

OCTOBER 2009

SPORT *aerobatics*

OFFICIAL MAGAZINE OF THE NATIONAL AEROBATIC CLUB

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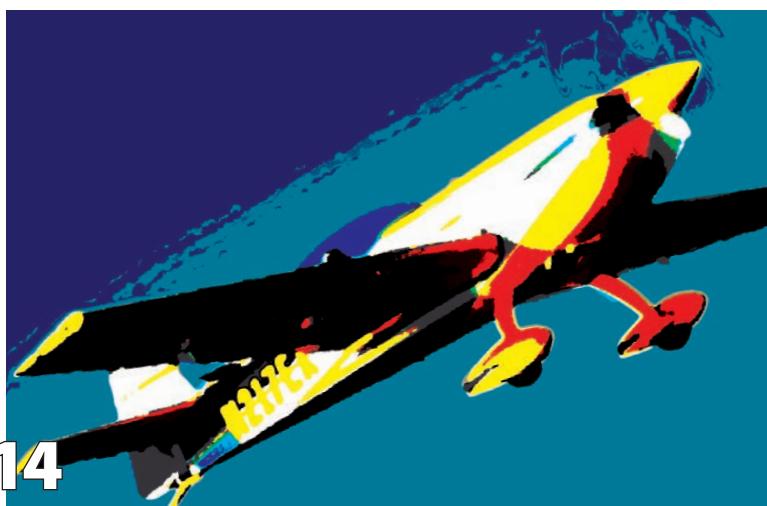


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THE COVER

Erik Edgren's clipped T-craft flying inverted over Oshkosh.

– Photo: Mike Steineke

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The International Aerobic Club is a division of the EAA.



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Reggie Paulk

LETTER from the EDITOR

by Reggie Paulk

sition, and the EAA staff has rallied around that call.

What's interesting is that before we pulled last month's Letter From the Editor, I had written about how well we work with the people in Wisconsin, and how much I appreciate their efforts, so I'd like to address these people now.

Phil Norton is the man behind the wonderful layouts you see on our pages every month. If you like the graphics and the photos, he's the guy to thank. He's been there every step of the way and is a driving force behind the presentation you see.

Colleen Walsh is our copy editor, and she has offered help above and beyond what's expected. She makes sure we dot our i's and cross our t's.

Sue Anderson and Katrina Bradshaw are behind the scenes with copy and advertising layout. They also stepped up and offered any help necessary.

I would also like to personally thank Tom Poberezny for taking the time to reach out and offer his help. It is very comforting to know that EAA is there when we need it.

Thank you.

Please submit news, comments, articles, or suggestions to: reggie.paulk@gmail.com

PRESIDENT'S PAGE

by Vicki Cruse • IAC 22968
E-mail: vcruse@earthlink.net

Vicki wrote this prior to her untimely death at the World Aerobatic Championships. We are sure that she would want you all to see it.



Vicki Cruse

Oshkosh 2009 - Planes, Technology and No Cheese

But it is still about the people

Another Oshkosh (AirVenture for you newbies) has come and gone and I fear I have to repeat myself once again by saying this was even better than last year. Many might say it was the highlights that made the event for them. The arrival of White Knight Two/Eve, particularly seeing such a strange aircraft actually fly, was amazing. Knowing the designer, Burt Rutan, got his start as an EAA'er with his unique VariViggen in the early 1970's made it all the better. I wonder how many people looked at the VariViggen back then and thought "this guy is crazy and this will go nowhere."

Then there was the magnificently immense Airbus A-380, whose arrival and departure stopped people in their tracks. Nineteen fortunate IAC members got a private tour of the aircraft as a result of one of the crew, a former French aerobatic pilot with good taste in aerobatic aircraft, being fascinated by the Edge 540.

There were many changes at Oshkosh this year, including the location of the IAC building. One member I spoke with won a beer based on a bet that the entire building had

been moved from its previous location. Lisa Popp and Trish Deimer reorganized the inside of the building — which made many members ask if we had made the building bigger (we didn't). Aerobatic airplanes previously parked behind the building were now in front, around the entrance and along the south side. More improvements are in the works for next year, but none will include moving the building again.

Aviation nuts come to Oshkosh to look at airplanes, check out the latest products, and get their annual Aeroshell

cow poster, while more come and experience the human side of Oshkosh. For many, this is a once-a-year gathering place of friends, all of whom have one thing in common. For others, it is a chance to meet new friends. Either way, it is an uplifting experience usually combined with sore feet. The IAC building is no exception; here we see old friends and are introduced to new ones. It is also where dreams begin to be fulfilled by the simplest of things, such as picking up a *Sport Aerobatics* magazine or the list of aerobatic schools, or perhaps

just talking aerobatics to someone who already participates.

As I think back over a very hectic week, two people come to mind. The first was IAC member Fred Bower, whom I had not seen since 2000. Fred was an unlimited competitor in California when I started in IAC. He got out of aerobatics, sold his Edge to Kirby Chambliss of Red Bull and moved to Michigan. One of the most unique things about Fred, other than his piloting skills, was the fact he was a U2 instructor out of Beale Air Force base in California. It isn't often you meet a Dragon Lady instructor.

Another memorable person was Jason Flood, the young man who at 16 soloed a Pitts last year and was featured in *Sport Aviation*. The chairman of KidVenture wanted Jason as a mentor and to be a celebrity for a week, posing for pictures with kids and signing autographs. The entire Flood family got involved, and were the hit of the event.

Here's to all those who came by the building with the tiniest bit of interest in aerobatics and who may take the chance to experience it in the future. It certainly worked for me. Lastly, many thanks to Trish Deimer for making everything run so smooth and especially for not ordering brats or cheese for the annual member dinner, sponsored by Northwest Insurance Group. ☺

*... dreams
begin to be
fulfilled
by the simplest
of things ...*

Introducing IAC President Doug Bartlett

Doug Bartlett was nominated and elected president at an IAC Board of Directors meeting on September 10. Doug will fill the remainder of the term of late President Vicki Cruse, who died tragically in an accident last month at the World Aerobatic Championships. His term will end at AirVenture 2010.

