

CATEGORY CHANGES • TRIBUTE TO THE PITTS FAMILY • STALL REVIEW 101

Pitts Aerobatics

INTERNATIONAL
AEROBATIC CLUB'S

JUNE 2006



Pitts Python:
The Legend Lives On



ALL POINTS LEAD TO
TECHNOLOGY



2007 FORD SHELBY GT500
THE FASTEST MUSTANG - EVER

JUNE 2006

VOLUME 35 - NUMBER 6

Official Magazine of the International Aerobatic Club, Inc.

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Illustration by Micro Pecorari



Calendar of Events

Thursday, June 15 – Sunday, June 18

Contest: Northern California Aerobatic Championships
Region: Southwest
Location: Paso Robles Municipal Airport – locator PRB, Paso Robles, California
Hosting Chapter: IAC 38
Practice/Registration: Thurs., June 15 **Rain Date:** Sun., June 18
Categories: Primary through Unlimited Power
Contest Director: Terry Lauck
Contact Information: 707/427-8516 (home); 510/245-4643 (work); 707/580-1790 (cell); t.s.lauck@gmail.com (e-mail)
Contest Website: www.iac38.org
Enterprise Rent-A-Car available at this location.

Saturday, June 17 – Sunday, June 18

Contest: Doug Yost Challenge
Region: Mid-America
Location: Cumberland Municipal Airport – locator UBE, Cumberland, Wisconsin **Hosting Chapter:** IAC 78
Practice/Registration: Friday, June 16 **Rain Date:** None
Categories: Primary through Unlimited Power
Contest Director: Mike Niccum
Contact Information: 952/652-2245 (home); 952/239-7114 (cell); pgnic@aol.com (e-mail)
Contest Website: www.iac78.org

Saturday, June 24 – Sunday, June 25

Contest: Ohio Aerobatic Open **Region:** Mid America
Location: Union County Airport – locator MRT, Marysville, OH
Hosting Chapter: IAC 34
Practice/Registration: Thursday, June 22 – Friday, June 23
Rain Date: None
Categories: Primary through Unlimited Power
Contest Director: Gordon Penner
Contact Information: 513/791-7331 (home); 513/520-6065 (cell); gpenner@cinci.rr.com (e-mail)
Contest Website: www.iac34.com
Enterprise Rent-A-Car available at this location.

Saturday, June 24 – Sunday, June 25

Contest: Midwest Aerobic Contest **Region:** South Central
Location: Seward Municipal Airport – locator SWT, Seward, NE
Hosting Chapter: IAC 80
Practice/Registration: Friday, June 23 **Rain Date:** None
Categories: Primary through Unlimited Power
Contest Director: Lynn Bowes
Contact Information: 402/785-1060 (home); edb bowes@futuretk.com (e-mail)

Thursday, June 29 – Sunday, July 2

Contest: Great Bay Aerobatic Contest
Region: Northeast
Location: Skyhaven Airport – locator DAW, Rochester, NH
Hosting Chapter: IAC 35
Practice/Registration: Thursday, May 18 **Rain Date:** None
Categories: Primary through Unlimited Power
Contest Director: Rob Petit
Contact Information: 781/646-5038 (home); rjpetit@earthlink.net (e-mail)
Contest Website: www.iac35.org
Enterprise Rent-A-Car available at this location.

Friday, July 7 – Saturday, July 8

Contest: Okie Dust Devil
Region: South Central
Location: Thomas P. Stafford Airport – locator OJA, Weatherford, Oklahoma
Hosting Chapter: IAC 38
Practice/Registration: Thursday, June 23 **Rain Date:** Friday, June 24
Categories: Primary through Unlimited Power
Contest Director: Greg Howard
Contact Information: 503/626-8152 (home); 360/735-9441 (work); grhoward@hotmail.com (e-mail)
Contest Website: www.iac77.org

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Sport Aerobatics is YOUR magazine. To submit news, comments, articles, or article ideas, please send them to: IAC, P.O. Box 3086, Oshkosh, WI 54903-3086; or email them to editorial@iac.org.

Sport Aerobatics



www.iac.org

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EAA-IAC Membership Services
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The International Aerobatic Club
EAA
The Leader In Recreational Aviation

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SPORT AEROBATICS (USPS 953-560) is owned by the International Aerobatic Club, Inc., and is published monthly at EAA Aviation Center, Editorial Department, P.O. Box 3086, Oshkosh, WI 54903-3086. Periodical Postage is paid at Oshkosh Post Office, Oshkosh, Wisconsin 54901 and other post offices. Membership rate for the International Aerobatic Club, Inc., is \$45.00 per 12-month period of which \$18.00 is for the subscription to SPORT AEROBATICS.

Manuscripts submitted for publication become the property of the International Aerobatic Club, Inc. Photographs will be returned upon request of the author. Black and white glossies are requested to assure the best quality reproduction. POSTMASTER: Send address changes to SPORT AEROBATICS, P.O. Box 3086, Oshkosh, WI 54903-3086. PM 40032445 Return undeliverable Canadian addresses to World Distribution Services, Station A, P.O. Box 54, Windsor, ON N9A 6J5, e-mail: cpcreturns@wdsmail.com.



President's Page

by VICKI CRUSE IAC 22968
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Pay It Forward

Sharing the joy of aerobatics

If you are like most people, you don't just jump into things without doing a little research or being introduced to it by someone you know. This can easily be said about aerobatics, and particularly about competition. Most of us aren't test pilots, and getting into an airplane, be it familiar or not, with the intention of going out and trying aerobatic maneuvers probably isn't the best idea. It almost rates up there with sky diving without first doing a tandem jump or two. It usually takes another person to get you involved.

In this month's issue, you'll see a story by Randy Wolfe of Kentucky about how he was inspired to fly aerobatics by Ashley Messenger. Randy's path just happened to cross with Ashley's willingness to introduce people to his Christen Eagle. There have to be many stories like this within our ranks. For me, it was probably seeing the Eagles Aerobic Flight Team, though I had no intention of flying air shows. I joined the International Aerobatic Club in 1994 on my first trip to Oshkosh (now called EAA AirVenture Oshkosh), though I had no idea what the organization was all about.

After this, I bought a Christen Eagle, sight unseen. It was flown to me and sat for two years for a number of reasons, one being I had no rudder pedal extensions. I had it flown back across the country where I started to fly it, under the tutelage of Rich Stowell, who introduced me to aerobatics. Like Randy Wolfe, I was hooked.

Rich taught me to be safe in the airplane, and from there I was introduced to aerobatic competition and what it takes to be a good competition pilot, including many hours of practice. If it were not for Rich, I wouldn't be enjoying this sport and the friendships I've made through the years.

Think about what sparked your interest in aerobatics. Was it a magazine article? An air show? An airplane ride with a friend? Something did it. How many people do you think Debby Rihn-Harvey has introduced to aerobatics? Hundreds have passed through her flight school. This changes lives; if you don't believe me, ask an aerobatic flight instructor.

Instructors get students who are scared to death of spins, which is usually their first introduction to "aerobatics."

Aerobatics
isn't rocket
science;
it's flight.

By the time the aerobatic course is over, these people have gained confidence in their flying and are willing to take the next step, usually jumping into recreational aerobatics or competition. How do I know this? It has me written all over it.

One of the best things about being an aerobatic pilot is sharing aerobatics with other people. Most people outside of our group initially think we are stunt or air show pilots. Talk to them a little, and then they begin to place you in the realm of an *aviator*. They also believe they can never do what you do. You can continue this myth, or you can talk to them about what aerobatics has done for you and what it can do for them. This isn't rocket science; it's flight. It all comes down to making an airplane do exactly what you want it to do. This applies to a Cessna 172 or a Pitts.

Taking this a step further is passing along your specific knowledge to others. I just started coaching other competition pilots, and it's surprisingly rewarding. With all the coaching I've had, I wasn't sure I could translate it to other people. Just like Ashley Messenger, who gets pleasure out of giving people rides and introducing them to aerobatics, I enjoy seeing the lightbulb come on for the people I coach. The satisfaction that comes from helping someone figure out a problem is a great reward. This must explain why so many people want to be teachers in a world where teachers have gone from teaching to baby-sitting.

Sometimes those of us who fly aerobatics, be it recreationally or competitively, are often viewed as elitists. What a shame. As pilots, we all share a common bond, the love and freedom of flight. Sharing our "specialty" should be natural, but it often isn't. At contests, we sometimes get wrapped up in our flights to the point of excluding people. Our focus is only natural, but sometimes it is taken for elitism. In case you haven't noticed, the ranks of the aerobatic pilots are becoming fewer and fewer. We've got to open up and share our love of aerobatics with others; there is no other way to grow. So, take what you've learned and share it. For a while, you'll still be a god, until your subject figures out aerobatics isn't so hard after all.

NEW at Sun'nFun

Engines, avionics, and neat stuff

By Ken Ibold

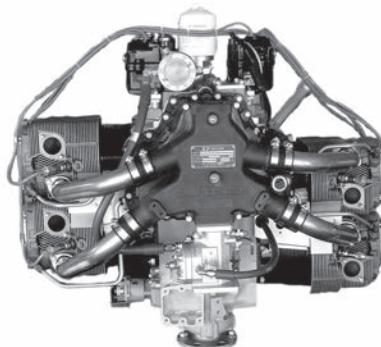
ENGINES

Custom Lycomings

Lycoming announced this week that a new division called Thunderbolt Engines will offer custom-built products at its Williamsport, Pennsylvania, facility. Customers can choose horsepower, fuel and ignition systems, plus performance enhancements such as tuned induction and turbocharging. The customer can even specify engine color.

The factory-built custom, non-certified engines are aimed at specialty markets such as Reno-style racing and competitive aerobatics. The work at Thunderbolt Engines will feed back into the company's research and development efforts and help to develop new product lines. The company also is interested in diesel technology and should have something new to show at Oshkosh.

Superior XP-360 Evolves



Superior Air Parts unveiled a 210-hp, 400-cubic-inch version of its popular XP-360 engine. The new

engine, dubbed the XP-400, is the first Superior product unveiled since Superior's acquisition by Thielert AG. The XP-400 is similar to a bored-out 360, but it also includes bigger valves that are angled for better breathing. The cylinders also have more fin area for better cooling.

The XP-400 will include Superior's proprietary electro slag remelt (ESR) crankshaft, which Superior says contains purer alloys to make it stronger than cranks produced through conventional processes. The ESR cranks are another sign of



Superior's relationship with Thielert, which developed the process and is manufacturing the crankshafts.

An experimental version of the XP-400 will be available this summer, and a certificated version is expected by the end of the year.

Thielert's acquisition of Superior in late March sets the stage for the joint company to market enhanced engine technology based on Superior's existing opposed piston engines and Thielert's diesel Centurion line.

For more information, visit www.SuperiorAirParts.com.

AVIONICS

Engine Info on the Cheap

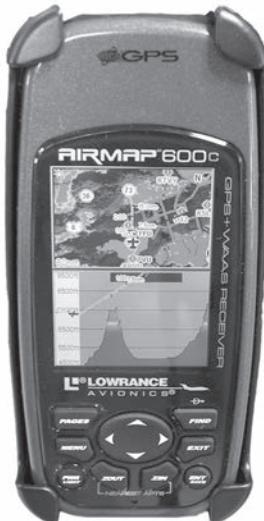
I-K Technologies introduced its AIM-Sport and AIM-Lite engine information systems, both bargain-priced alternatives to the engine monitors so popular in piston cockpits.

I-K's engine monitors have some of the features of the big boys but are designed for the simpler operations of light-sport aircraft and simple experimental types. For \$1,100 (including all sensors), pilots can

equip their airplanes with a tool for displaying and logging cylinder head temperatures, exhaust gas temps, voltage, oil pressure, oil temperature, fuel and manifold pressures, and rpm.

