devices is an effective means of insulating the terminals and protecting against internal short-circuiting. However, battery-powered devices with installed batteries must be packaged to prevent inadvertent activation. Cordless power tools, for instance, should be packed in a protective case, with a trigger lock engaged.

As with any product, manufacturing defects also can cause safety problems. Last summer, several major notebook computer manufacturers initiated recalls of their Li-Ion batteries after learning of overheating and fires caused by a production defect in the batteries installed in their notebooks. According to the Consumer Product Safety Commission, manufacturers have voluntarily recalled over 10 million lithium-ion batteries in the last few years. PHMSA are also aware of risks associated with overcharging and internal short circuits that have led to battery recalls. Information about recalled batteries can be found at the manufacturer's Web site or from the Consumer Product Safety Commission <<http://www.cpsc.gov>>.

Related information, including the PHMSA safety advisory published in the *Federal Register*, can be found at the following Web site: <<http://safetravel.dot.gov>>.

Enlightening Thoughts

Over the past several years, we at the FAA are aware of a number of reports of transportation incidents involving various kinds of batteries and battery-powered devices, including incidents involving passenger airline operations. The most recent incident occurred on February 10, 2007, aboard a flight originating at JFK International Airport. Shortly after takeoff, a fire ignited in a passenger bag stowed in an overhead bin. Fast and appropriate action by the crew brought the fire

under control and prevented injury to passengers and crew. The flight crew promptly extinguished the fire and the flight returned to JFK for an emergency landing. Although the fire is still under investigation by the FAA, PHMSA, and the NTSB, preliminary reports indicate batteries were involved in the incident.

Other incidents have occurred on the ground. Last May, we received a report of a fire involving a spare Li-Ion battery that had been stowed in a passenger's notebook computer carrying case. A flight attendant removed the burning case from the passenger cabin and tossed it onto the ramp, where the fire was extinguished by ground personnel.

On April 18, 2004, at Chicago's Midway Airport, a power drill with an installed nickel cadmium battery activated while in checked luggage. This caused a fire that spread to other bags on a luggage cart waiting to be loaded onto a passenger aircraft.

In June 2003, we received reports that an overheated battery had been discovered in a routine baggage inspection of a flight departing from Boston's Logan Airport. The battery had been loosely packed in a toolbox, along with various metal tools. PHMSA believes the heat build-up was caused by short-circuiting when the battery's exposed terminals came in contact with metal objects in the toolbox.

Cargo Casualties

There are ancillary hazards from transporting lithium batteries in cargo containers aboard aircraft. A number of recently reported incidents sparked the FAA Office of Aviation Research to conduct a series of tests to assess the flammability characteristics of non-rechargeable lithium batteries. The results of the tests indicate that:

- A relatively small fire source is sufficient to start a primary lithium (metal) battery fire

- None of the fire extinguishing agents, including Halon 1301, currently in use within cargo compartments on U.S. commercial aircraft, is



effective in extinguishing primary lithium fires

- The ignition of a primary lithium battery releases burning electrolyte which can perforate cargo liners and propagate a fire to other locations in the passenger compartment

The tests were triggered by an "...incident [that] occurred at Los Angeles International Airport in April 1999 [wherein] a pallet of batteries caught fire while being handled between flights. There was no known external ignition source."

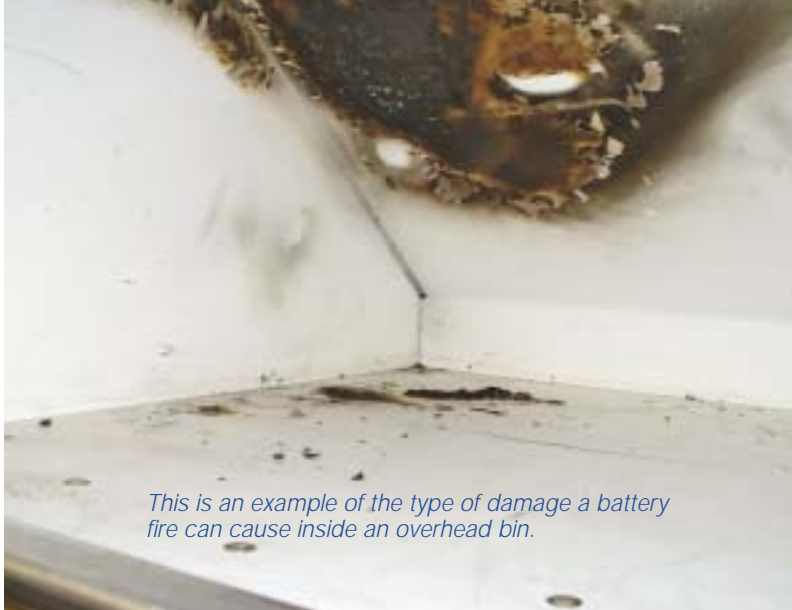
FAA researchers tested batteries from a number of manufacturers by suspending individual batteries over firepans charged with a quantity of 1-propanol. This took place in a 64 cubic feet test chamber set up to provide the same Halon 1301 concentration used in standard aircraft cargo compartments for initial fire knock-down. Here's the executive summary from the report:

"A relatively small fire source is sufficient to start a primary lithium battery fire. The outer plastic coating easily melts and fuses adjacent batteries together and then ignites, contributing to the fire intensity. This helps raise the battery temperature to the self-ignition temperature of lithium. Once the lithium in a single battery begins to burn, it releases enough energy to ignite adjacent batteries. This propagation continues until all batteries have been consumed. Halon 1301, the fire suppression agent installed in transport category aircraft, is ineffective in suppressing or extinguishing a primary lithium battery fire. Halon 1301 appears to chemically interact with the burning lithium and electrolyte, causing a color change in the molten lithium sparks, turning them a deep red instead of the normal white. This chemical interaction has no effect on battery fire duration or intensity. The air temperature in a cargo compartment that has had a fire suppressed by Halon 1301 can still be above the auto-ignition temperature of lithium. Because of this, batteries that were not involved in the initial fire can still ignite and propa-

gate. The ignition of a primary lithium battery releases burning electrolyte and a molten lithium spray. The cargo liner material may be vulnerable to perforation by molten lithium, depending on its thickness. This can allow the Halon 1301 fire suppressant agent to leak out of the compartment, reducing the concentration within the cargo compartment and the effectiveness of the agent. Holes in the cargo liner may also allow flames to spread outside the compartment. The ignition of primary lithium batteries releases a pressure pulse that can raise the air pressure within the cargo compartment. The ignition of only a few batteries was sufficient to increase the air pressure by more than one pound per-square-inch (psi) in an airtight 10-meter-cubed pressure vessel. Cargo compartments are only designed to withstand approximately a one-psi pressure differential. The ignition of a bulk-packed lithium battery shipment may compromise the integrity of the compartment by activating the pressure relief panels. This has the same effect as perforations in the cargo liner, allowing the Halon 1301 fire suppressant to leak out, reducing its effectiveness."

Final Thoughts

Publications of the FAA InFO and original SAFO, as well as the PHMSA safety advisory are several measures being taken, in consultation with the NTSB. The Air Line Pilots Association, in conjunction with the International Federation of Air Line Pilots Associations, published both a Safety Alert and a Safety Bulletin respectively, concerning the hazards associated with in-flight passenger electronic equipment fires, and steps crewmembers should take in the event of a fire. Manufacturers of batteries and con-



sumer products, as well as airlines, testing laboratories, emergency responders, the law enforcement community, and others continue to respond to real incidents and accidents caused by Li and Li-Ion battery malfunctions.

We continue to receive reports of cabin smoke or fire suspected to have originated from batteries or battery-powered devices carried in the cabin. In all of the reported incidents, fortunately crewmembers were able to successfully locate the source of the smoke or fire and combat it effectively with the equipment and techniques available to them. Nevertheless, over the next few months FAA, PHMSA, and other interested public and private sector organizations will move ahead with actions to enhance battery transportation safety through development and revision of safety standards and public education and outreach.

In the meantime, airline passengers and crew members are reminded of their existing obligations under PHMSA's regulations and FAA policies. Questions on this article and information contained herein should be addressed to the General Aviation and Avionics Branch, AFS-350, Aircraft Maintenance Division or to the Air Transportation Division, AFS-210, FAA Headquarters, 800 Independence Avenue, SW, Washington, DC 20591.



Terry Pearsall is an Aviation Safety Inspector with the General Aviation and Avionics Branch in Flight Standards Service's Aircraft Maintenance Division.