BIOGRAPHY

Doug Bartlett first started flying airplanes as a high school student in northern Illinois and soloed in his senior year. With few funds, Doug put flying to the side and was off to the United States Naval Academy where he graduated in 1979 with a BS in engineering. While at Annapolis, Doug competed as a gymnast and knew a combination of flying and gymnastics was in his future. Naval aviation was not an option due to poor eyesight, so Doug spent five years in the United States Marine Corps as an artillery officer serving in Hawaii and the Western Pacific.

After leaving the Marines, Doug joined a family electronics business that he owned and managed until its closing this year. During this time, he became active with different associations and groups that included positions as the national chairman of the United States Business and Industry Council and national co-chairman of the Fair Currency Coalition, a position he still holds today.

Ten years after his first solo, Doug finally had the funds to get his pilots certificate, but it wasn't until 2001 that he had the money and time to fly on a continual basis. His first attempt at owning an airplane came when he and his high school shop teacher put aside the time and money necessary for the high school shop class to build a Lancair Super ES. While waiting for the completion of the Lancair, Doug bought a Cessna 182. In 2002, he and the teacher flew the 182 to the magnetic north pole. According to Bartlett, "The High Arctic at 80.0 N and 104W is a long way from Chicago!"

In 2003, it was finally time to roll loop and spin (gymnastics for older people). His first acro aircraft was a Decathlon. A friend introduced Doug to Bill Bruns, an aerobatics instructor and IAC member. After a few hours of acro training, Bill suggested a trip to Salem, Illinois, for an aerobatic contest. At the Salem contest, Doug met IAC Chapter 1 members including Gerry Molidor who, in no time, talked Doug into buying a Sukhoi 29. The Sukhoi was flown in Sportsman through Advanced until it was pushed to the back of the hangar for an Edge 540, which Doug now flies in Unlimited.

Doug was elected as the treasurer of the IAC in 2007. Vicki Cruse appointed him as a member of the Strategic Planning Committee and



Photo courtesy IAC Chapter 34

the Midwestern regional government representative for the IAC that same year. Most recently, Doug was selected by the IAC Board of Directors to fill the position of president until the next election cycle in 2010.

"I am pleased to be able to help in guiding this group of skilled pilots, members, and friends", he commented. "We will continue to focus on sharing our flying knowledge and technical know how to anyone with an interest in aerobatics while ensuring a safe, fair, and fun environment in all of our activities." 

Statement of Ownership, Management, and Circulation (Required by 39 U.S.C. 3685). 1. Title of Publication: Sport Aerobatics 2. Publication No.:0953-560. 3. Filing Date: 9/28/09. 4. Issue Frequency: Monthly. 5. No. of Issues Published Annually: 12. 6. Annual Subscription Price: \$18.00 in U.S. 7. Known Office of Publication: 3000 Poberezny Road, P.O. Box 3086, Oshkosh, WI 54903-3086. Contact Person: Kathleen Witman, Telephone: 920-426-6156. 8. Headquarters or General Business Office of the Publisher: Same as above. 9. Publisher: Doug Bartlett, 1972 Concord Dr., McHenry, IL 60050. Editor: Reggie Pault, c/o EAA, 3000 Poberezny Road, P.O. Box 3086, Oshkosh, WI 54903-3086. Managing Editor: None. 10. Owner: International Aerobatic Club, 3000 Poberezny Road, P.O. Box 3086, Oshkosh, WI 54903-3086. 11. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amounts of bonds, mortgages or other securities: None. 12. Tax Status: Has Not Changed During Preceding 12 Months. 13. Publication Title: Sport Aerobatics. 14. Issue date for circulation data below: September 2009. 15. Extent and Nature of Circulation (Average No. Copies Each Issue During Preceding 12 Months/ No. Copies of Single Issue Published Nearest to Filing Date): a. Total No. of Copies Printed (5,283/4,356) b. Paid Circulation (By Mail and Outside the Mail): 1. Mailed Outside-County Paid Subscriptions Stated on PS Form 3541 (Include paid distribution above nominal rate, advertiser's proof copies, and exchange copies) (3,630/3,459). 2. Mailed In-County Paid Subscriptions Stated on PS Form 3541 (Include paid distribution above nominal rate, advertiser's proof copies, and exchange copies) (0/0). 3. Paid Distribution Outside the Mails Including Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid Distribution Outside USPS (462/405). 4. Paid Distribution by Other Classes of Mail Through the USPS (e.g., First-Class Mail) (16/3). c. Total Paid Distribution (Sum of 15b (1), (2), (3), and (4)) (4,108/3,867). d. Free or Nominal Rate Distribution (By Mail and Outside the Mail): 1. Free or Nominal Rate Outside-County Copies Included on PS Form 3541 (0/0). 2. Free or Nominal Rate In-County Copies Included on PS Form 3541 (0/0). 3. Free or Nominal Rate Copies Mailed at Other Classes Through the USPS (e.g. First-Class Mail) (139/181). 4. Free or Nominal Rate Distribution Outside the Mail (Carriers or other means) (583/80). e. Total Free or Nominal Rate Distribution (Sum of 15d (1), (2), (3), and (4)) (722/261). f. Total Distribution (Sum of 15c and 15e) (4,830/4,128). g. Copies not Distributed (See Instructions to Publishers #4 (page #3))(278/264). h. Total (Sum of 15f and g) (5,108/4,392). i. Percent Paid (15c divided by 15f times 100) (85.04%/93.68%). 16. Publication of Statement of Ownership: Publication required. Will be printed in the October 2009 issue of this publication. 17. I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties). Executive Director: Trish Deimer, 9/30/09. PS Form 3526, September 2007