Both units can be customized for specialty engines such as Subaru, Chevy, Corvair, and turbines. The units have similar capabilities but different display types. For more information, visit www.IKTechnologies.com.





Lowrance 600C Packs Big Features

Lowrance Avionics displayed its new AirMap 600C, a mid-priced handheld GPS that includes high-end features such as terrain awareness, WAAS, and pseudo-HSI display.

At \$499, suggested retail price, the 600C combines many of the features of handhelds priced twice as high with a compact package and long battery life. Although the

screen is a relatively small 2.83 inches diagonal—an inch smaller than a Garmin 296—we found the display's high resolution and 16-color contrast made the most of the available real estate.

The 8.7-ounce unit measures a trim 5.6 inches by 2.5 inches by 1.2 inches. Lowrance says it will operate up to 10 hours on two AA batteries.

ACCESSORIES

Dog of a Headset

Tucked off the beaten path was a tent showing Mutt Muffs—noise attenuating ear protection for dogs. They have no speakers and no mics, but the \$50 Mutt Muffs were attracting a lot of attention from dog owners who have wondered if cockpit noise is harmful to a dog's sensitive hearing.

Mutt Muffs are the product of Michele McGuire's imagination. She noticed her black Lab, Cooper, would not be his energetic self in

the airplane and set about trying to solve the noise problem. She came up with a nicely engineered set of foam-line black plastic ear cups, connected by three pairs of Velcro straps—one under the chin and two across the head. Mutt Muffs come in four sizes.

McGuire describes the noise attenuation as "pretty good," but she acknowledges the earmuffs do not have a noise reduction rating like human headsets.

For details, visit www.MuttMuffs.com.



Keep Your Cool



Air conditioning is an expensive and heavy accessory, and isn't found much on light aircraft. However, hot

cabins can take a lot of the fun out of flying. Arctic Air has adapted a conventional Rubbermaid cooler to create a true air-conditioning unit suitable for many small airplanes, as well as boats and even tents.

The portable unit pumps ice water through a condenser coil, which blows cold air into the cabin. Unlike other products that simply blow cabin air over ice, the Arctic Air works like a "real" air conditioner, except that it uses ice water instead of compressor-

driven refrigerant to cool the coil. A demonstration at Sun 'n Fun showed the cooled air was 37 degrees cooler than ambient on an 88°F day.

The unit comes in five different models and two styles—three sizes of a self-contained "package" unit and two sizes of a split system that separates the ice chest from the coil and fan. The prices range from \$475 to \$585.

For more information, visit www.ArcticAirCooler.com.

recreational aerobatics

no. 2 basic stall review

By Rich Stowell, MCFI-A

Thanks to the Wright brothers, we now experience the magical gift of powered flight with relative ease. Unfortunately, the gift comes with a huge string attached: stalls. It was the Wright brothers, in fact, who first used the term “stall” to describe a so-called mysterious phenomenon they would occasionally encounter (and crash from!) while learning to fly their machine in the years immediately following Kitty Hawk. Concerned about the long-term viability of their flying machine, the brothers undertook an investigation of the stall in 1905. They reached the following conclusions:

1. **Stalling is common to all airplanes.**
2. **Stall recovery lies “in the more skillful operation of the machine and not in a different construction.”**
3. **Push forward on the elevator control to recover.**

The Wrights were dead-on in their assessment of stalls and how to deal with them; however, the brothers incorrectly believed that stalls resulted from insufficient airspeed. Regrettably, the flawed link between airspeed and stalling still permeates general aviation to this day.

Angle of Attack Matters Most

Though the remedy discovered by the Wright brothers for stalled flight remains valid a century later, it is of course angle of attack that governs when the airplane stalls. Exceed the critical angle for a given wing, and it will stall. Yet few light airplanes are equipped with an angle of attack indicator; without it, we cannot ever precisely know our margin to stalled flight. Instead, we can only infer our proximity to the stall based on indirect cues.

By itself, airspeed turns out to be a poor indicator of stall proximity; attitude alone is a poor indicator as well. Yet recall that the elevator is our primary angle of attack control. Stall awareness can be enhanced, therefore, simply by paying attention to the changes associated with our elevator actions. Even though we cannot readily see angle of attack, we can certainly see, hear, and feel the consequences of elevator inputs vis-à-vis changes in airspeed, g-load, and flight path.

Correctly interpreting these trends is key. For instance in positive g flight, displacing the elevator control 1 inch aft of its trim set point moves you closer to stalled flight; displacing the elevator control 1 inch forward moves you farther from stalled flight. An increasing airspeed trend, a decreasing g-load trend, and forward displacement of the elevator control each point to a decreasing angle of attack. Conversely, a decreasing airspeed trend, an increasing g-load trend, and aft displacement of the elevator control each point to an increasing angle of attack.

Stall Awareness

The V-g diagram (fig. 1) plots the operational relationship between speed and g-load. In the case of positive g flight in our featured airplane—a 1973 Citabria 7ECA with upgraded wing strut attach fittings—the V_g diagram reveals a range of calibrated airspeed and g-load combinations under which the airplane will stall: 36 mph at +0.5g; 51 mph at +1.0g; 73 mph at

+2.0g; 120 mph at +5.0g. Above 120 mph CAS (V_a), parts of the airplane might bend or break before reaching the stall. And independent of g-load, parts of the airplane might bend or break above 162 mph CAS (V_{NE}).

Clearly we can stall this (and any other) airplane through a broad range of speeds and g-loads. But the diagram divulges more: higher speeds can tolerate higher g's without stalling the airplane; lower speeds demand lower g's to avoid stalling. Decelerate from 120 mph under essentially 1g, and you'll encounter the stall somewhere around 51 mph CAS. Load the airplane instead with a +5.0g pull at 120 mph CAS, and you'll also encounter the stall, albeit a much more aggressive stall than the 1g stall loitering at 51 mph. To avoid an inadvertent stall, the speed and g-load trends should parallel one another—speed up, g up; slow down, g down. Otherwise, should the speed and g-load trends start to converge (speed down, g up for example), your stall margin will decrease until airflow ultimately separates from the wing.

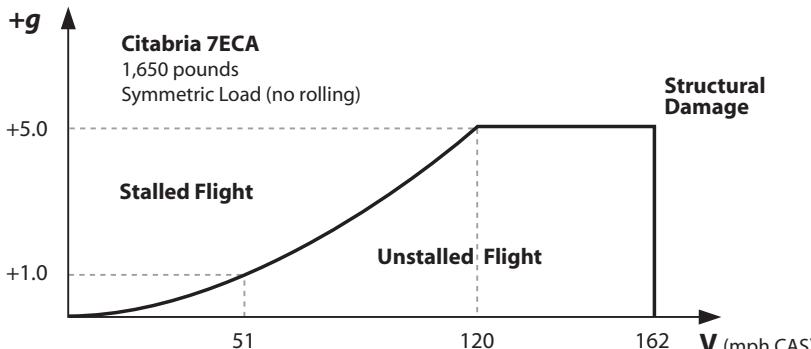


FIGURE 1: V-g Diagram, Positive g Envelope, Citabria 7ECA

Power-Off Stalls

Okay, that's enough theory—let's do some benign, wings-level stalls. Our featured Citabria has no mechanical stall warning system, so we'll need to pay attention to as many of the ambient cues as possible: sight, sound, feel, control pressures, and speed and g-load trends. Set up each stall as follows: reduce the power to idle, keep the ailerons neutral throughout

the process, use rudder inputs to maintain a general heading (use a visual reference outside for this, not the compass) and a wings-level attitude, pull back on the stick just hard enough to maintain altitude, and pull back on the stick far enough to reach the stall. The pitch attitude must change continuously to preserve a straight-and-level flight path to the stall break.

Recover from each stall as follows: ease the stick forward just enough to reattach the airflow over the wing, keep the ailerons neutral, continue to use rudder inputs to control heading and bank angle, and leave the power at idle. Should a wing dip, do not arm-wrestle the stick. The ailerons are the least effective control at your disposal here, so leave them alone. Use your feet to counter any deviations in bank or heading. Moreover, flailing the ailerons back and forth wastes time and will distract you from applying forward elevator to break the stall.

Perform some of these stalls looking straight ahead. Then do some stalls sighting down one of the wings. Perform the stall entry, stall break, and stall recovery looking only at the wingtip. Resist the urge to snap your head forward at the stall. Keep looking at the wingtip. Relax your body. Feel your way through the stall.

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The wing will tell you everything you need to know. You can also see the aileron, so be sure it stays flush with the wing. With a light touch on the controls, you can literally feel the airflow grab onto the wing as the stall is broken. Lightly wiggling your feet on the rudder pedals will provide valuable feedback about your yaw balance as well.

On average in our well-rigged Citabria, the rudder will hover around its neutral position during the exercise. Even though it might seem that rudder inputs are unnecessary, wiggle your feet continuously before, during, and after each stall anyway. This ensures that you are indeed relaxed on the controls the entire time. You'll also find that control over heading and bank angle will be more precise.

"The wing will tell you everything you need to know."

Power-On Stalls

Set up this exercise as follows: throttle to 2100 rpm, keep the ailerons neutral, use the rudder to maintain heading and wings-level flight, and pull back on the stick slowly and steadily. Avoid yanking the airplane into an extreme, nose-high attitude. Instead, ease your way into the stall and recover as follows: lower the nose to the cruise flight attitude, keep the ailerons neutral, continue to wiggle the

Stall Configuration	Power Setting	Where to Look	Flight Path	Altitude Profile	Attitude
Power-Off	Idle	Nose & Wingtips	Straight Lines	Level	Upright, Wings
Power-On	2,100 rpm			Climbing	
Prolonged	1,400 rpm	Nose		Descending	Level

rudder to control heading and bank angle, and leave the throttle as is.

Compared to power-off stalls, the pre-stall pitch attitude will now be more dramatic. Be dynamic with your rudder inputs; on average, however, expect the rudder to be deflected to the right to cancel the engine effects associated with slow flight. If a wing dips, remedy it with the rudder, not the ailerons. Try some of these stalls looking at the wingtip, too—during recovery, smoothly push the stick forward until the bottom of the wing sits parallel to the horizon line.

Prolonged Stalls

A key objective in the previous stall exercises is to sense the stall break and immediately recover with minimum effort. In the prolonged stall, we want to hang out in stalled flight for a little while. This exercise illustrates the importance of the rudder to thwart spin entry. Set

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Citabria**

Owned and operated by Debbie Rihn-Harvey

the throttle at 1400 rpm. Slowly ease your way into the stall using rudder to control heading and bank angle. As usual, the ailerons remain dormant the entire time.

At the stall break, freeze the stick right where it is. Don't allow it to move again until it's time to exit the maneuver. You must now literally run on the rudder pedals to stay on heading with the wings level. Be quick, be dynamic, and show the airplane that you are in charge of the exercise. The key is to make high frequency, small amplitude rudder inputs. The speed of your footwork is more important than the magnitude of the movements. Each movement, though, consists of two parts: corrective rudder (opposite to the bank or heading excursion) and neutral rudder. Avoid holding the corrective rudder in for too long here; step on it and then release. Be light on your feet, make multiple quick jabs, and apply your inputs one-two, opposite-neutral.

Interestingly, the faster and more frequently you move your feet, the straighter the airplane will stay. And rather than sitting there waiting to react to a deviation, be proactive. Move your feet before you think you need to. Make the airplane follow your lead, not the other way around.

The Citabria will oscillate in pitch during this exercise—the nose pitches toward your feet (down) at the stall break, then pitches toward your head (up) as the airplane eventually auto-recovers (even though you're still holding the stick back), then pitches down again at the stall, and so on. Terminate the exercise after two or three such oscillations. Rest your legs for a couple of minutes and try again. The prolonged stall is perhaps among the most difficult exercises to do well, ranking right up there with rolling turns. Yet this is an exercise that can be done in any airplane. 