Pilot Orientation Guide to using the Wide Area Augmentation System (WAAS)

What is WAAS?

The WAAS is a satellite navigation system consisting of the equipment and software which augments the Global Positioning Satellite (GPS) Standard Positioning Service (SPS). The WAAS provides enhanced integrity, accuracy, availability, and continuity over and above GPS SPS. The differential correction function provides improved accuracy required for more precise vertically guided approaches as well as improved altimetry and en route accuracy.

How WAAS Works?

Precisely surveyed wide-area reference stations (WRS) are linked to form the U.S. WAAS network. Signals from the GPS satellites are monitored by these WRSs to determine satellite clock and ephemeris corrections and to model the propagation effects of the ionosphere. Each station in the network relays the data to a wide-area master station (WMS) where the correction information is computed. A correction message is prepared and uplinked to a geostationary satellite (GEO) via a ground uplink station (GUS). The message is then broadcast on the same frequency as GPS (L1, 1575.42 MHz) to WAAS receivers within the broadcast coverage area of the WAAS GEO.

In addition to providing the correction signal, the WAAS GEO provides an additional pseudo-range measurement to the aircraft receiver, improving the availability of GPS by providing, in effect, an additional GPS satellite in view. The integrity of GPS is improved through real-time monitoring, and the accuracy is improved by providing differential corrections to reduce errors. The performance improvement is sufficient to enable approach procedures with GPS/WAAS glide paths (vertical guidance).

Flying RNAV (GPS) Approaches

GPS provides greater flexibility and capability in developing area navigation (RNAV) instrument approach procedures. The improvements derived from WAAS provide several benefits to the flying community, including vertical guidance which will reduce aircraft accidents categorized as “controlled flight into terrain.”

Flight Planning

WAAS provides four major advantages to the pilot during flight planning. Principally, WAAS is designed and certified as a stand alone navigation system without the reliance on legacy navigational systems (VOR, DME, NDB or ILS). WAAS is the only navigational source that is available to all categories of aircraft that can provide this capability to all qualifying runway ends in North America. WAAS receivers can be used for flight planning approaches (using lateral navigation (LNAV) minima) at required instrument flight rules (IFR) alternate airports without the alternate N/A symbol **▲NA** (see Alt N/A section below). Without WAAS, pilots must develop their flight plans to alternate locations based on conventional instrument procedures and cannot substitute GPS for conventional nav aids.

The second major flight planning benefit is the availability of vertically guided, instrument approaches to more runway ends with lower approach minima than legacy systems. WAAS localizer precision vertical (LPV) approaches take advantage of superior accuracy of the Global Navigation Satellite System (GNSS) to use smaller obstacle evaluation areas to achieve lower minimums. The FAA is committed to providing LPV minima to all

qualifying runway ends that are forecast to support IFR operations through 2025 at the rate of at least 300 LPVs each year.

The third WAAS benefit eliminates the need for pilots to conduct GPS receiver autonomous integrity monitor (RAIM) checks. Planning to fly RNAV with GPS requires the extra step of evaluating the satellite geometry and coverage at the destination at the expected time of arrival. (RAIM checks are accomplished through the avionics or at www.RAIMprediction.net). The RAIM function is also referred to as fault detection. Another capability, fault exclusion, refers to the ability of the receiver to exclude a failed satellite from the position solution and is provided by WAAS receivers.

The fourth WAAS flight planning benefit is that the temperature restrictions on lateral navigation (LNAV)/vertical navigation (VNAV) approaches flown with baro-VNAV do not apply to LNAV/VNAV approaches flown with WAAS. Aircraft with baro-VNAV input for vertical guidance cannot utilize vertical guidance at temperatures above or below those charted for the location. WAAS allows the use of LNAV/VNAV minima irrespective of temperature and with remote altimeter settings.

Instrument Approach Procedures

The WAAS LPV minima are published on RNAV (GPS) instrument approach procedures (IAP) and share the same ground path with LNAV and LNAV/VNAV procedures. The lowest approach minima you can fly will depend on the type of certified avionics onboard the aircraft (See Figure 1). GPS receivers certified for instrument approaches (known as Technical Standard Order (TSO) C-129 boxes)



RNAV (GPS) RWY 17L Oklahoma City/Will Rogers World (OKC)

can descend to "LNAV" minima. Aircraft with avionics which incorporate approach certified barometric VNAV can descend to LNAV/VNAV or LNAV minima. WAAS GPS avionics (TSO-C145 or C146) avionics may allow descent to LPV, LNAV/VNAV, and or LNAV minima.