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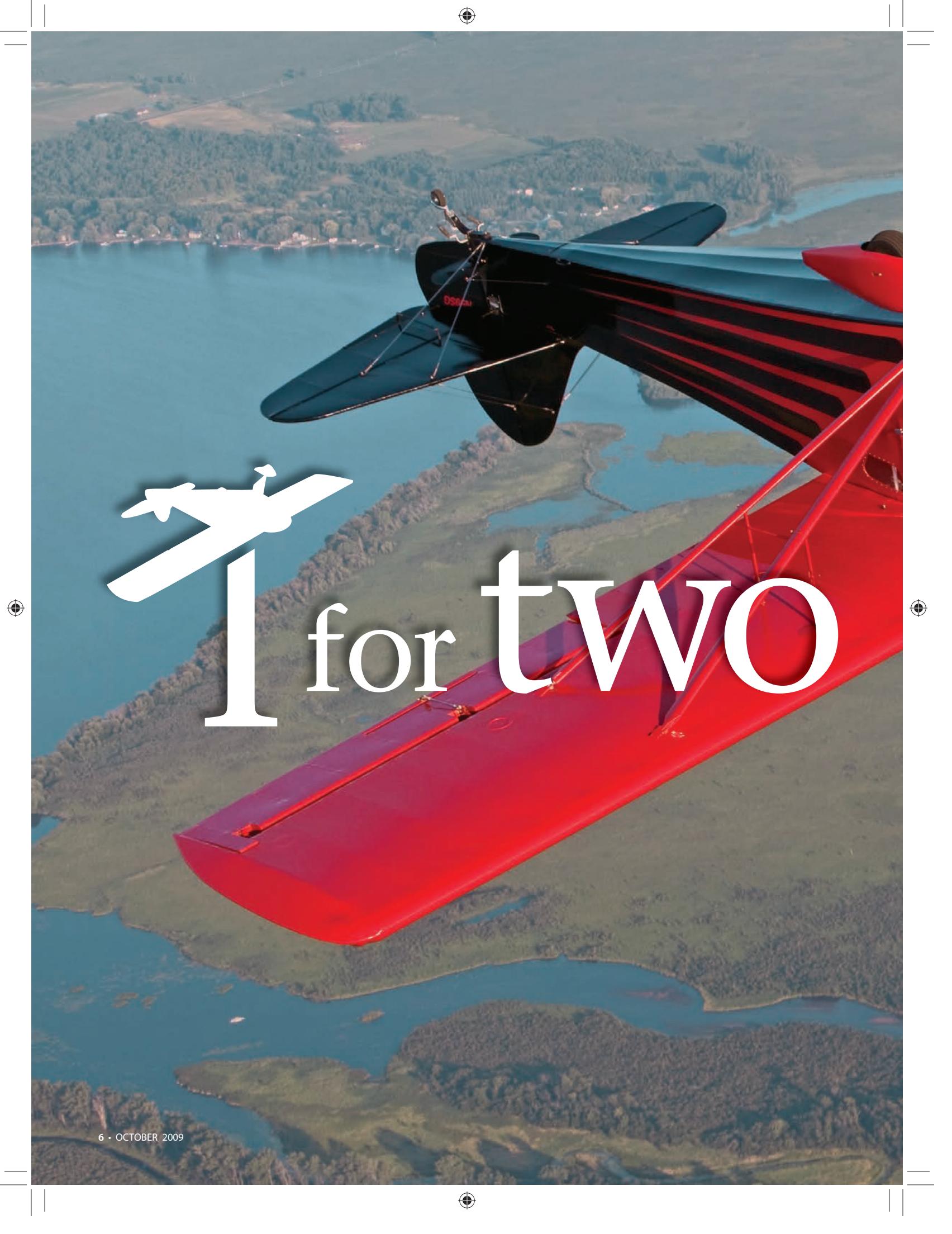
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An aerial photograph of a red biplane flying over a large body of water and a dense forest. The plane's wings are visible, and the landscape below shows various islands and greenery.

1 for two

... or fun for one

Budd Davisson

For a farm kid from Oskaloosa, Iowa, Erik Edgren has certainly led an interesting aeronautical life. And, if he has anything to do with it, he and his Steve Givens-built clipped T-craft are about to make it even more interesting. It's been a long time coming.

Erik says, "I lived on the family farm and Dad had a Mooney and a BC-12D Taylorcraft. So, it was only natural I'd learn to fly. In fact, Dad said that I spent so much time flying with him, that I was ready to solo by the time I was 8. Dad even built me a seat and rudder extensions so I could see out while controlling the airplane."

A chance flight with Dick Willetts, a local air show legend, set much of the direction for Erik's life.

"Dick was one of the smoothest air show pilots you've ever seen," Erik says. "He did a comedy Cub act in which he'd work it right down to where the airplane had grass stains on the wingtips. When I was 13, I went for a ride with him and that's what got me started on wanting to be an air show pilot. He was, and is, my hero. And he's still at it. He's 82 years old now and still a wildly active pilot."

"Dad taught me spins," continues Erik. "And, when I was a stupid, bulletproof teenager, I taught myself acro in a stock BD-12, [with] a copy of *Conquest of Lines and Symmetry* tucked under my leg. I was a damn fool, and I definitely don't recommend it."

Erik soloed, got his certificate, and then did something a little unusual. He explains: "I bought a clapped-out Cessna 310 with bad motors for a song. I rebuilt the motors with help from an IA friend (Bill Patterson), and worked on getting all of my ratings. That winter, which was 1993, was a particularly cold one in Iowa, and I was trying to pay the bills by working at the local FBO as an instructor/ramp rat/toilet cleaner. I answered an ad from North AmErikan Top Gun, where Bruce Moore was looking for another pilot to work into his T-6 ride business. He was working three airplanes and based in Florida. Considering I was freezing to death in Iowa and here was a chance to fly T-6s, there really wasn't much doubt that I'd take the job, if offered."

Erik left the wind-driven snow of Iowa for the sun and surf of St. Augustine, Florida, although he wound up in Michigan with NATG on the road, where he hopped rides in T-6s.

"I started looking around for work. I went to interview for a job flying DC-3s, but that didn't work out. However, right next door was a flight operation flying Learjets and Hawkers, and one of their pilots had just quit. So, for the next two years I got OJT in the right seat of a Lear."