Stall Exercise Quick Reference Guide

Discipline and Precision

Stalls by themselves are not recognized as competition maneuvers; nevertheless, let's apply two pillars of competition aerobatics to our stall practice: discipline and precision. A few specific disciplines we want to develop include the following:

1. Upon commencing each stall exercise, apply smooth aft stick movement all the way to the stall break. Avoid the natural tendency to stop pulling as you near the stall—keep the stick moving slowly, steadily, and continuously right up to the moment of stall.
2. Do not use ailerons to correct bank or heading deviations. Again, do not use ailerons no matter what happens during the stall and recovery. Instead, use your feet—apply quick rudder inputs for bank control as well as to hold a heading throughout. (As an added incentive not to thrash the ailerons around, place one dollar in a large jar for each inch of aileron deflection you apply during each stall. At the end of the year, send what will likely be the gobs of accumulated money to: "The CFI Retirement Fund, c/o Rich Stowell...")
3. Become acutely aware not only of any tension in your body, but also of each and every control input you make, no matter how small. Relax and do not allow any subconscious inputs to interfere with the stall process.
4. Do not stuff the nose down to a vertical line to recover from the stalls! Simply relax some of the back elevator pressure. Guide the airplane toward recovery using the minimum amount of forward elevator to accomplish the task. Overcome the natural tendency to yank the stick aft immediately after stall recovery, too. This will reduce the likelihood of a secondary stall.

As for the precision elements:

1. Move the stick precisely in pitch only. Do not tolerate any lateral deviations (see discipline element No. 2). The stick must either move straight aft toward your belly button or straight forward away from your belly button.
2. Use rudder inputs to stay as close to your original heading as possible.
3. Except for prolonged stalls, pay close attention to the airplane's pitch response. See the nose and wingtips pitch toward your head as you pull on the stick prior to the stall; see them hesitate as the critical angle of attack is reached; and see them then pitch toward your feet as airflow separates. At the precise instant the nose and wingtips begin to pitch toward your feet, move the stick forward the absolute minimum distance necessary to recover. Minimize the time delay between sensing the actual stall and reacting to recover.

The concepts presented here are applicable to any airplane, so give these exercises a try at a safe altitude. Understand, however, that the exercises are just a few representative snapshots of all of the stalls possible. The adage "any attitude, any airspeed" still applies. Be sure to perform clearing turns before starting each exercise. And if you are the least bit uncomfortable practicing stalls on your own, take a qualified instructor along.

Next time, we'll discuss banking and turning in two dimensions with coordination exercises such as Dutch rolls, aerobatic-style turns, and turning Dutch rolls. In the meantime, get comfortable with stalls.

Rich Stowell is a NAFI Master Instructor-Aerobatics and is the FAA's 2006 National CFI of the Year. E-mail your thoughts, ideas, or stall experiences to Rich@richstowell.com.

*Carrying on the tradition of
butt-kickin' biplanes ...*



By Budd Davisson

"O ne of my very first recollections," says Kevin Kimball, "is standing on a chair in the kitchen so I could look out the window at my dad painting the ailerons for our Bonanza in the backyard. Of course, that was back when dad had a 'real' job running an electronics distribution business."

The Kimballs have been aviation icons for so long, it's hard to believe any Kimball ever did anything but work on airplanes. There are now three generations of Kimballs bashing aluminum and laying down fabric. In fact, Kevin's son, Kallin, hammered the bullet-shaped landing gear strut fairings on this year's Sun 'n Fun champion Stearman Junior Speedmail when he was only 10 years old. One of Kevin's favorite pictures of himself as a child is holding a Stearman throttle quadrant he had just totally restored and painted: he was 7 years old.

Kevin says, "We restored a Stearman in the '70s as a family project. Shortly after the Stearman was flying, Dad left his day job and bought a basket case Staggerwing, which we started rebuilding while he decided what his next career would be."

By the time Kevin was ready to go to college, airplanes were both in his blood and in his hands. "I did all the paint and fabric on my first airplane when I was 17 and did the paint and fabric on the black Staggerwing that was one of our signature airplanes when I was 19. To date, I've personally put the fabric on over 80 airplanes."

Guess you could say he has a handle on it by now.

When he hit college, he majored in mechanical engineering with as many aero courses as the school offered. Initially, he figured he'd wind up as an engineer in a big company's cubicle farm, but that changed early.

"When I saw how restricted life would be working for a big company," he says, "I totally wrote that out of my life. I wanted to work on cool airplanes, and there were none cooler than those coming out of my dad's shop. So, my goal while in college was to prepare myself for doing engineering around our own shop, even though I didn't have a clear idea of what that would entail."

"Dad had known Curtis Pitts from our years in Louisiana, but we really got to know him when we moved to Zellwood [Florida] because one of his daughters worked for our insurance agent. He'd come up to visit her and hang around our shop just to see what we were doing. At first, I was a little in awe having a legend walking around the shop, but we got past that in a hurry."

"I really got to know Curtis while we were building the Gee Bee Z replica. I worked up the courage to start asking questions about the design work, and Curtis, true to form, was

more than willing to help. From that point on, when it came to engineering, he was my mentor."

"Dad and I had been talking for some time about building a 'fun' biplane around the M14P and happened to mention it to Curtis while we were sitting in our camper at Sun 'n Fun.

"Curtis got a twinkle in his eye and said he was already working on something like that and sent us a three-view a week or so later. We were totally distraught when we saw it. It was almost exactly what we had in mind, and who would want a 'Kimball' when you could have a Pitts?"

"We were later down at Curtis' place for a visit when the first Model 12 was already framed up and sitting there. Curtis said, 'You guys ought to buy this,' meaning we should buy the rights to the Model 12, and we agreed. However, when we started the negotiations, the fact that the purchaser of the Model 11 Super Stinker rights had first right of refusal for the Model 12 stopped us."

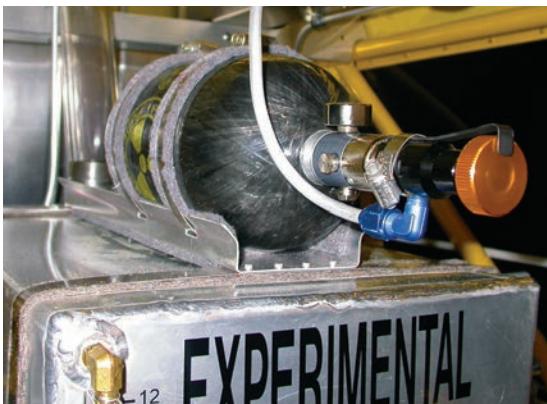
The Kimballs made an agreement with the new Model 12 owner that they'd make parts and he'd sell plans. Then, after approximately 100 sets of Model 12 plans were sold, circumstances changed for the owner, and he sold the rights to Jim Kimball Enterprises. The rest, as they say, is history.

"Right from the beginning, we were getting input from various aerobatic types we knew, including Ben Morphew, who actually got his Model 12 flying before ours. Using their input and with Curtis' blessing, we slightly modified the original airplane for better aerobatic performance, including shortening the wings. The Python is a further development of that same push for more performance."

"The Python originally started out as a one-off, turnkey airplane we were building for an air show performer. An unscheduled divorce forced him to back out of the project after we had started the wings. Then Dad made the



From top: Applying vinyl graphics, Kallin Kimball working on Python top wing, Titanium canopy frame, Precover test rigging
Photos by Tom Drake



From top: Python top wing, Carbon Fiber air start bottle, Fitting carbon fiber cowling, Main fuel tank w/header tank left, 12-gallon smoke tank at right. Photos by Tom Drake

statement that he wondered what the airplane would do as a single-seater if we really paid attention to weight and made it as light as possible."

The wings for the Python are another foot shorter than the HP Model 12 version. The original airplane, as designed by Curtis, had a 23-foot upper span and 22-foot lower wings. Each successive iteration reduced both spans by a foot, giving the Python a 21-foot upper span and 20-foot bottom wings.

Incidentally, the name Python, Kevin says, has to be credited to air show ace Jim LeRoy. He was wintering in the Zellwood area when the airplane was taking shape and it was being called the Model 12S—"S" for single place. LeRoy insisted the airplane needed something more provocative with a larger "cool factor" and came up with Pitts Python on the spot. The name stuck, and Kevin had Mirco Pecorari design the distinctive graphics.

The wings are based on HP Model 12 wings, which have always incorporated Curtis' distinctive Super Stinker (SS) aileron technology. On SS ailerons the hinge points are far back in the surface, which helps decrease pressures, but this is further enhanced by an interesting concept in which the protruding nose of the aileron that goes up inside the aileron well is sculpted to change the gap-seal effect with deflection: as the ailerons are deflected the gap gets smaller and smaller, which increases aileron effectiveness with deflection. It's a little like on-demand power steering: more or less normal reactions right at center, but when you're ready to rock and roll, the ailerons are, too.

Kevin studied the ailerons closely and realized that everywhere there is a hinge on any aileron, there is also a gap that is usually at least an inch and a half wide. In all flight conditions, air is spurting up through that gap like a big fountain, which destroys

flow right behind the gap so the efficiency of the aileron suffers. The harder the aileron is loaded, as under g or when rolling hard, the stronger the degradation. Also, the larger the hinge gap, the larger the effect.

To minimize the gap, Kevin designed unique aileron hinges that are only three-eighths inch thick where they go into the aileron, and the aileron is built around them, so the gap can be minimal. In this case, only a half-inch.

The hinges, which are machined out of half-inch aluminum plate with a bearing pressed in one end, are vaguely triangular in shape and butt against the back of the spars. They are held in place by bolts, which go through the triangle vertically, rather than having the usual flat feet with bolts going through the spar fore and aft. This allows the hinges to flex left and right as the wing flexes under load, eliminating any binding. The four-hinge aileron, which is 8 feet long(!), is held in position left and right by a bracket on the inboard hinge. This also allows a tight gap (three-sixteenths inch) at the root for maximum effectiveness where the high-energy air from the prop is always ripping past.

To make sure there is nothing on the aileron nose that can trip airflow (symmetrical ailerons are thicker than the wings) when they are deflected, the leading edge skins are bonded in place making the surface super slick.

"This is the same construction method we used on the ailerons we built for Sean Tucker, who has been thrashing them for four years, so we feel as if the system has been thoroughly tested at this point."

The fuselage was carefully massaged, from prop to tailwheel, with the goal of eliminating every possible ounce while keeping the airplane plenty strong and with lots of performance.

The performance starts with the 400-hp, M14PF Vendenyev engine

that's spinning a 102-inch MT prop, the MTV9-260-29. Kevin says, "This is the wide-blade prop with the trick airfoil, and it really works. Using our dynamometer pulling on the tail, we measured a repeatable 1,780 pounds of thrust, and that was on an 85° day."

The engine is equipped with a modified titanium exhaust originally meant for a Sukhoi 26 and has none of the usual air start machinery, other than a start valve. The heavy compressor was heave-hoed, and a little 88-cubic-inch carbon-fiber air tank handles the starting duties. Kevin says it easily starts the airplane a minimum of 10 times. Usually more. A backup "support" bottle fits in the baggage compartment for trips but is removed for aerobatics.

While the Python's cowling appears the same as a standard Model 12, it's crafted from vacuum-bagged carbon fiber, which makes it 11 pounds lighter than the standard wet lay-up cowl. Further, all of the sheet metal flowing back to the cockpit has been reduced from 0.032 to 0.025 for a net loss of another 6.5 pounds.

The fuel system was lightened and simplified by deleting the wing tank and flying the airplane on the main and header tanks only. This resulted in a savings of another 18 pounds while still retaining 36 gallons of total capacity.

The electrical system was also lightened as much as practical by using a B & C alternator and a little 7.2-amp battery.

Since most of the weight saved came out of the firewall area, the smoke system and battery were moved up to right behind the firewall to keep the center of gravity in the right place.