WAAS and Required Navigation Performance (RNP)

Satellite-based navigation is a cornerstone for performance-based operations. While WAAS sensor equipment alone does not make an aircraft RNP capable, WAAS positioning accuracy currently exceeds the most stringent RNP navigation sensor criteria, enabling current RNP operations.

NOTAMS

GPS and WAAS still require checking the NOTAMS. There are two unique WAAS NOTAMS; "unavailable" and "unreliable." Unavailable means there is a system or regional area outage; these NOTAMS are extremely rare. The unreliable NOTAM is a computer generated prediction of a possible lack of the WAAS level of service at the NOTAM specific time and location. However, upon arriving at the destination, one can fly LPV, LNAV/VNAV, or the LNAV minima, if the receiver indicates that the service is available.

Two symbols affect NOTAMS and flight planning:

W The WAAS symbol (or inverse 'W'): This symbol is on RNAV (GPS) approach charts where the WAAS vertical coverage is predicted to have multiple outages on a daily basis due to being on the fringe of WAAS system coverage at the present time. These areas include southern Florida, southern Texas, southwestern California, and in northeast New England. Vertical predictive NOTAMS are not supplied for these locations. Lateral NOTAMS are provided in the very unlikely event of a lateral outage. WAAS symbols are being removed from these charts as the expanding WAAS coverage improves service at that airport.

When the **NA** symbol appears

FIGURE 1

CATEGORY	A	B	C	D
LPV DA	1486/24 200 (200-1/2)			
LNAV/VNAV DA	1610/24	324 (400-1/2)	1610/40 324 (400-3/4)	
LNAV MDA	1800/24	514 (600-1/2)	1800/50 514 (600-1)	1800/60 514 (600-1 1/4)
CIRCLING	1800/1	505 (600-1)	1800-1 1/2 505 (600-1 1/2)	1860-2 565 (600-2)

on an approach chart, it indicates use of this procedure is not authorized for flight planning purposes. This symbol was originally placed on all standalone GPS procedures at industry request to remind pilots that they could not use GPS at the alternate due to limitations with basic GPS. As these procedures are reevaluated, this symbol will be removed where possible to allow flight planning use of the airport as an alternate for WAAS-equipped aircraft. It will not change the guidance for GPS-only aircraft.

Additional Notes

Due to issues of GPS RAIM capability, database currency and antenna location, portable GPS receivers are not certified for navigation under IFR. These receivers will only be used for situational awareness and may not be used for course guidance in an RNAV (GPS) approach. Refer to section 1-1-19 (b) of the *Aeronautical Information Manual* (AIM) for more about the Visual Flight Rules (VFR) use of GPS. TSO C-129 provides guidance for supplemental navigation GPS use.

Glossary

Satellite Systems

GNSS – Global Navigation Satellite System (ICAO standard)

GPS – Global Positioning System (U.S. implementation of GNSS)

GPS SPS – GPS Standard Positioning Service

WAAS – Wide Area Augmentation System

LAAS – Local Area Augmentation System

Baro-VNAV – Approach certified system providing vertical navigation from a barometric input

GEO – Geostationary satellite

GUS – Ground Uplink Station

WRS – WAAS Reference Station

WMS – Wide Area Master Stations

Approach Minima

LNAV - Lateral Navigation: A function of RNAV equipment which calculates, displays, and provides lateral guidance to a profile or path. LNAV is the non-precision minima line for procedures published as RNAV (GPS). It is titled S-xx (xx is the runway number) on charts still titled GPS. WAAS receivers may provide a descent angle on these procedures to aid in flying a stabilized approach to the MDA. (See AIM para 5-4-5, on flying a descent angle).

LNAV/VNAV – Minima for approach certified Baro-VNAV, or WAAS avionics providing a glide path to a decision altitude (DA). The vertical navigation (VNAV) portion is a function of area navigation (RNAV) equipment which calculates, displays, and provides vertical guidance to a profile or path.

LP – Localizer performance: minima using the WAAS lateral guidance without vertical guidance. These minima will start appearing in 2008 at locations where vertical guidance cannot be provided due to terrain issues. LP minima will not appear on RNAV (GPS) charts that have LPV minima.