Although the exotic hardware was interesting, it had turned flying into hard work and taken the fun out of it, so it was back to the farm, where he could fly how, and when, he wanted. Then another winter rolled around.

"... I quit flying to concentrate on my new family and farming. I thought I was doing pretty well until a friend dropped by to take me flying."

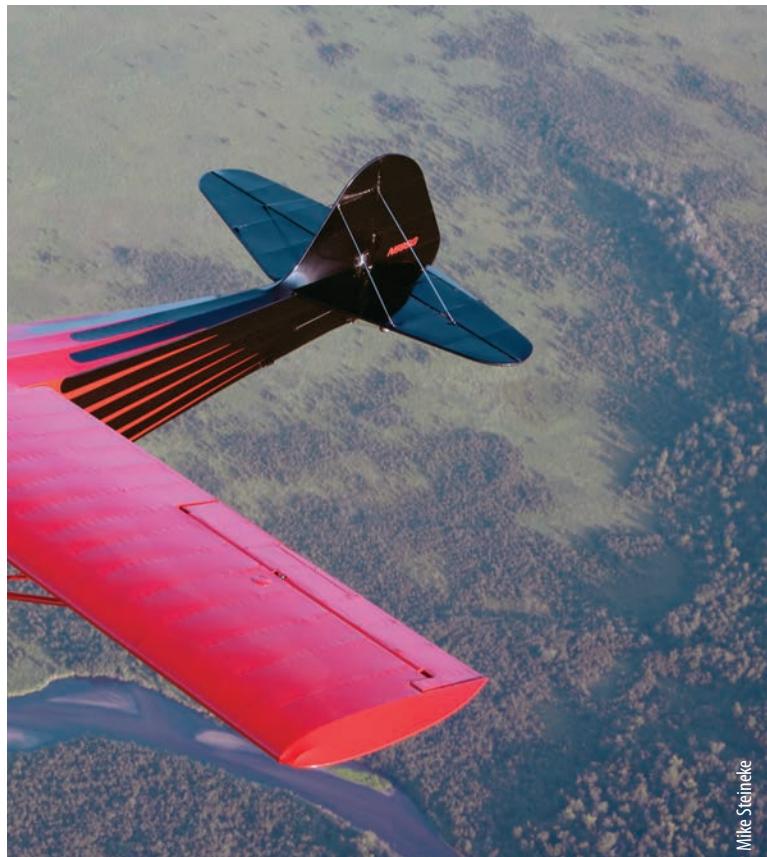
"This time I went to Livermore, California, to teach acro, and while I was there, Bruce Moore called and wanted me to come fly T-6s for him again, which turned out to be a very fortunate thing: the very first passenger I hopped had a beautiful girl with him. And I've now been married to that beautiful girl, Stephanie, for 12 years."

Okay, so now a young guy who has been playing with fun airplanes gets married. We all know the next chapter in this story, don't we? He had an I'm-married-now-and-have-to-be-responsible attack of conscience and sold the Pitts he had been air showing.



Photos of his wife and son serve as, "Don't do anything stupid gauges," according to Erik.

"Well, that's not entirely the truth. I wasn't being *that* responsible. I was flat broke and the Pitts had cracked spars, so basically I quit flying to concentrate on my new family and farming. I thought I was doing pretty well until a friend dropped by to take me flying. I had really been looking forward to it, but he had to leave because he had someone else with him, and I immediately started mopping around the house. Finally, Stephanie couldn't take any more. She cornered me and said, in no uncertain terms, 'I want you to go out and buy any damn airplane you can find and start flying again!' How's that for a great wife?"



Mike Steineke



Aaron Lurth

Erik puts the Continental 0-200 through its paces, but keeps the engine compartment spotless. **RIGHT:** Erik Edgren (right) plans to fly his Clipped 'T in air shows.



Aaron Lurth

Building a Clipped T-Craft, Steve Givens style

Mike Steineke

There are basically two recognized styles of clipped T-crafts: the Swick and the Cole conversions. The Swick is named for Jim Swick of T-Minus-Two fame, and the Cole is named for Duane Cole, the universally recognized master of small-box aerobatics.

To any who saw him fly, Duane Cole was an incredible change of pace. Most people are used to growling, roaring, snarling aerobatics with ever-increasing noise and altitude gains. Duane never hit more than 120 mph or more than perhaps 800 feet above the ground. He would do his entire show dead in the middle of air show center. At Oshkosh, for instance, wouldn't even come close to the end of the runways. He actually had to extend his show to make sure it covered the entire crowd line, since he could do his routine among the middle three taxiways.

Those are the kind of aerobatics Steven Givens was thinking about when he decided to build a clipped T-craft. But his would be neither a Swick nor a Cole conversion; it would be a Givens conversion.

Steve started with a 1939 fuselage. "That was all that was left after a high school trades class stripped it to use the parts for a homebuilt project," he recalls. Next, Steve found a set of stock T-craft wings that had been mangled in an accident. He says, "The spars were broken, but I was able to salvage and reuse all but three of the ribs.

I made all the rest of the fittings, the drag/anti-drag wires, root fittings, and anything else needed."



The wings became a combination of Cole and Swick—30 feet long, rather than the 27-foot Swick length—but using the Swick ailerons. Steve, who calls Anderson, Indiana, home, went with those ailerons because they were mass balanced and had servo tabs to lighten the stick forces. However, the control system itself was the cables and pulleys of Cole rather than the push-pull rods of Swick.

"A lot of my ideas came from spending some time at the EAA museum with a tape measure and camera, learning all I could from Duane Cole's airplane they had on display. I also borrowed a set of plans for each conversion from a friend and studied them."

The landing gear on Steve's plane is mostly Swick, which uses bungees rather than being welded solid the way Cole had his set up. Steve planned on flying the airplane with a passenger and landing on unimproved grass strips. Rigid gear would leave a lot to be desired in those situations.

The stock rudder and brake pedals are used in a unique fashion because the brake pedals use cables to actuate master cylinders that are cleverly hidden inside the gear leg fairings. The cylinders are easily serviced through inspection doors located on the inside of each gear leg.