Robbie Grove whittled out the one-off landing gear that is still 1-1/4 inch thick, but 1 inch narrower. The Model 12 has its brake lines clipped to the back of the blunt gear and covered with a streamlined fairing. The

Python gear, however, is gun drilled for the brake lines, and the rear of the gear itself is ground into an airfoil shape. The mods left another 11 pounds on the ground, even though the new gear had to be 3 inches longer to clear that gigungous prop. A sharp eye will notice the tread is slightly narrowed and the legs are a little straighter.

The wheels are 6.00-6 magnesium units, and the axles are hollow aluminum, so, yeah, the Kimballs were trying to save every ounce.

The carbon fiber wheel pants only weigh 3.1 pounds apiece including paint and attaching screws. When it is all totaled up, the landing gear mods totaled a weight savings of 26 pounds.

That snarky-looking, single-place canopy is held in place by a welded titanium tubing frame that uses titanium latches, while the English wheeled 0.040 aluminum skirt is bonded to the Airplane Plastics (Jeff Rogers) bubble. The bubble started as 1/4-inch sheet, and Kevin estimates it comes down to about 0.100 inch at the thin spots.

Kevin says, "One of the reasons we built the Python was to try some new stuff, like our adjustable pedals,

hinges, and landing gear. Every time I'd come up with something new and lay it out, I'd ship it off to Curtis, who was pretty sick by this time, to take a look at. So, in that way, he was part of the project.

"Pilots who have flown the airplane can't say enough good about the ailerons, so, although we may not produce the Python as anything but a turnkey airplane—we haven't decided yet—there's a high probability we'll offer a Python supplement kit that can be put on any Model 12 wing. If we go that route, it would include fully built ailerons, ready to be installed."

So, as Curtis Pitts' Model 12 evolves, so do Jim and Kevin Kimball. They know they can't possibly fill the void created by Curtis' passing, but it's hard not to feel as if Kevin has a good start in that direction. In a world that some feel is overpopulated by tumbling monoplanes, it's good to know there's a young designer who still hears the wind in the wires in his sleep.

P.S. We forgot: The total weight savings was 150 pounds, so the airplane with 1,780 pounds of thrust weighs 1,695 at aerobatic weight. Think about that for a while! 

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CONTACT INFORMATION

- Jim Kimball Enterprises Inc.
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Phone: 407/889-3451 Fax: 407/889-7168
www.JimKimballEnterprises.com
www.PittsModel12.com
www.PittsPython.com

PITTS PYTHON SPECIFICATIONS

Span	21 ft. (6,4 m)
Length	19 ft. 8 inches (6 m)
Empty wt.	1,427 lbs. (623 kg)
Aerobatic wt.	1,661 lbs. (753 kg)
Thrust	1,800 lbs. (816 kg)



Kevin Kimball congratulates Ben Morphew on a well-done first flight. Photo: Tom Drake

Python PIREP



Snake Dance

By Budd Davisson

Fifteen days prior to the 2006 Sun 'n Fun Fly-In at Lakeland Florida, where the Pitts Python, was to debut, it hadn't been flown even once, much less been wrung out enough to know whether it's an aerobatic slug or not. Enter Ben Morphew and Larry King: With their help the airplane showed up at Sun 'n Fun with nearly 45 hours on it, but the intrepid test pilots' butts were really dragging.

The FAA had mandated the usual 40-hour test period, but the designer/builders, the Kimballs, and pilots Morphew and King knew they couldn't just drone around the test area watching the time accumulate. If they were going to show up at Sun 'n Fun with an airplane that looks as if it runs on testosterone, they had to know how it flew. How it *really* flew! And they found out because they did everything except drone around the assigned test area. For instance, when asked how fast it cruised, they couldn't immediately tell us because that would have required extended periods of level flight.

We cornered Ben Morphew just as this issue was going to press and asked him how the airplane flew.

Morphew is a longtime Pitts guy going clear back into his pre-airline days in the '70s when he was still a freight dog flying Twin Beeches and Gooney Birds. Barely 20 years old, he spent enough time around the Cole brothers and similar aerobatic legends that he became suitably infected with the three-dimensional disease. Eventually he met, and became friends with, Curtis (*the* Curtis) and built an S-1. Since then he has owned practically every airplane worth owning, including a wide variety of Pitts.

"I built the second Model 12 to fly, and Kevin Kimball and I became good friends, so when he said he had to have the Python test flown and the restrictions flown off, I told him 'I'm your guy.' I went over ready to fly nonstop, which is just about what we did. Larry and I were like two duster pilots working a huge field. The airplane was never on the ground except to get gas."

"I did the first flight, and I hadn't taxied 10 feet before I loved the way the airplane handled on the ground. It's tight and easy, with visibility better than the S-1s I've owned. Then, I dropped the hammer and was barely off the ground and I was in love with it. Especially the ailerons."

"Everything about the airplane is sweet, but the ailerons are super sweet. Kevin really nailed them. They have just enough breakout force that finding center is a no-brainer, but the actual pressures are quite low. I owned the original Super Stinker, and that's what it reminds me of, and it rolls just as fast. To time it on videotape, I just laid the stick over and did eight or nine rolls without a pause, and it came in around 360 degrees a second. You wouldn't expect that out of such a big airplane."

"We did so many takeoffs that Larry and I started competing with one another. It was hysterical to watch as the power came up. The airplane would practically disappear in the cloud of dust. Then it would erupt out of the dust with its tail-wheel still on the ground and the nose pitching up."

The Python originally started out as a one-off, turnkey airplane we were building for an air show performer.

"You can just keep pulling on takeoff until it's showing about 40 mph, and it'll hang on the prop. I did that on one takeoff and started making pedal turns, and it was as if I was flying out of a smoke stack."

"Doing acro is a real kick. If you want to go up really fast, just pull. From straight and level cruise you can easily snatch it up and do two verticals into a hammer."

"The hammerhead is another thing I really love. You can let it come to a dead stop, and when you stomp on it, it pivots as if it has a nail through the

center of the fuselage. With so much of the ailerons being blown by the prop, you can completely control what it does in roll with virtually no forward speed. Also, with that big prop, if you were to snatch the power off on the downline with your shoulder belts loose, you'd get a face full of instruments; it slows down so quickly.

"From 230 mph, you get an easy 2,500-plus feet vertical, and then you just hang there deciding what you want to do next."

"The spins are absolutely classic. The flat inverteds are as flat as a pancake, but as soon as you yank the power and kick rudder, it's most of the way out before you can blink."

"The snaps are also classic and so much easier than most airplanes. I'm using S-1 Pitts techniques, which is to say I'm leading with the rudder just a hair and unloading it a little once it's moving. It goes in and out so crisp and predictably that after only a few hours, I did a double on takeoff. I felt that comfortable in it."

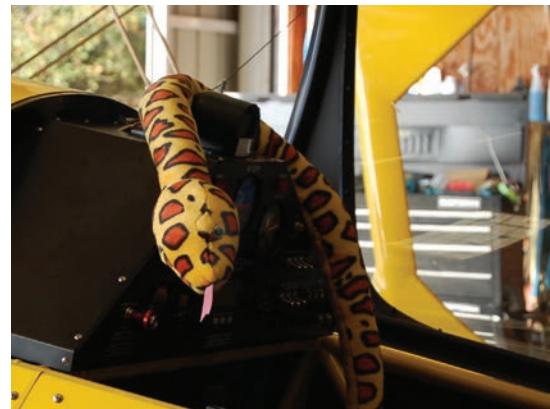
"I should also mention that even though we yanked and banked every way possible, neither of us got any hint of a shudder or buffet no matter how hard we tried."

"I had the seat for my Model 12 sloped back a little more than the original, and that was the angle Kevin used on this airplane. It's super comfortable and angled back just enough to make pulling heavy g's easier. The new rudder pedals have your feet up a bit, which is even better."

"The in-flight visibility was a welcome surprise. It's not like you're looking down over the nose of a Champ or anything like that, but it's much better than we've come to expect in a Pitts. The panel is low and completely out of your field of view, and with a couple of degrees angle of incidence, the airplane isn't as nose-up as most Pitts. Also, the panel is far enough away I didn't have to wear glasses to read anything."

"On landing we played with various combinations of power and speed and just about concluded that it has too much wing. Not really! We did, however, decide a 90 mph approach was good, if we kept the prop control at mid-range rather than all the way in. However, even at 80-85, it floats."

"Is there anything I'd change about the airplane? Yes, although it's just personal taste: I'd round the wingtips a bit and maybe paint it red. Otherwise, I wouldn't change a thing." 



Python security system. Photo: Tom Drake

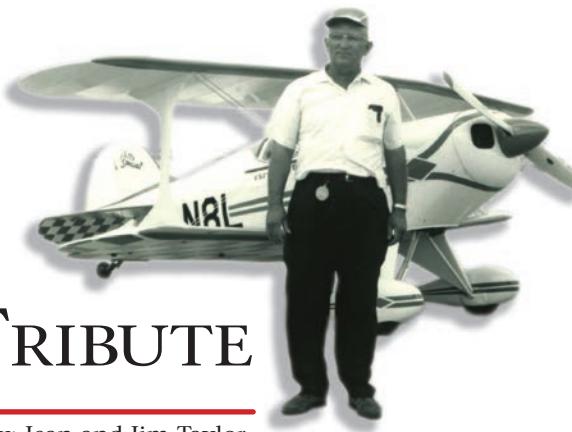


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Sun 'n Fun

PITTS FAMILY TRIBUTE

By: Jean and Jim Taylor



The Aerobatic Center tent was the place to be on Friday night during the Sun 'n Fun Fly-In at Lakeland, Florida. What began as a tribute to the Pitts aircraft at EAA AirVenture Oshkosh last year evolved into a tribute to Curtis Pitts at Sun 'n Fun, with his two daughters and grandson being honored at the annual IAC Sun 'n Fun party.

The event was co-sponsored by Falcon Insurance and the IAC. The tent was set up for 125 people, but more than 150 people attended. It was standing room only. A buffet-style dinner was enjoyed by all, with the wine, soft drinks, and water being provided by Jim and Jean Taylor. Bill Schmidt of Bernie Little Distributing donated the ice and beer.



Mary (left) and Martha pose with the Python.

Eighteen members of the Pitts family were in attendance. They were presented with "Thank You Curtis" T-shirts. Francois Bougie presented Curtis' daughters, Mary and Martha, with beautiful plaques with the same image as the T-shirts. The plaques were autographed by the air show pilots performing at Sun 'n Fun. Martha and Mary will also receive a copy of the Pitts Memory Book started at AirVenture by Kevin Kimball of Pitts Model 12 fame. The memory book has been signed by hundreds of people, all thanking Curtis for his designs, telling his family how great their airplane was, or just writing a memory of Curtis. A copy of this book will also be placed in the Florida Air Museum at Sun 'n Fun.

After dinner, the real fun began. The microphone was open to anyone who wanted to tell Curtis stories. This was a great success and the highlight of the night. Curtis' grandson, Harry Warner, brought a copy of the logbook entry showing the first flight of the first Pitts "special." At that time, the airplane was known only as the Pitts. The



Allen Silver

Francois Bougie, the artist responsible for the "Thank You Curtis" design, poses with Martha (left) and Mary, Curtis Pitts' daughters.

logbook entry reads "8-28, 1945 From JAX [Jacksonville, Florida] To Local, Type of Aircraft: Pitts, Type of Engine: Lyc., Horsepower 65, License Number: 52650, Duration: 20 [minutes], Remarks: Test Hop ('what a day')." Those of us who have had the privilege to know Curtis and his easygoing mild manner can only imagine what a day it must have been for him to make such an entry.