LPV – Localizer performance with vertical guidance: minima for WAAS that provides a glide path to a decision altitude (DA).

GLS – GNSS landing system: Prior to the commissioning of WAAS, this minima line was included on RNAV (GPS) charts as a placeholder for a future precision vertically guided approaches using WAAS or LAAS. As these approach procedure charts are reevaluated, this line of minima will be removed or replaced with LPV when possible. GLS is now associated with the LAAS minima and will be published on a separate chart when LAAS approaches become available.



APV – Approach procedure with vertical guidance: A category of approach between precision and non-precision which provides a glide path, but does not meet all the requirements of a precision approach. APV can be based on satellite or conventional nav aids.

WAAS Approach Plate Indicators

WAAS Channel Number/Approach ID. The WAAS channel number is an equipment optional capability that allows the use of a five-digit number to select a specific final approach segment. The Approach ID is an airport unique four-letter combination for verifying selection of the correct final approach segment.

Temperature restrictions do not apply to WAAS equipment.

WAAS is the only avionics approved to fly the LPV minima line. WAAS can also fly LNAV/VNAV and LNAV minima lines. Selection depends on minima line availability on the approach chart. If the WAAS augmentation signal is not available, most WAAS avionics will default to the LNAV minima.

Official Guidance

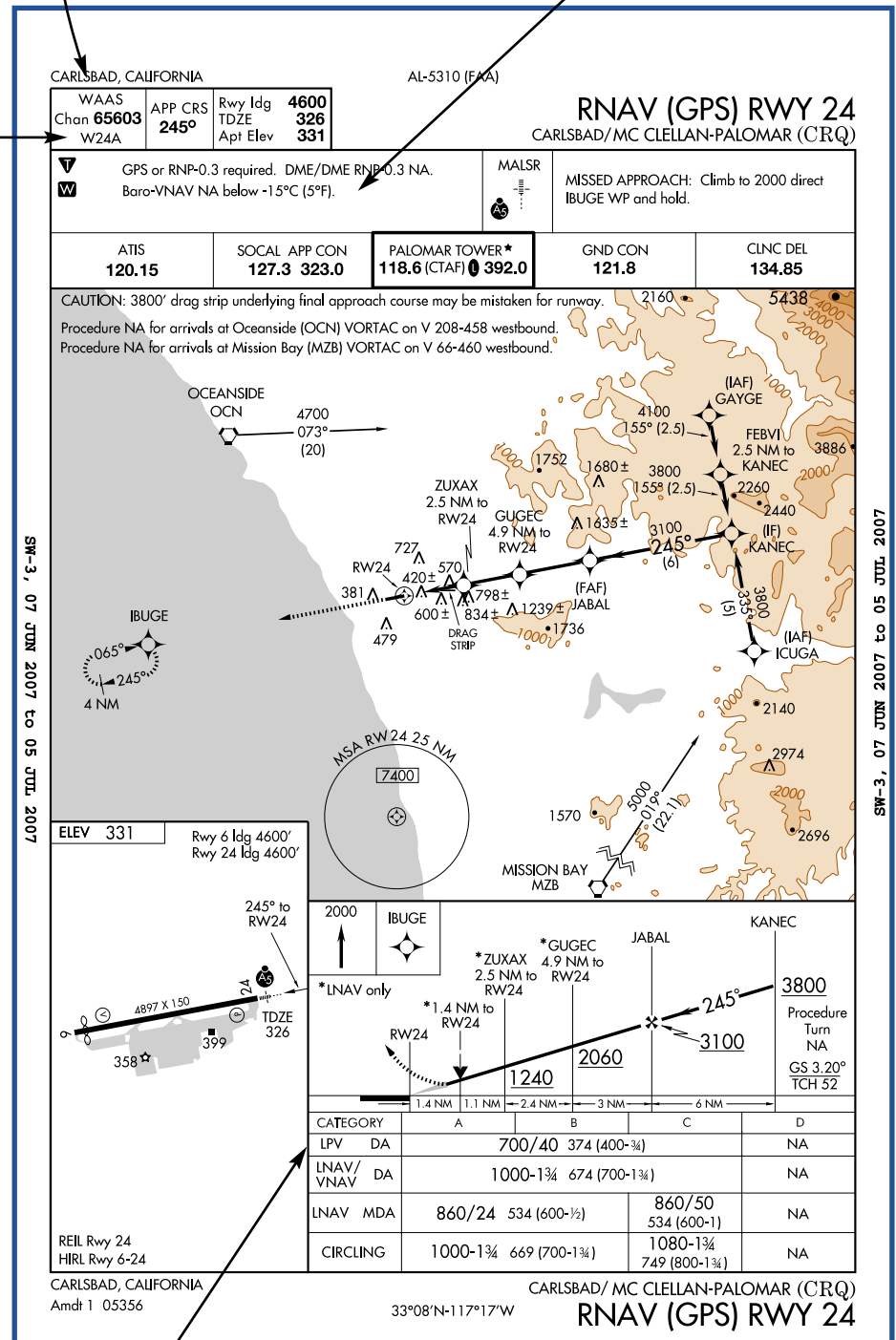
- *Aeronautical Information Manual (AIM), Chapter 1-1-19 (GPS), 1-1-20 (WAAS), 1-2 (RNAV/RNP), 5-2-9 (departure procedures), 5-4-4 (Arrival Procedures), 5-4-5 (Approach Procedures) and 5-5-16 (Pilot/Controller Roles & Responsibilities, RNAV/RNP)*
- *Flight Information Publication, Terminal Procedures, Page A1*
- *Advisory Circular 90-100b: U.S. Terminal and En Route Area (RNAV) Operations*
- *Advisory Circular 90-94: Guidelines for using Global Positioning System Equipment for IFR En Route and Terminal Operations and for Nonprecision Instrument Approaches in the U.S. National Airspace System*
- *Instrument Procedures Handbook (FAA H-8661-1A)*
- *Pilots operating handbook*
- *Aircraft flight manual*