The engine Steve originally put in the airplane was essentially a stock Continental C-90 that Steve had balanced and ported more to make it smoother than anything else.

"I really loved that airplane," Steve says, "but Erik's last call caught me at exactly the right moment, and my resistance was down. I was maintaining three airplanes at the time and really wasn't flying the T-craft much. Now, of course, I have a massive case of 'seller's remorse'! I really miss it."

It sounds as if Erik is now going to be getting calls from Steve asking if he can buy it back, so the shoe is on the other foot.

Erik bought a Luscombe, which satisfied his flying urge, but then the T-craft crossed his path. He recalls:

"I'm totally family-oriented for 362 days a year, but the other three are mine to spend at the Antique Aircraft Association fly-in in Blakesburg. I was walking the line there in 1999, and I saw this gorgeous, I mean really gorgeous, clipped wing T-craft. I was totally smitten. The owner/builder was Steve Givens, and even though I put on my best sad puppy-dog face, he still said no when I asked him if his airplane was for sale.

"I wanted that airplane so badly, you'll never know. It was exactly what I wanted to start doing air shows in again. I figured the crowds have seen enough zip-rockets, Extras, Sukhois, and such, and something like Duane Cole's old slow-speed T-craft show would be unique."

"I figured the crowds have seen enough zip-rockets, Extras, Sukhois, and such, and something like Duane Cole's old slow-speed T-craft show would be unique."

T-craft or no T-craft, Erik went through quite a few more winter cycles, 10 to be exact, where he'd relocate somewhere to fly, including doing aerobatic rides in a 450 Stearman.

"Even though I was doing flying a lot, periodically I'd call and pester Steve about his T-craft. That would let me do 450 Stearman type aerobatics at about a quarter the price so I could actually afford to fly it. The pestering went on for about 10 years, then last fall, I found Bud Dake's



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old clipped-wing Swick T-craft, and it was for sale. The Swick conversion gives 27-foot wings, while the Cole conversion, which is what Steven Givens had built, are 30 feet long. I was just about ready to buy Bud's old airplane, when I gave Steve one last call, and he totally surprised me by agreeing to sell it to me. Boy, am I glad I called!"

"The instant I started flying the airplane, I knew I'd made the right decision. Also, it's set up to be flown single-place in the middle of the seat or flown two-place by just sliding over, which lets me take Stephanie or John, my son, up with me."

Even the so-called perfect airplane isn't generally perfect, and so it was with the Steve Givens clipped T-craft.

"It had no inverted system at all, and to do the kind of aerobatics that I wanted to do meant spending a lot of time hanging from the belts, so I had to have full inverted capabilities. About that time we were coming into our season, and there was farm work to be done, so I wasn't going to be able to do the engine work myself. Giles Henderson suggested I talk to Greg Rhodes in Mattoon, Illinois. Greg is a machinist in addition to his day job, and he said he'd install a Christen inverted oil system at his normal hourly rate, which is quite reasonable. He installed an Ellison throttle body and a full Christen

system including the typical slobber pot and firewall-mounted check valve."

"I still have a few things to do to it," he says, "like changing out the seat belts to something that will actually keep me in the seat. And the prop is something I'm still struggling with. I got a composite prop from Mike Demuth, but it was pitched so fine that I ran into a nearly solid wall at 130 mph and needed to dive like a Stearman to get the numbers I needed for some of my maneuvers, like a vertical roll. Mike, however, is a stand-up guy, and he went above and beyond and refunded all my money."

"For a while I was using a borrowed Cessna 150 prop, which worked okay, but right now I'm hanging the O-200 out of our Luscombe on it, so I'll probably end up with some weight in the tail, as much as I hate it."

So, now that his dream plane is finished, what's next?

"That's easy: find the time to practice and practice a lot. My goal is to put together a unique comedy act, both power-on and dead-stick, and combine that with really good, Duane Cole style aerobatics. I want to stay right in front of the crowd and fly a tiny little box like he used to do."

It looks as if the next time the snow starts to fly, the aerobatic types at St. Augustine, Florida, can expect to see a little red airplane working its way south over the northern horizon. That would be Erik seeking out the sun and an empty aerobatic box. 