With a crowd spilling outside the tent, the stories continued well into the night. Budd Davisson brought everyone to tears with humor and affection, as did Curtis' secretary and grandson. Though most of us remember

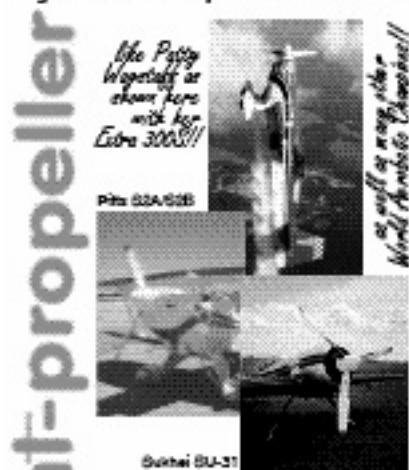
Curtis as the man who changed the aerobatic world with his Pitts Specials, Curtis' children and grandchildren remember him as one of the best fishermen ever. Neil Holder related the story about him catching "old Joe," his deep southern accent helping paint quite a picture. Ben Morphew and Kevin Kimball also kept the crowd on their feet. No one left early! The storytelling reluctantly had to come to an end when the night air show started. Despite the air show, the crowd wanted more.

Mary and Martha were at Sun 'n Fun for a couple of days visiting old friends and enjoying the many sights.

The Friday night tribute, especially with the many stories, became very personal for Jean and me, especially when Mary gave us a hug and with a tear in her eye related that even though there was a wonderful ceremony with a missing man fly-by and remembrances at the funeral, the pain was just too intense at that time to realize the effect their dad had on the aviation world. The events at Sun 'n Fun, and particularly the Friday night tribute, brought closure to her father's passing. "What a day" indeed. ✈

Many thanks for the help of our great volunteers, Keith and Carol Hunt, Bunk and Diane Chase, and Dale and Jane Cornelius. We continued to hear "Curtis" stories throughout the rest of Sun 'n Fun.

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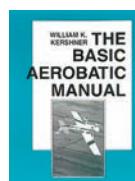
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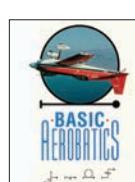
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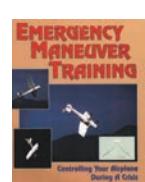
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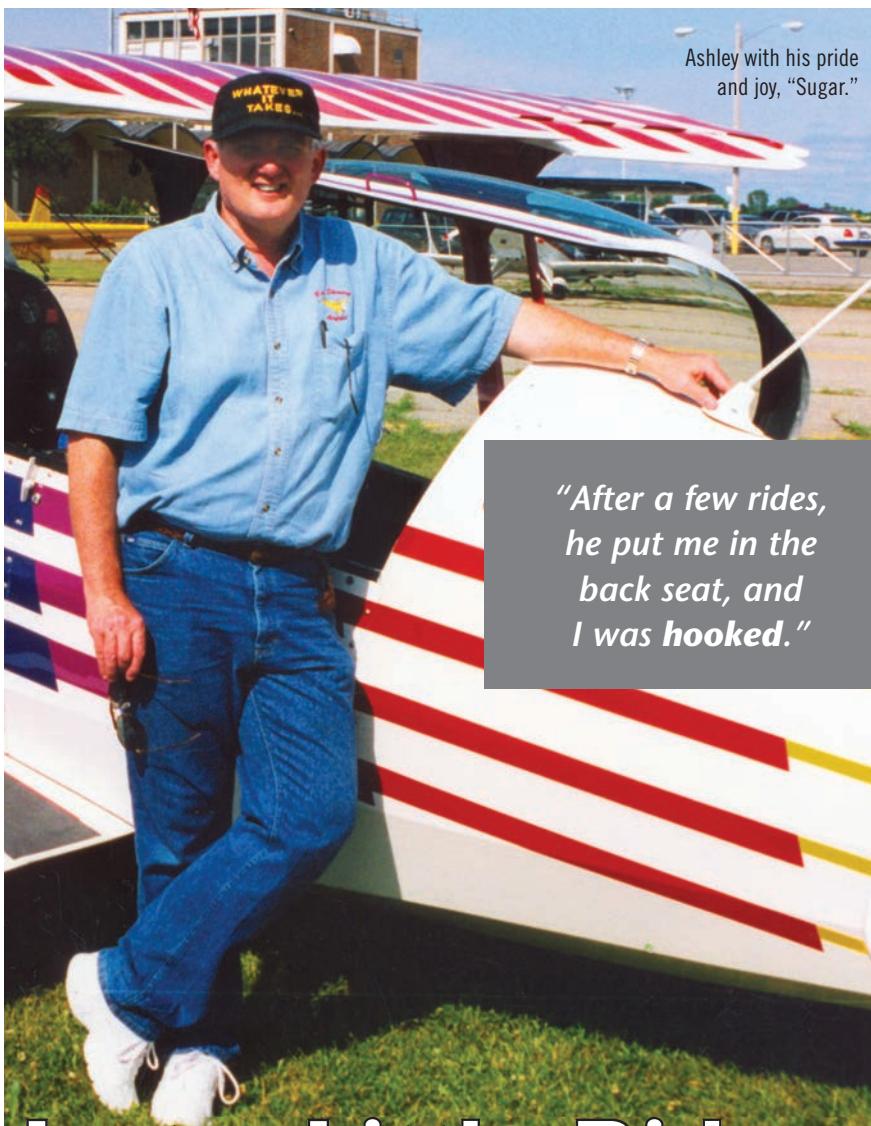
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Ashley with his pride
and joy, "Sugar."

**"After a few rides,
he put me in the
back seat, and
I was hooked."**

Just a Little Ride...

A mentor made all the difference

By: Randy Wolfe, IAC 430898

The articles I personally love to read in *Sport Aerobatics* are about people sharing their passion for aerobatics, or just flying in general, with others showing the same interest. People being mentors if you will. The IAC has many people who take newcomers under their wing and bring them into the fold. They don't fly Unlimited, compete at the Nationals, or have a flight training school. Articles about some of these guys might inspire others to do the same.

Just such an inspiration is Ashley Messenger.

At a small airport in Kentucky, Ashley gives rides in his Christen Eagle almost every weekend, explaining what maneuvers he will be doing, what the safety procedures are, and what to expect the first time the ground and sky start switching places.

I met Ashley about six years ago while I was practicing aerobatics with my radio-controlled airplane. We talked while he watched me fly my airplane, and I would watch him fly his Eagle. About a year later, I got my private certificate and was flying a 7AC my dad and I bought. Then, a mutual friend of ours passed away suddenly. He was the man at the FBO on our field who taught me to fly and helped Ashley keep his Eagle flying.

Soon after I was put in the front seat of *Sugar*, Ashley's Eagle, and off we went. My first ride doing aerobatics was so different than what I thought it would be; it was smooth and exciting, with Ashley talking me



Randy & Kim Wolfe with one of Randy's RC planes.



Ashley gives Randy a pep talk before his first contest flight.



Ashley demonstrates an aerobatic maneuver as Randy looks on.



Randy and Ashley just after Randy's first solo flight in his Eagle.

through every maneuver. I knew what to expect, no rough surprises. After a few rides, he put me in the back seat, and I was *hooked*. What I felt is experienced by only a few gifted pilots, but the way it was demonstrated to me I understood it was just a plane, it does what you tell it to, and with training and coaching, that brass ring could be had!

Before long, my wife and I had our own Eagle. Ashley took the time to inspect it with us and flew it

home. After some dual instruction, he turned me loose on takeoffs and landings. Then came the spin training. We started doing basic maneuvers, about two at a time. Once he felt I was doing them all right, I would practice on my own. After learning the maneuvers for Sportsman, Ashley helped me through my first contest.

That was four years ago, but it seems like yesterday. Ashley has since hooked one other man at our field, and he too bought an Eagle and is

competing in Sportsman. We have all become great friends and help each other all we can.

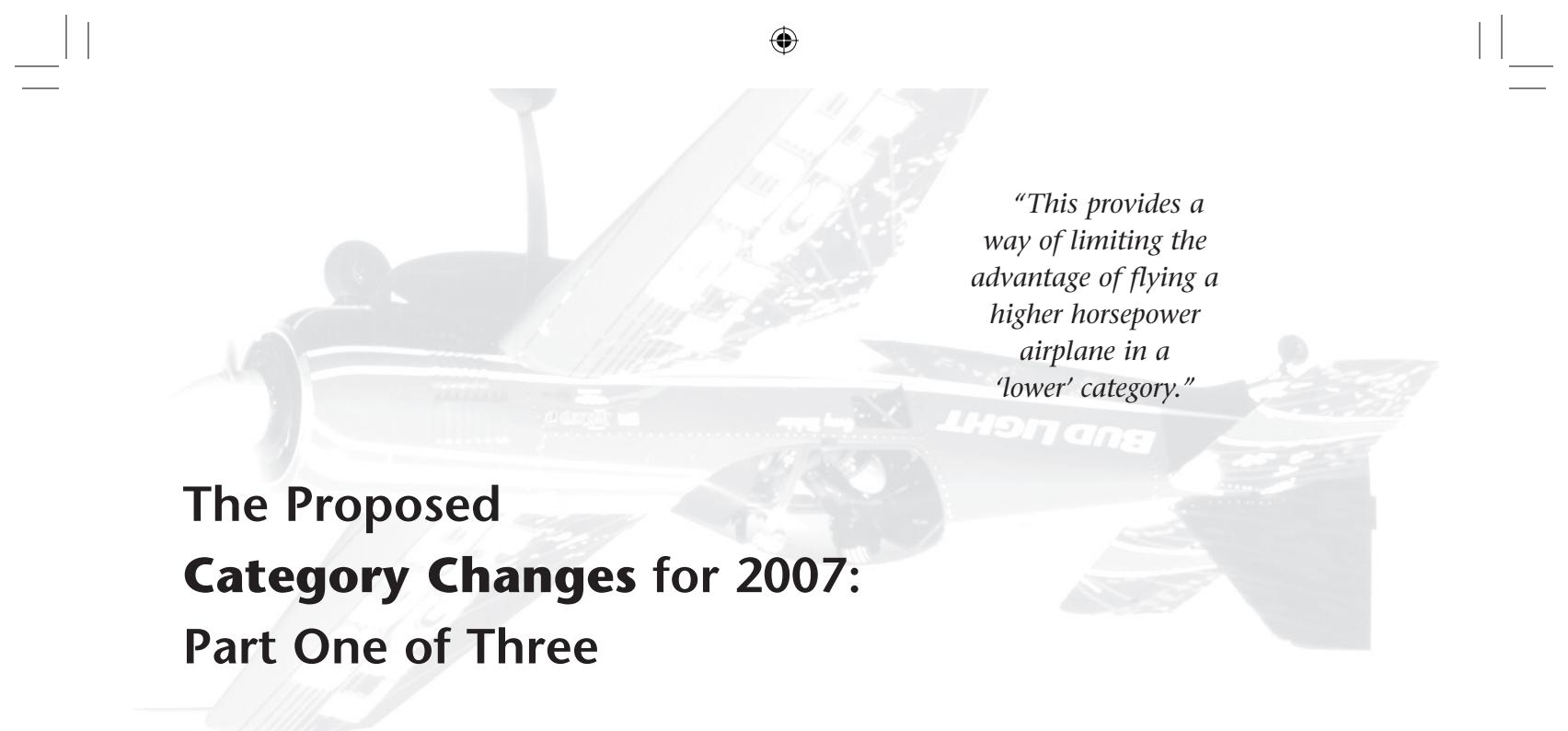
One person took the time to help others, and then there were two more IAC members. I hope someday I too can be a mentor to someone as Ashley was to me. To all the people like Ashley that just compete locally and have a lot of fun doing so, you will always be a Kirby Chambliss or a Patty Wagstaff in the eyes of the ones you helped and brought along for the ride. ✈

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"This provides a way of limiting the advantage of flying a higher horsepower airplane in a 'lower' category."

The Proposed Category Changes for 2007: Part One of Three

What do they want to do with my category and why?