WAAS Approach ID: W24A
W: WAAS
24: Runway 24
A: 1st WAAS Approach to Rwy 24

Temperature Restriction Does Not Apply to WAAS Equipment

WAAS Channel Number



LPV Minimum Line





CHANGES TO PARACHUTE RULE PROPOSED

On May 22, the FAA proposed to change the rules regarding the packing interval for reserve and emergency parachutes. Currently these parachutes are required to be repacked and inspected every 120 days. New reliability data from the parachute industry and other sources indicates it is time to review this repacking interval. Under the proposed rule this interval would be extended to 180 days.

Comments on this proposed change (Docket number 2005-21829) are due by August 20, 2007. They can be mailed to Docket Management Facility, U.S. DOT, 1200 New Jersey Avenue, SE, West Building, Ground Floor, Room W12-140, Washington, DC 20590-0001 or go to <http://www.dms.dot.gov> to sent electronically.

For more information on these and other FAA rulemaking documents, visit the FAA Web site at http://www.faa.gov/regulations_policies/rulemaking/recently_published/ >.

AUTOMATION OF WINGS – PILOT PROFICIENCY PROGRAM

The long awaited release of the automated WINGS - Pilot Proficiency Program is here, and with it come exciting opportunities for you to improve your piloting knowledge and skills!

The new Internet-based system allows you to have ownership and control of your aviation training and proficiency. You will be able to customize your individual pilot profile so the training you receive is relevant to your flying environment. You will also be able to track your progress on-line through your FAASafety.gov user account.

An obvious incentive to pilots is the added level of safety and professionalism that can be obtained through incorporation of a consistent recurrent training program. Another real plus is that qualifying for the Basic

phase of WINGS meets the requirements under Title 14 Code of Federal Regulations (14 CFR) section 61.56 for a flight review. Maintaining at least the Basic phase means that your flight review will always be current.

As a registered user of FAASafety.gov you may already have WINGS credits, even if you have not yet signed up to participate in the new WINGS program. For example, you have automatically received credit for eligible on-line FAASafety.gov courses you completed in the past. These credits will appear on your "My WINGS" page once you have signed up to participate in the new WINGS program.

Remember, though, that WINGS credits expire every 12 months. The FAASafety.gov system will automatically send you a reminder when one or more of your WINGS credits are within 30 days of expiring. During the initial roll out of the new system, anyone who completed a course more than 11 months ago has already received this email for each course previously taken, whether you have signed up for WINGS or not. If for some reason you choose not to participate in the WINGS program, you can disregard that reminder email.