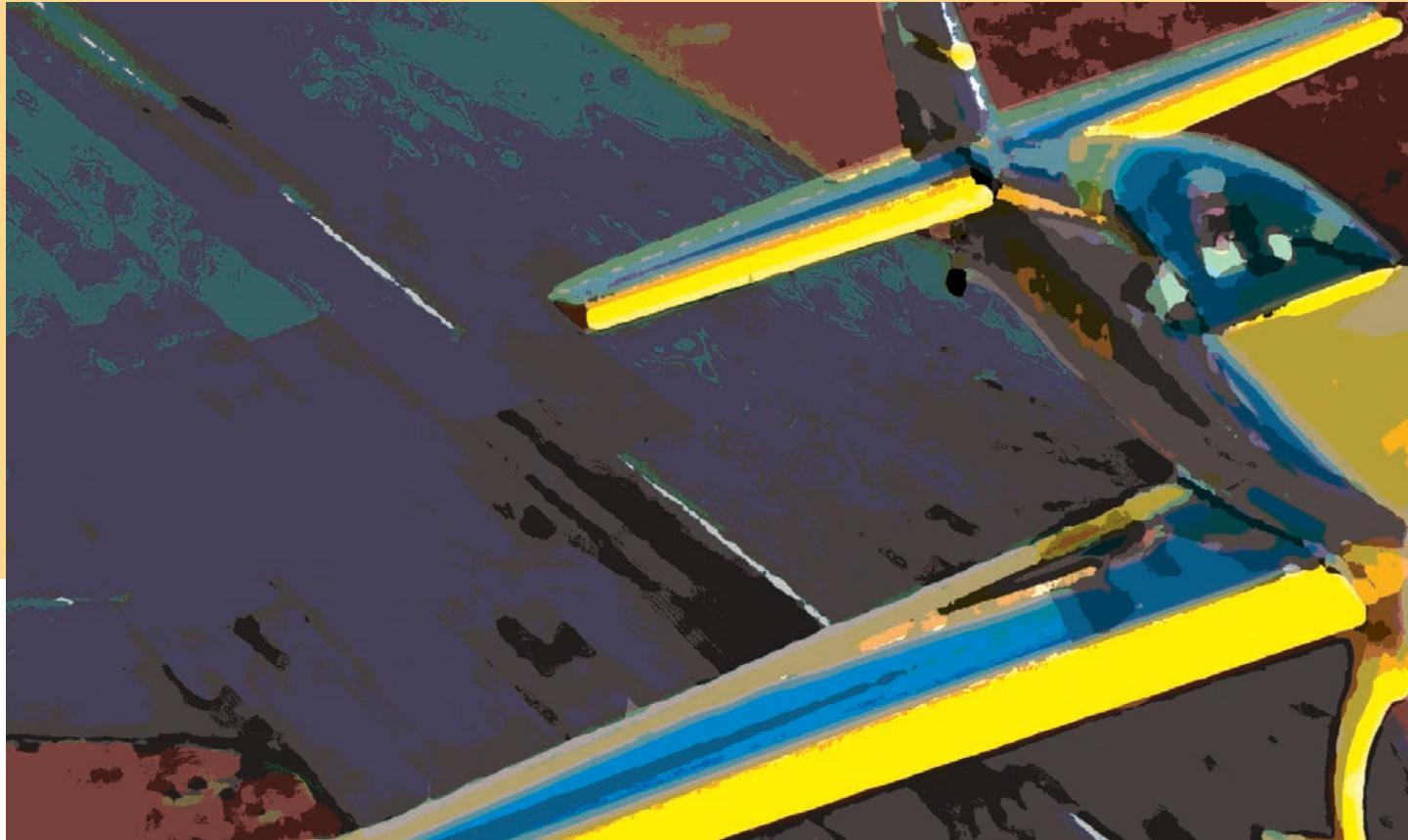
Aaron Lurth



Making Safer Takeoffs

Rod Hector

Lining up on the runway and pushing the throttle forward in a modern aerobatic airplane is an exhilarating experience that never seems to get old. The overabundance of horsepower and the ability to climb out at an obscene angle is a great way to demonstrate one of the highest-performance maneuvers of the entire flight. But do you really know how to handle that much horsepower? Have you ever really thought about what would happen if you lost an engine right after takeoff? Standing on the ground with a critical eye, you can easily spot those who haven't.



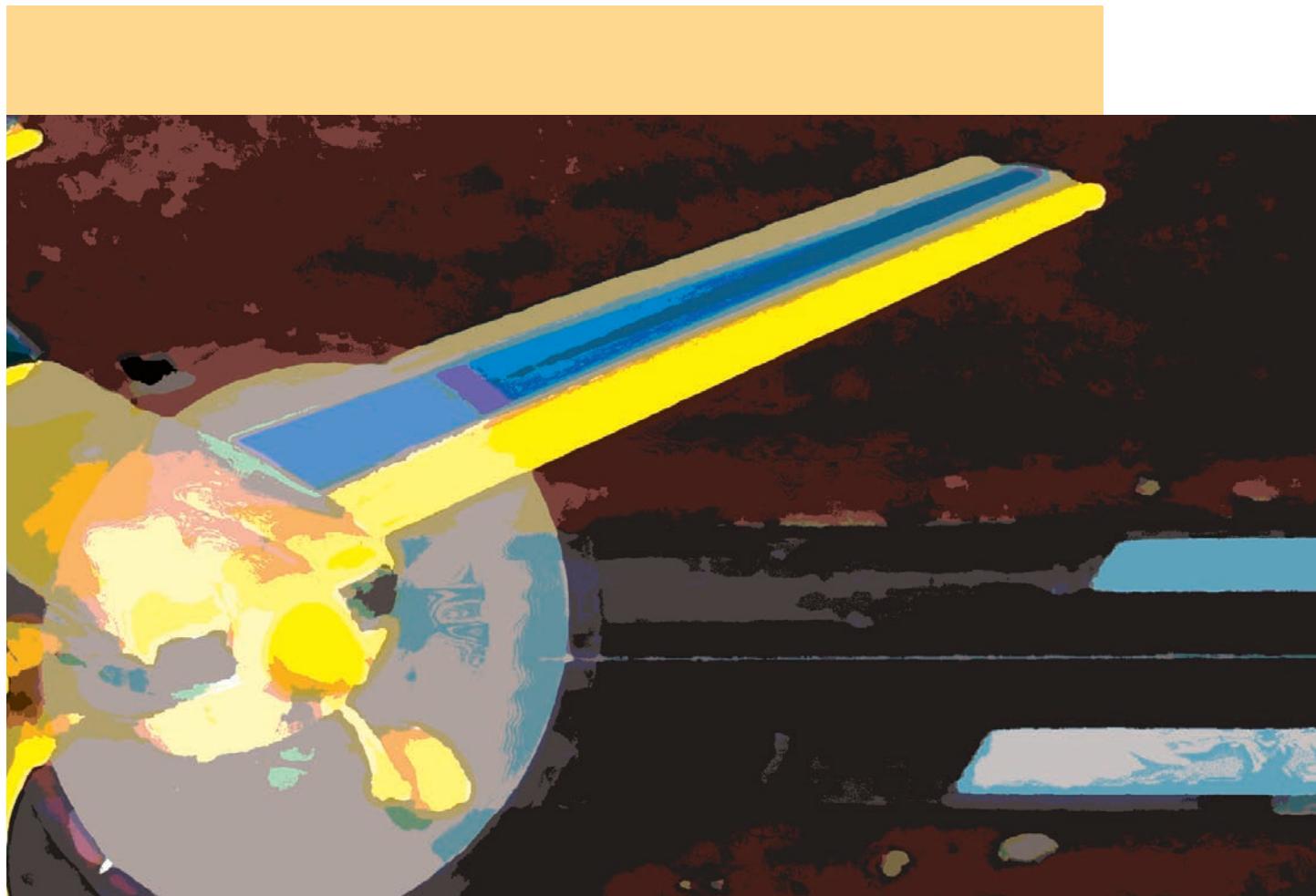
As aerobatic airplanes have become more powerful over the years, excess horsepower has seduced many aerobatic pilots into flight profiles that will not tolerate an engine failure. If casual observation is any indication, many aerobatic pilots climb steeply right after liftoff in their quest for altitude, perhaps guided by the thought that altitude is their friend in case of an engine failure. That powerhouse up front gives you a choice of climb angles not available to lesser aviators, but it may also allow you to box yourself into an unrecoverable situation if the engine suddenly conks out close to the ground.