By IAC Category Realignment Committee: Scott Poehlmann (Chair), Tom Adams, Bryan Butler, Bob Freeman, Giles Henderson, and Allyson Parker-Lauck

Once upon a time, a pilot could build an airplane in his garage, learn to fly aerobatics, start competing at the "lowest" category, and in that same airplane rise to the point where he could mount a serious challenge for the U.S. National Aerobatic Championships or even the World Aerobatic Championships. Unfortunately, that was 30-odd years ago. That doesn't mean a competitor can't build an airplane in his garage and fly it successfully and with great enjoyment in competition for a long time, but the nature and especially the range of the airplanes that are flying in competition now are very different. Our current categories and rules were designed in that era, and they are just as outdated as the notion that started this paragraph. That is the first problem.

The second problem with our current category structure is that it is based on a lot of aircraft that, frankly, aren't flown in competition often. The people who are trying to create sequences for these categories are often unfamiliar with the aircraft on which the sequences are supposed to be based, and they frequently don't have these aircraft available to test the "flyability" of sequences. This has led to a number of problems with sequences that weren't discovered until after your board of directors approved them. In fact, it is these difficulties that originally sparked the analysis on which this proposal is based.

Finally, the third problem: Over the course of time each of these categories has morphed from a direct progression from Primary through Unlimited to a point where several large gaps have developed. The most notable of these gaps is between Intermediate and Advanced, but a significant gap also exists between Primary and Sportsman, while the only real difference between Sportsman and Intermediate is the introduction of an Unknown and the snap roll.

It is with these issues in mind that your board of directors created the Category Realignment Committee approximately two years ago to study

the current structure and develop a proposal to repair the problems with the current category structure.

Why Have Categories?

The first question we started with was the simplest of all: Why have categories in the first place? There are essentially two reasons why we might want to have categories:

- To separate pilots based on experience and training, and to allow for educational progression from entry into the sport until reaching the pilot's desired level of participation.
- To separate aircraft based on performance differences, that is, to allow

for “handicapping,” assuming that the piloting skills are equal or can be made so.

Note that these two reasons have nothing to do with one another.

Historical Development

The current IAC category structure was developed in the 1970s primarily to allow a means of entry into competition for pilots new to aerobatics. A secondary goal was to provide a structured means of progress from the lowest levels up to Unlimited.

At that time, the most sophisticated Unlimited aircraft in common use in the United States were the Pitts S-1S and S-2A aircraft. Citabrias, Taylorcraft, various forms of clipped-wing Cubs, Stearmans, Great Lakes, and so on were common aerobatic types. The S-2B, Extra, Yak, and Sukhoi were many years in the future. To use Alan Cassidy’s Aerobatic Performance Index (API) (see sidebar), the range went from a low of 3 or 4 (the Citabrias and Cubs) to about 47 (Pitts S-1S), with the vast majority of the aircraft clustered between 10 and 25. This is a range of about 44 API points, overall, and when the then-current “Unlimited types” are removed from consideration, this range shrinks to more like 25 API points. In those circumstances, it was easily possible for someone to begin their aerobatic career in an airplane of reasonable (for the time) performance and stay in that same airplane all the way up to Advanced or even Unlimited. In that situation there was little need for handicapping, and so the second of the two reasons stated above was moot.

As time has gone by, however, most of the “classic” aerobatic aircraft have gone out of production, and those that remain in the fleet have aged, now by 30 additional years. Many of these aircraft were already 30 – 40 years old when the IAC category structure was created, and now they

are more like 60 years old. On the other hand, the performance of the highest-end aircraft has continued to increase, with the Edge 540 having an API of 93. Many of these higher performance aircraft are production models (Pitts S-2B, S-1T; Sukhois; Yaks; CAPs, and Extras), and only some of these aircraft are still in production. The range of API now stretches from those same Citabrias and Cubs at 3 to the Edge 540 at 93, a range of 90 API points, and essentially doubles the performance range that existed at the time the category structure was created. Even without the current Unlimited aircraft, the range of API is still about 70 points, which is much,

Pilots wanted a category structure that allows them to be competitive in the plane they have, ideally without breaking it.

much greater than what existed in the 1970s. A quick perusal of **Figure 1** should make this obvious. No wonder the current category structure seems to have some flaws.

Add to that the fact that we now have a population of pilots who want to continue to fly their current airplane competitively, without exceeding its limitations, and who are not interested in progressing up the category ladder. We see more and more “lifetime” Intermediate and even Sportsman pilots. These pilots do not need experience; indeed, many of them have been flying competition aerobatics since the IAC was founded. They want a category structure that allows them to be competitive in the plane they have, ideally without breaking it. Essentially, they want a category structure based on the second of the two reasons given above.

What Do the Current Categories Look Like?

To determine what was actually going on, one member of the committee (Poehlmann) set about collecting data from the contest results to determine what categories were being flown, when they were being flown, how many people were flying in them, and what airplanes they were flying. We started with 2002 data and have continued through to 2005.

The first thing looked at was how many people were signing up for contests and in what category they were flying. **Table 1** shows the results. It also shows a decline in the total number of competitors that continues to the present. In 2004 the total number of competitors was only 986; although the total number of entries increased in 2005 to 1,062, this still represents a 15 percent drop from the number of contest entrants in 2002. The data for 2004 probably represents the same trend, because there were only 31 contests held in 2004, as compared to an average of 38.67 in 2002, 2003, and 2005. These results are more clearly illustrated in **Figure 2**.

This data illustrates several interesting things. First, note that our entry category consistently has the fewest competitors, while the bulk of our competitors are in the second and third levels (Sportsman and Intermediate). If the goal of the categories is to introduce new people to the sport, then the highest numbers of competitors should be in the most accessible category, Primary. That is not what is happening.

The Primary category, which as our entry category should be our most popular category, is flown at only 78 percent of contests. While this trend appears constant over 2002, 2003, and 2005, there appears to be a spike in the number of contests that flew Primary in 2004. Unfortunately, this is because there were about 20 percent

fewer contests in 2004, and of those, the ones that did not occur were mostly from the list of five-category contests (that is, the Primary/Sportsman-only mini-fests were relatively preserved in 2004). In fact, if one removes the Primary/Sportsman-only contests from consideration, the percentage of contests that flew Primary drops to approximately 73 percent and is essentially constant over the period.

Moreover, this under-utilization of the Primary category is demonstrated by the number of competitors entering the category per contest (**Table 3**). This is heightened by the number of contests at which higher level competitors fly Primary "for Patch Only" in order for a contest to be held in that category, which in 2004 and 2005 accounted for almost 20 percent of the Primary contestants.

Finally, and this is the most important point, people are not repeating in the Primary category. If Primary actually functioned as a training ground, then pilots would fly some number of contests at the Primary level and then move up to the next category. That is not happening. For example, in 2003, in Primary **no pilots flew in more than three contests**. Only three flew in three contests, and only 11 flew in two or more, while **101 pilots flew in only one contest** (that's 90.2 percent). By contrast, in the same year in Sportsman, 14 (8.14 percent) flew in more than three contests, 39 (22.7 percent) flew in three or more, and 83 (48.3 percent) flew in two or more contests, while only 89 (51.7 percent) flew in only one contest.

Perhaps more frightening is that the biggest decline in our competitors occurs in the mid-level categories, Sportsman and Intermediate, which individually showed a 17 percent and 37 percent drop in competitors respectively over the four years stud-

Table 1: Numbers of Contestant Entries:

	2002	2003	2004	2005	Total
Primary	106 (8.5%)	112 (10.0%)	97 (9.8%)	123 (11.6%)	438 (9.9%)
Sportsman	394 (31.5%)	352 (31.3%)	328 (33.3%)	387 (36.4%)	1,461 (33.0%)
Intermediate	375 (30.0%)	320 (28.4%)	236 (23.9%)	284 (26.7%)	1,215 (27.5%)
Advanced	245 (19.6%)	229 (20.4%)	222 (22.5%)	173 (16.3%)	869 (19.7%)
Unlimited	130 (10.4%)	112 (10.0%)	103 (10.5%)	95 (8.9%)	440 (10.0%)
Total	1,250	1,125	986	1,062	4,423

Table 2: Numbers of Contests at Which the Categories Are Flown:

	2002	2003	2004	2005	Total
Primary	29 (76.3%)	29 (74.4%)	26 (83.8%)	31 (79.5%)	115 (78.2%)
Sportsman	38 (100%)	39 (100%)	30 (96.8%)	39 (100%)	146 (99.3%)
Intermediate	34 (89.5%)	36 (92.3%)	29 (93.5%)	37 (94.9%)	136 (92.5%)
Advanced	34 (89.5%)	35 (89.7%)	29 (93.5%)	34 (87.2%)	132 (89.7%)
Unlimited	30 (79.0%)	24 (61.5%)	23 (74.2%)	24 (61.5%)	101 (68.7%)
Total	38	39	31	39	147

Table Three: Average Number of Entrants Per Contest:

	2002	2003	2004	2005	Overall
Primary	2.8 ± 1.9	2.9 ± 2.8	3.4 ± 1.9	3.9 ± 2.4	3.3 ± 2.3
Sportsman	10.4 ± 4.0	9.0 ± 3.6	10.9 ± 6.0	9.9 ± 4.7	10.1 ± 4.6
Intermediate	11.0 ± 3.0	8.9 ± 3.8	8.1 ± 2.9	7.7 ± 2.7	8.9 ± 3.1
Advanced	7.2 ± 3.0	6.5 ± 2.6	7.7 ± 2.9	5.1 ± 2.4	6.6 ± 2.7
Unlimited	4.3 ± 2.4	4.7 ± 2.2	4.5 ± 1.9	4.0 ± 1.5	4.4 ± 2.0

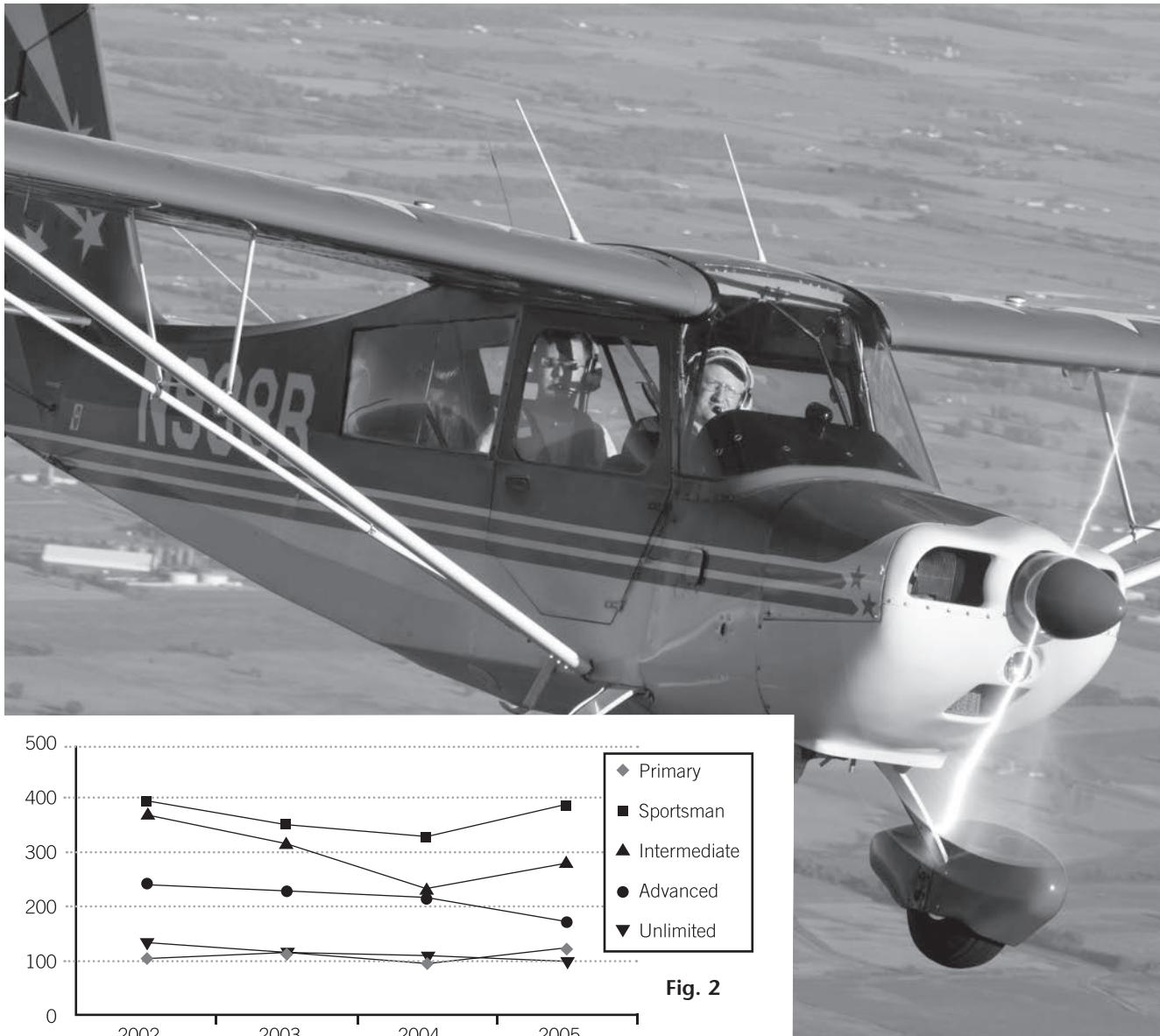
ied, and together they account for almost 78 percent of our decrease in competitors. The problem with our category structure is not just with the entry level. It rises up into the mid-categories as well. We are not recruiting people into the sport, and once they are in it, we aren't doing a good job of retaining them.