This notice does not apply to any requirements you may have accomplished under the "old" WINGS Pilot Proficiency Award Program, which remains valid through December 31, 2007. However, we strongly encourage you to participate in the new WINGS - Pilot Proficiency Program. For a limited time, completion of at least the Basic phase under the new WINGS program will also qualify you to receive the phase of WINGS you are working on under the old program. Contact your local FAASafety Program Manager or FAASafety Representative for details.

For more information about the WINGS - Pilot Proficiency Program, log on to www.faasafety.gov. Infor-

mation regarding the new WINGS program can be found by selecting the "WINGS - Pilot Proficiency Program" link on the lower left side of the home page, then selecting the "WINGS Help" link. Here you will find an overview of the new program as well as additional help links, including an on-line help tutorial.

Please contact your local FAASafety Program Manager or FAASafety Representative if you have questions about the new WINGS program or any other products or features of the FAA Safety Team.

CHARTING CHANGES

Since October 2006 the National Aeronautical Charting Group has changed the finishing process to prevent tearing around the folds of charts. This was done because of reports from pilots indicating that charts were tearing at folds before their six month expiration.

The scheduled publication dates for the 78th edition of the Cincinnati Sectional and the 17th edition of the Cincinnati Terminal Area Chart (TAC)/Flyway have been changed to August 2, 2007. The current editions will remain in effect until these new charts are available.

In other charting news, the *Airport Facility Directory (A/FD)* has been realigned so that the regions match those of the Terminal Procedures Publications (TPP). The regions affected are the southwest (now includes Arizona, California, Colorado, Nevada, New Mexico, and Utah), the south central (now includes Arkansas, Louisiana, Mississippi, Oklahoma, and Texas), and the South east (now includes Alabama, Florida, Georgia, Kentucky, North Carolina, South Carolina, and Tennessee). These changes become effective August 30, 2007. Standing order customers will have to update their orders between now and August 1, 2007 in order to receive the





newly aligned A/FDs by the August 30, 2007 effective date. You can update your order online at <http://naco.faa.gov> and selecting "online ordering." You may also update by phone toll free at 1-800-638-8972.

FAA APPROVES ADS-B FOR AIR TRAFFIC IN ALASKA

A much anticipated satellite-based navigation tool can now be used to separate air traffic in Alaska.

The FAA's Aviation Safety Organization declared on May 31 that Automatic Dependent Surveillance-Broadcast (ADS-B) is more accurate than radar and can be used operationally for air traffic control in the state, opening the way for national deployment.

The milestone followed extensive technical analysis of ADS-B in Alaskan airspace performed by the FAA's Surveillance and Broadcast Services Separation Standards Work Group. The team included members from the FAA's Air Traffic, Aircraft Certification, and Flight Standards offices. Outside members represented Johns Hopkins University, U.S. Department of Transportation (DOT)/Volpe, Massachusetts Institute of Technology (MIT)/Lincoln Laboratories and MITRE Corporation.

ADS-B derives aircraft position data from an onboard navigation system such as a global navigation satellite system, thereby allowing pilots and air traffic controllers to "see" the location of nearby aircraft and engage in collaborative decision making.

The evaluation found that over 96 percent of ADS-B data had at least 10 times better accuracy and integrity than the minimum required to support today's separation standards.

The group analyzed data from the Microprocessor En Route Automated Radar Tracking System (MEARTS) in cases where one air traffic target came from a radar return and the other came from ADS-B. It also ana-

lyzed cases in which both targets came from the same source, whether from ADS-B or radar.

The team analyzed live traffic data collected by the MEARTS automation system from nearly 500,000 ADS-B-to-ADS-B reports and 200,000 radar-to-ADS-B reports. It also studied ADS-B and radar performance data from dedicated flight tests, in addition to other separation error modeling and simulation analyses.

In addition to forming the basis for sanctioning ADS-B's use for a five mile en route separation standard in Alaska, these studies will also be adapted to evaluate the ADS-B system as it is deployed across the nation.

ADS-B is seen as a cornerstone of the Next Generation Air Transportation System.