Aerobatic pilots are certainly no strangers to energy management, as evidenced by the brutal tradeoffs between altitude and airspeed during a "normal" flight, but energy management during critical phases of flight close to the ground is especially important. In case you need a reminder, your primary task whenever your wheels leave the ground is to return safely, and the biggest impediment to that is an engine failure right after takeoff. How you manage your energy right after liftoff will determine if you have a fair chance of walking away, and believe it or not, establishing your glide speed will turn out to be your biggest challenge. What is needed is an established climb-out procedure that maximizes your airplane's climb capabilities, yet still provides for an escape plan.

"...occasionally someone will climb at best angle as a crowd pleaser."

To devise such a plan, let's first review some important airspeeds and how they are established. We'll use a Pitts as our example. The best rate-of-climb airspeed (V_r) provides the maximum difference between power required for level flight and power available. This speed is near the point of least drag and the point of max thrust horsepower... raising the nose and going slower will reduce the vertical component of velocity, while lowering the nose and going faster will waste horsepower due to excessive drag. The Pitts S-2A and S-2B climb at 90 to 95 mph for V_r , even with a significant difference in horsepower. It seems reasonable that a climb at best rate just after liftoff would be the most efficient way to increase energy...and it is, but it does not provide an escape path, as we shall see later.

Most aerobatic pilots climb at best rate, since they are looking to get to altitude as soon as possible, but occasionally someone will climb at best angle as a crowd pleaser. An aircraft's best angle of climb (V_x) is dependent on excess thrust over and above that required for level flight and is even steeper than V_r because the thrust from a propeller is highest at low airspeeds. For example, a 260-hp engine with a two-bladed prop generates 900 pounds of thrust at 70 mph and 780 pounds at 90 mph, a difference of 13 percent. Higher thrust now dictates a higher climb angle, which relates to a lower climb airspeed...75 in a Pitts S-2A and 82 in an S-2B. The climb angles for best rate and best angle are extreme for aerobatic aircraft: around 30 degrees minimum, and much higher with more horsepower.



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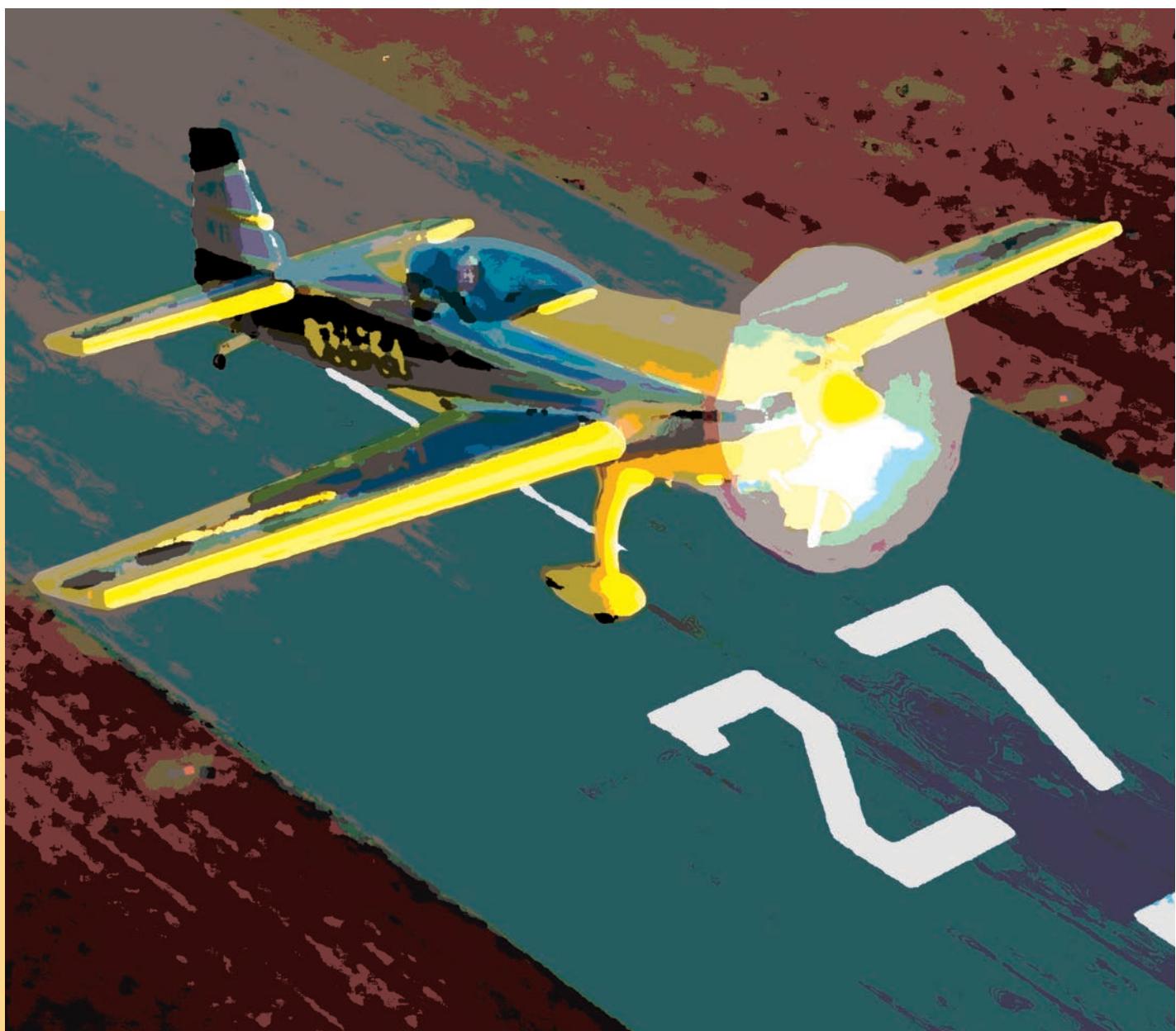
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Steep climbs also, in effect, transfer more of the lift from the wings to the engine and prop. A 15-degree climb in a 1,500-pound airplane will produce a 260-pound component of gravity opposite the aircraft's thrust (i.e., in the "drag" direction). However, a steep climb of 30 degrees will result in a 750-pound component of gravity, effectively giving you an extra 490 pounds of "drag." Not a problem when power is available, but certainly an issue if you suddenly have to establish a glide.