What to Do About All of This

Given this data, it is reasonable to rethink the current category structure. In that process, the first and most important question to ask is, "What is the purpose of the category structure?" This was the question that the board posed to the committee. In

our evaluation of the current category structure, we started with this question and attempted to work from there. We tried to look at the pilots who fly in competition and those who might reasonably do so if a structure were developed to allow them to compete. It became clear to us through this process that we have three populations to serve:

- The traditional highly competitive pilots, whose goal is to move up to the higher levels of competition using the category structure to gain experience and training.
- The traditional new pilots who want a means to enter aerobatic competition.



- Pilots who fly airplanes of minimal to moderate aerobatic capability who still want to compete in these airplanes (these are the lifetime Sportsman and Intermediate pilots who look at the categories as a way of separating the aircraft).

We concluded that an intelligent design will have to accommodate all of these populations, keep them interested and challenged, yet not challenge them beyond the limits of their own skill set and/or the limits of their aircraft. That was the goal we attempted to reach, and we also wanted to do so with a category design that did not rely on the flight characteristics of specific aircraft

(which might or might not be known to those designing sequences for the categories and which might or might not be available to try those sequences out), but rather had what we considered to be "hard" definitions that were not subject to the vagaries of aircraft (or pilot) specific abilities.

A second goal was to make the steps between the categories as even as possible. Our current structure has a wide gap between Intermediate and Advanced, a somewhat smaller gap between Primary and Sportsman, and a small gap between Sportsman and Intermediate; our aim was to even this out, and make progression between categories easier and clearer.

This led to our category proposal, which we will present to you in detail in the next of this series of articles. It radically changes how we will all think about the categories. The essence is that categories will now be defined by a "catalog" of figures (rather like the limited catalog of figures that can be used in Unknowns in the Intermediate and Advanced categories), which will be all the figures that will be available to fly. The purpose of this was to provide a way of limiting the advantage of flying a higher horsepower airplane in a "lower" category. Rather than limiting the airplanes that can fly in a category, we chose to limit what they could do there.

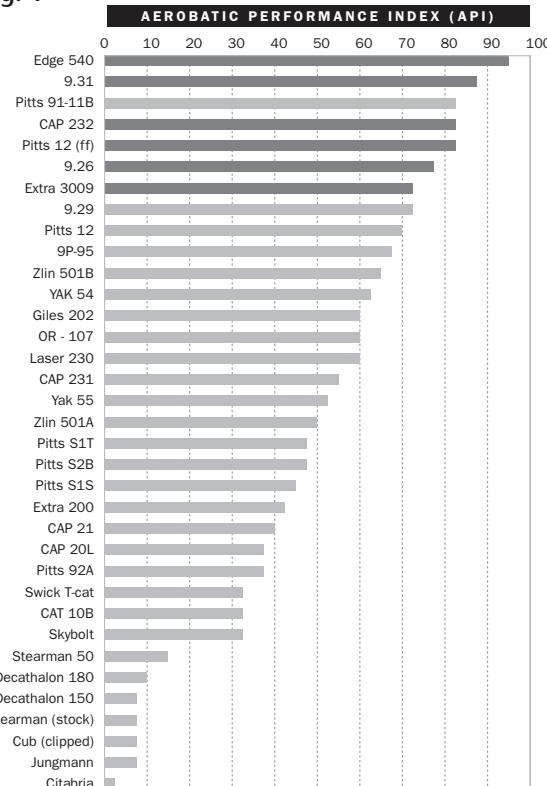
The other big change will be the names. Since the current category names have 30-plus years of history behind them, we chose to simply number the categories, starting with Category 1 and running up to Category 5 (although, since Advanced and Unlimited are under the control of CIVA as well as the IAC, we made no changes to these categories, except to give them new names). Frankly, the committee did not want to cloud the substance of the issue by having people busily discussing whether we had (for example) "dumbed down" Sportsman or "crept up" Primary. The more pertinent questions (in this case) to ask are, "Is this a good entry-level category?" or "Is this category suitable for long-term participation in my airplane?" The same logic applies to the other categories as well, and since everyone involved in competition has strong ideas about what their particular category is (or should be), it was felt that removing all that historical baggage would allow a much clearer discussion. The committee also liked the numerical system since it doesn't require as much explanation to non-aerobatic pilots (how many times have you had to explain why you were the first-place Intermediate pilot? We thought that first-place Category 3 pilot sounded much better.) We will give you all the details in the next installment.

In the meantime, the committee desperately wants your input. This is *not* a done deal. If you like the ideas, tell us. If you *don't* like the ideas, tell us. If you have a suggestion, or a thought, tell us. You can contact the committee by e-mailing committee chair Scott Poehlmann at *Category@texas.net*, or you can contact your regional director with any comments. These categories belong to you, and we want them to reflect the needs and wants of the group. ✈

The Aerobatic Performance Index

The Aerobatic Performance Index (API) is an attempt to develop a numerical method for comparing the aerobatic capabilities of various types of airplanes. It was developed by Alan Cassidy of the British Aerobatic Association. The formula for calculating the API is detailed in his book *Better Aerobatics*. While we won't try to replicate the math here, it is important to realize that the formula includes the aircraft's horsepower, weight, roll rate, and level-flight cruise speed. Although there may be argument about the exact placement of aircraft (for example, is a Yak-54 really more capable than a G-202?), the system does appear to put aircraft into an at-least approximately correct order of aerobatic capabilities. Figure 1 is a modification of the ranking created by the API to include a number of common American types and lower-powered aircraft not originally listed in Cassidy's API tables.

Fig. 1



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Continued from page 32

What food would you most wish to see served at a contest banquet?

All the banquets are good, so I can't think of anything I'd change.

What do you do when you're not flying aerobatics?

I'm a flight instructor at Sunrise Aviation, primarily teaching the aerobatics course and glass panel (Cirrus and G1000 transitions). Recently I also started doing demo rides in the Extra 300. Away from the airport, I sing professionally for one of the nation's largest opera companies.

What else do you do for fun?

In the summer, I spend some time in Mexico, diving on the Sea of Cortez with friends who have a house and boat on San Carlos Bay. I have also produced theater professionally in Las Vegas, Hollywood, and Orange County. And I fly for Angel Flight West, a nonprofit organization that provides transportation to those who need help getting to and from medical treatment.

What got you into singing opera?

I received undergraduate degrees in theater and

music. I never had much of an interest in opera until a friend suggested that I audition for one, just for the experience. As luck would have it, the production was *Aida*, and they needed more than a hundred singers. I got a contract for the show, joined the musicians union, and have been doing it ever since. I recently finished my 38th opera with the company.

What operas have you performed in?

How much time do you have? This is not a complete list, and I've done some of these shows multiple times. Here are a few: *Aida* (1995 and 2006), *Carmen* (1996), *Othello*, *La Boheme* (1997 and 2002), *Madame Butterfly* (1998 and 2003), and many more.

Why do you sing?

The money helps feed my addiction to aerobatics. Seriously, I do it because I love it. Life is far too short to do something you dislike all day long. And much like aviation, in the operatic world you meet some memorable characters, a surprising number of whom are also pilots.

How old were you when you discovered that you have a "voice"?

I didn't start singing seriously until I was in college. That's a late start for many careers, but the human voice doesn't mature until the late 20s or early 30s.

Did you take voice lessons as a child?

No. I played the accordion. And yes, I got beat up for it. Talk about suffering for your art.... I don't play the accordion anymore.

Do you also do musicals (Broadway)?

Yes. And there's a bit of crossover between the musical and operatic worlds. Shows like *Dead Man Walking* and *Porgy and Bess* are considered by some people to be operas and by others to be musicals. I think the two art forms are slowly merging.

When you find yourself up in that beautiful sky with the sun shining and puffy white clouds, do you ever accompany your aerobatics with an aria?

Are you kidding? I learned my lesson with the accordion! I'm not going down that road again. ✈

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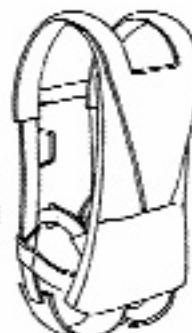
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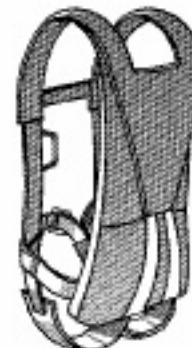
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ASK Allen

Your parachute questions answered

Q: I'm interested in purchasing a used parachute. What should I look for?

A: This is a good question. This year alone I've seen two or three good deals be worthless. First and foremost, do not buy anything from someone you know or from someplace online unless the seller will consent to a parachute rigger (of your choice) looking at it as a condition of purchase. The rigger will be able to tell you within a minute if it's airworthy, and the rigger should not charge you for this service. If the parachute is approaching 20 years of age, I would consider not buying it. (For information on how I price a used parachute, read my article "All Parachutes Are Not Created Equal" available at www.SilverParachutes.com.) Be aware the canopy inside the container may be a lot older than the container that holds the parachute. Most of the manufacturers recommend their parachutes be removed from service after 20 years. Is it legal in the United States to pack it after 20 years? Technically yes, but it becomes a liability issue if something goes wrong. Most professional riggers who rig full time agree with the 20-year limit. Twenty years is a long time to be exposed to UV damage and other contaminants regardless of how good your parachute looks from the outside.

Q: Can a jump center (drop zone rigger) pack my parachute?

A: Of course it can, but you need to ask some questions. You need to make sure it has adequate facilities to pack your parachute (FAR 65.127). Many drop zone riggers are familiar only with the rectangular parachutes sky divers use, and some have never seen a round parachute that almost all pilots use, but legally they can pack it. All an FAA certificated rigger needs to pack your parachute is the proper certification (FAR 65.121), a back rating for all back chutes, and a seat rating for your seat pack. Don't hesitate to ask to see the rigger's FAA certificate. And make sure the person packing your chute has the current packing manual, service bulletins, or airworthiness directives (most are online). Also check that the jump center has a clean surface big enough to properly stretch out your parachute for proper inspection and packing. I find this is sometimes a problem with a jump center that does not routinely pack round parachutes. Most important, you need to be comfortable with the person who packs your parachute.