AIR NATIONAL GUARD LAUNCHES SEE AND AVOID WEB SITE

The Air National Guard came up with a solution to help avoid mid-air collisions. The newly launched "See and Avoid" Web site, www.seeandavoid.org, allows users to get information on "special-use airspace." The site was designed to eliminate mid-air collisions by promoting information exchange between civilian pilots and the military flight safety community. The objective is to help provide safer skies for all to share. To use this site, just type in an airport identifier and all relevant information about military activity in that area will automatically be displayed. Depending on the amount of activity in the area, it may take a few seconds for the information to appear on the map. For example, if you were tracking military airspace activity in the Washington, DC, area, you would type in the airport code for Ronald Reagan Washington National Airport (DCA). The map would automatically zoom in on the area.

By using the layover selections on

the left hand side of the page you are able view locations of minor and major airports, military bases, pilot training routes, military operations area, and special use airspace. Up until now some of the information provided was never available on the Internet. Other information was only obtained by searching Web sites of individual military bases.

It also shows where mid-air collisions and near mid-air collisions have occurred in that area. By clicking on the markers you can obtain information on a collision or near collision. Facts about the date and a reference number will appear in a message bubble so that you can receive detailed information about the collision or near collision.

Avoiding collisions with military aircraft isn't the only thing that pilots should be concerned with. Pilots should make sure that they avoid flying into restricted airspace. With the national security as a major issue now, more than ever, it is imperative that pilots are always updated on restrictions and warnings that may change every day. For the latest updates on flight restrictions, pilots can reference the *Notice to Airmen* (NOTAM). Pilots should review NOTAMs before every flight, to ensure that they have the latest information. If unsure pilots should, contact Flight Service at 1-800-WXBRIEF (1-800-992-7433). If for some reason pilots unknowingly find themselves in a restricted air space or Air Defense Identification Zone (ADIZ), they can expect to have their aircraft intercepted. Every pilot should know the basic procedures for interception, so they can know what to expect. These procedures can be found in the *Aeronautical Information Manual* (AIM) under National Security and Interception Procedures (5-6-2). The FAA Web site for the AIM is <http://www.faa.gov/ATpubs/AIM/> and for NOTAMs is <https://pilotweb.nas.faa.gov/distribution/atcsc.html>.



Editor's *Runway*

from the pen of H. Dean Chamberlain

Renewal Notices

FAA Aviation News subscribers can expect help in remembering to renew their subscriptions. The Government Printing Office (GPO) has informed the magazine staff that it has changed the GPO subscriber renewal notification policy. Up until now, subscribers were only sent one renewal reminder when their GPO subscription to *FAA Aviation News* was about to expire. The result was occasionally subscribers would fail to notice the one GPO reminder, forget to renew their subscription, and then their subscription would expire. To reduce the loss of subscribers, GPO is now sending up to four notices to those whose magazine subscription is about to expire. A renewal notice will be sent at 90, 60, and 30 days before expiration date. A final reminder will be sent 30 days after the expiration date. We hope the increase in renewal notification will help all subscribers to remain part of our readership family. With the gift giving season rapidly approaching, have you thought about giving an *FAA Aviation News* subscription to one of your aviation friends? They would appreciate the gift, especially with the new renewal policy.

Approaching Deadlines

The countdown is underway. With only two more *FAA Aviation News* issues left in 2007, we want to remind our ultralight friends and those interested in flying Light Sport aircraft of several rapidly approaching deadlines. As noted in the article titled, "What really happens to your transitioning 'Two-Place Ultralight Trainer' on January 31, 2008: on page 15 in this issue, January 31, 2008, is a critical date for many in those communities. The Light Sport Rule set compliance dates for certain airmen and ultralight-like aircraft certification. In some cases, deadline decisions are irreversible once made or not made. We want to remind everyone who is not familiar with the deadlines to use this time between now and January 31, 2008, to become familiar with the requirements and what decisions must be made.

January 31, 2008 is the deadline for:

- Ultralight instructors to take the practical test for Sport Pilot instructor and receive credit for previous ultralight instructing experience—see Title 14 Code of Federal Regulations §61.431;
- The FAA exemption allowing the use of two-seat ultralight-like training aircraft to be used by FAA-recognized ultralight organizations basic flight instructors (BFI) for training expires;
- Registering so-called "fat" ultralights and two-seat ultralight trainers as light sport aircraft;
- FAA issuance of experimental light sport airworthiness certificates under Title 14 Code of Federal Regulations § 21.191(i)(1).

U.S. Department
of Transportation

**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

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DO NOT DELAY -- CRITICAL TO FLIGHT SAFETY!