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Calendar of Events

continued from page 2

Friday, August 25 – Sunday, August 27

Contest: Illinois State Open
Region: Mid-America
Location: Illinois Valley Regional Airport – locator VYS, Peru, IL
Hosting Chapter: IAC 1
Practice/Registration: Fri., August 25
Rain Date: None
Categories: Primary through Unlimited Power
Contact Info. and Contest Website: www.iacchapter1.com

Friday, August 25 – Sunday, August 27

Contest: Green Mountain Aerobatic Contest
Region: Northeast
Location: Harness State Airport – locator VSF, Springfield, VT
Hosting Chapter: IAC 35
Practice/Registration: Fri., August 25
Rain Date: None
Categories: Primary through Unlimited Power
Contest Director: Hans Bok
Contact Information: 508/994-5957 (home); hans.bok@comcast.net (e-mail)
Contest Website: www.iac35.org

Friday, September 1 – Monday, September 4, 2006

Contest: Happiness Is Delano Contest
Region: Southwest
Location: Delano Municipal Airport – locator DLO, Delano, CA
Hosting Chapter: IAC 26
Practice/Registration: Thurs., August 31 – Fri., September 1
Rain Date: Monday, September 4
Categories: Primary through Unlimited Power
Contest Directors: Roger Rourke and Gerrit Vanderziel
Contact Information: Roger: 661/766-2753 (home); Gerrit: 805/481-1354 (home), 805/440-2458 (cell); rogrouke@earthlink.net (e-mail)

Saturday, September 2 – Sunday, September 3

Contest: Gulf Coast Regional
Region: South Central
Location: TBD
Hosting Chapter: IAC 25
Practice/Registration: Thurs., August 31 – Fri., September 1
Rain Date: None
Categories: Primary through Unlimited Power
Contest Director: Mike Torbett
Contact Information: 281/359-6320 (home); 713/780-6085 (work); 713/540-0408 (cell); mike.torbett@honeywell.com (e-mail)

Saturday, September 9 – Sunday, September 10

Contest: Albert Lea Aerobic Contest
Region: Mid-America
Location: Albert Lea Municipal Airport – locator AEL, Albert Lea, MN
Hosting Chapter: IAC 78
Practice/Registration: Fri., September 8
Rain Date: None
Categories: Primary through Unlimited Power
Contest Director: Joe Wakely
Contact Information: 507/663-9085 (home); 612-802-0049 (cell); twakely@charter.net (e-mail)
Contest Website: www.iac78.org

Saturday, September 16 – Sunday, September 17

Contest: East Coast Aerobic Contest
Region: Northeast

Location: Warrenton–Fauquier Airport – locator W66, Warrenton, Virginia

Hosting Chapter: IAC 11
Practice/Registration: Fri., Sept. 15
Rain Date: None

Categories: Primary through Unlimited Power

Contest Director: Scott Francis

Contact Information: 703/327-3135 (home); 703/272-1064 (work); 703/618-4132 (cell); 703/359-8686 (fax); s.francis@ieee.org (e-mail)

Contest Website: www.iac-chapter11.net

Saturday, October 7

Contest: Harold Neumann Barnstormer
Region: South Central
Location: New Century AirCenter Airport – locator IXD, Olathe, Kansas
Hosting Chapter: IAC 15
Practice/Registration: Fri., Oct. 6
Rain Date: Sun., Oct. 8

Categories: Primary and Sportsman Power only

Contest Director: Connie Johnson

Contact Information: 816/453-5047 (home); 816/347-1331 (work); 816/560-6404 (cell); cjohnson4532@kc.rr.com (e-mail)

Friday, October 13 – Saturday, October 14

Contest: Borrego AkroFest
Region: Southwest
Location: Borrego Valley Airport – locator L08, Borrego Springs, California
Hosting Chapter: IAC 36
Practice/Registration: Thursday, October 12
Rain Date: Sunday, October 15
Categories: Primary through Sportsman Power
Contest Director: Michael Church
Contact Information: 949/852-8850 (work); mc@sunriseaviation.com (e-mail)
Contest Website: www.iac36.org

Saturday, August 26 – Monday, August 28, 2006

Contest: Aspen Leaf Aerobic Challenge
Region: South Central
Practice/Registration: Fri., Aug. 25, 2006
Rain Date: None
Categories: Primary - Unlimited Power on 8/26-8/27; Sportsman - Unlimited Gliders on 8/28 (glider pilots should call well in advance to discuss towing).
Location: Sterling Municipal Airport – locator STK, Sterling, CO
Hosting Chapter: IAC Chapter 12
Contest Director: DJ Molny
Contact: 303-619-4814 (cell); djmolny@yahoo.com (e-mail)
Contest Website: www.iac12.org

Saturday, October 14 – Sunday, October 15

Contest: Rocky Mountain Invitational
Region: South Central
Location: Lamar Municipal Airport – locator LAA, Lamar, Colorado
Hosting Chapter: IAC 5
Practice Registration: Friday, October 13
Rain Date: Saturday, October 21 – Sunday October 22
Categories: Primary through Unlimited Power
Contest Director: Jamie Treat

Contact Information: 303/648-0130 (home); 719/721-8149 (work); JamieTreat@direcway.com (e-mail)

Contest Website: <http://iac5.org>

Canadian Contests

Saturday, August 5 – Sunday, August 6

Contest: Montreal Acro Challenge
Location: St. Hyacinthe Airport – locator CSU3 (N45 36 18 W073 00 51), Montreal, Canada
Hosting Chapter: Aerobatics Canada 2 (Quebec)
Practice/Registration: Friday, August 4
Rain Date: None
Categories: Primary through Unlimited Power
Contest Director: John Wyman
Contact Information: 514/697-4253 (home); ac2gc@yahoo.ca (e-mail)
Contest Website: Not yet available.

2006 National Championships

Sunday, September 24 – Friday, September 29
Contest: 2006 U.S. National Aerobatic Championships
Location: Grayson County Airport – locator GYI, Denison, TX
Hosting Chapter: IAC National
Practice/Registration: Sat., Sept. 23
Rain Date: None
Categories: Primary through Unlimited Power; Sportsman through Unlimited Glider
Contest Director: Tammy Kemnitz
Contact Information: 217/676-9782; tammy.kemnitz@wnco.com (e-mail)
Contest Website: Not yet available
Enterprise Rent-A-Car available at this location.

Other Events

Saturday, June 17 – Sunday, June 18

Event: AWAC Demonstration Day
Location: Madison County Executive Airport – locator MDQ, Huntsville, Alabama
Time: June 17, 10:00 a.m. & 2:00 p.m.; June 18, 2:00 p.m.
U.S. Advanced Aerobatic Team members will be providing lectures and demonstration aerobatic flights to help promote the U.S. Advanced team's participation in the Advanced World Aerobatic Championship to be held in Radom, Poland, August 3-13, 2006.
Contact Information: Hector Ramirez, 256/880-6967; heclau@aol.com (e-mail)

2006 World Championships

Thursday, August 3 – Sunday, August 13
Contest: Advanced World Aerobatic Championships
Location: Radom, Poland

To support and follow the U.S. Advanced Aerobatic Team's participation in AWAC, visit www.advancedaerobaticteam.com.

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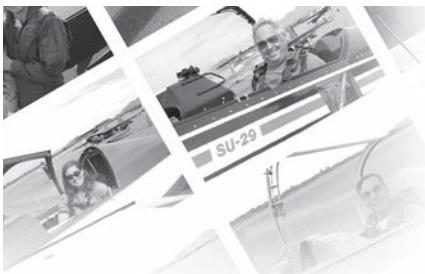
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Acro Pilots

Ron Rapp • Personality Profile By Kate DeBaun

Pilot Certificates/Ratings: Commercial, SEL, MEL, glider, and seaplane ratings. Flight instructor certificate with instrument instructor and multiengine instructor ratings.

Aircraft Flown: Cirrus, DA20 Eclipse, DA40 DiamondStar, Lancair IV, Lancair Columbia 400, 7ECA Citabria, 8KCAB Decathlon and Super Decathlon, Pitts S-2B, Extra 300 and 300L, RV-4, RV-6, RV-7, J-3 Cub, Stinson 108, PA-28, PA-44, PA-17 Vagabond, M20J, Stearman, Waco UPF7, B-17 Flying Fortress, Schweizer SGS 2-33A, and of course, many Cessna models.

What was your first experience with aerobatics?

My first experience with aerobatics was in a standard Decathlon during my private pilot training. I learned to fly at Sunrise Aviation, where you aren't allowed to solo until you can enter and exit spins on heading while maintaining orientation. Only one-turn spins are required by the syllabus, but I enjoyed them so much we went on to do two- and three-turn spins during that flight.

After passing the checkride, the school offers a free hour of aerobatics as a way to say thank you. That "free" hour cost me a couple thousand dollars: I had so much fun I immediately enrolled in the school's basic aerobatic course, got my tailwheel endorsement, and flew recreational aerobatics for several years.

What experience drew you to flying competitions?

I was working as a flight instructor and wanted to start teaching aerobatics. Fellow aerobatic instructors whom I respect suggested that a competition background would be extremely helpful.

What got you into competition?

The desire to start teaching aerobatics. Everyone told me that the competitions would be fun, but I had no idea it would improve the scope and quality of my flying as much as it did. As an instructor, I find myself spending a lot of time in airplanes, but very little of it is actually flying the aircraft. So competitive aerobatics serves as a fun, social activity that also helps keep my skills sharp.

Tell me about your airplane.

I fly a 1993 Pitts S-2B. I recently purchased a share of this airplane, which is on lease-back at Sunrise Aviation. It's quite a step up from the Super Decathlon I was flying last season. I soloed the S-2B only two days before my first competition in it. My goal for that contest was simple: land it in one piece! Somehow I also finished second in Sportsman. I owe a huge thanks to Gray Brandt (a co-owner in the Pitts) for the outstanding transition training. He also provided moral support during those times I thought I'd never be able to land that thing.

What is your most memorable contest moment?

At the Paso Robles contest last year, I experienced an aileron jam while flying a sequence on the practice day in the Super Decathlon. The ailerons were



Kate DeBaun

Name: Ron Rapp **City, State:** Irvine, California
Occupation: Flight instructor
Family: I'm single. **E-mail Address:** Ron@rapp.org

partially deflected, so I had to fly around in a strong slip in order to keep the airplane upright while I sorted out the situation. The culprit ended up being an unused rivet floating around inside the wing. It became jammed in the right wing-root aileron pulley.

What is your most memorable moment with the airplane?

I'd have to say my first solo in the Pitts was quite a memorable moment, right up there with the first time I soloed an airplane as a student pilot.

What is your favorite part of a contest?

The camaraderie. I know of no other sport where competitors put so much money and effort into the game yet are so supportive and friendly even in the midst of a contest. We help refuel aircraft, push airplanes around the ramp, volunteer on the judging line, and just have a great time out there.

Tell me a person or persons in the sport you admire.

There are too many to name. If I had to pick one, I'd say the volunteers, especially the ones who aren't pilots. They'll happily spend a weekend sealed away in a scoring room or out on a corner in the blazing sun. God bless 'em.

How does your girlfriend feel about your aerobatics?

She's very supportive. She enjoys flying, though I haven't taken her up for any aerobatics yet. Her favorite airplanes are the Stearman, Waco, and other biplanes, so I have a feeling the Pitts will be a hit with her.

Where do you see yourself going in the sport?

As far as my money can take me. I'm starting to fly Intermediate this year. I can see myself eventually flying Advanced. I'm not so sure about Unlimited. It looks appealing, but the cost gets prohibitive. There seem to be a lot of folks in that boat. It's a long way off, so I'm not thinking about it too much right now.

Continued on page 27

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