Oh, there's one more speed that's important right after takeoff: the best glide speed, because that's what you'll quickly be looking for if the engine quits. This airspeed is determined by the maximum ratio of lift over drag, or L/D max. In a Pitts S-2A and S-2B, best glide is 100 mph and is the minimum drag airspeed. Note that it is not the same as the airspeed for max rate of climb; it's faster. Also note (and this is a big note) that a wind-milling prop will add considerable drag; in fact, it's about the same as deploying a drag chute with the same diameter.

Just for fun, let's say you are at 300 feet above ground level (AGL) after takeoff and the engine quits cold (could happen...really). Your airspeed is 90 mph (best rate) and your climb angle is 30 degrees. Wait about two seconds, because that's your typical reaction time in spite of what you might think; before you have a chance to get the nose down, your airspeed will bleed to 65 mph, largely due to the "drag chute" effect of the wind-milling prop along with that extra 490 pounds of force pulling straight back on the tail. As you shove the stick full forward, the airspeed will continue to drop back to around 60 mph. Now you are sinking and stalling and maybe even starting to spin because as you push hard, the wind-milling prop is still acting like a gyro and yawing the airplane to the left.

Now look at your energy state. You have no airspeed to work with, and you are going down rapidly at well below your glide speed...remember, it's 100 mph. You need a descent angle of about 30 degrees to start building



airspeed (remember your “drag chute” and the hefty use of elevator and rudder, which right about now are acting like speed brakes), so you will have to de-rotate a full 60 degrees with full down elevator, all while you are sinking fast. Your airspeed will stagnate while you push—like someone just dropped your airplane out of the sky—and even though you’re being pulled downward rapidly, the airplane won’t respond and you can’t seem to build airspeed fast enough. You’re going through 150 feet now with the ground coming up fast, and if accident records are any indication, you will try to keep the nose up and will stall before you slam into the ground. Your only other choice is to keep the nose down until the flare, and I use the term loosely, because you will not have anywhere near enough airspeed to bring the nose up more than just a few degrees. Either way, you’re out of options and you will hit the ground at more than 20g’s, plenty hard enough to break your back.

In a nutshell, excess horsepower can get you in a tight spot if you are trying to gain altitude rapidly. You wouldn’t have this problem in a Cherokee because you would be unable to climb at such an extreme angle to get in as much trouble. When it coincides with an engine failure, the extreme climb angle results in three serious issues:

- Rapid loss of airspeed.
- Large de-rotation required to get the nose down.
- Climb speed on the wrong side of glide speed.

So what is a good escape plan? How can you maximize your airplane’s performance and still be able to recover from an engine failure? Let’s say your best glide speed is 100 mph, and you need that as soon as you de-rotate, so you need to be on the high side by about 20 percent to give you a fighting chance. More horsepower will dictate a steeper climb angle and will require a greater buffer. Too much airspeed will hurt your altitude gain, and too little will require a steep descent to recover the speed. Go practice it at altitude by pulling the power to idle, waiting two seconds, and evaluating your airspeed and altitude loss. Do it a few more times and you will quickly be able to determine the appropriate airspeed and technique that will provide you with maximum altitude gain and enough reserve airspeed to arrive at best glide speed.

Now you can take that information and establish a takeoff procedure to use for every departure. Just after liftoff, stay in ground effect until you have established your new climb-out airspeed...one that gives you an escape route. Climb at this speed until you reach a safe altitude for recovery from a sudden engine failure, usually about 300 to 400 feet depending on how severe your climb angle is. At this point, you can bring the nose up higher and continue at best rate. This flight profile will permit a safe glide from an engine failure at any point after liftoff.

*“...excess horsepower
can get you in a tight spot
if you are trying to gain
altitude rapidly.”*

I know what you’re probably thinking now: “...nice discussion, thanks for writing, but it probably won’t happen.” Au contraire...it happened to me in a Pitts; a plugged fuel vent line caused a total engine failure at 300 feet shortly after takeoff while climbing at best rate, and I barely survived the crash, with some serious injuries (yes, it broke my back). A passenger up front would not have survived, and it was fortunate for me that the smashed fuel tank didn’t explode, because I was trapped in the aircraft for an hour and soaked with fuel. Point is, the unexpected does happen, and your survival may depend largely on how your everyday flying discipline provides you with an escape route.

Of course, this now begs the question, Why does everybody climb out so steeply if it actually makes more sense to have some extra airspeed? Well, partly because it seems to be a time-honored tradition

and partly because it’s just plain fun. Mostly, however, it’s because excess horsepower has seduced many aerobatic pilots into incorporating normalized deviations into their flight profiles.

Normalized deviations refer to operations that pilots conduct on a regular basis that deviate from normally accepted procedures, but because everybody does them and nothing ever happens, they become the new norm. They are part of an accident chain that is patiently waiting for all the planets to line up for a mishap to occur. You see other pilots do them all the time: skipped engine runups, intersection takeoffs, minimum fuel operations, excessive g forces, low-level aerobatics...the list goes on and on, but the common threads are always overconfidence and complacency.

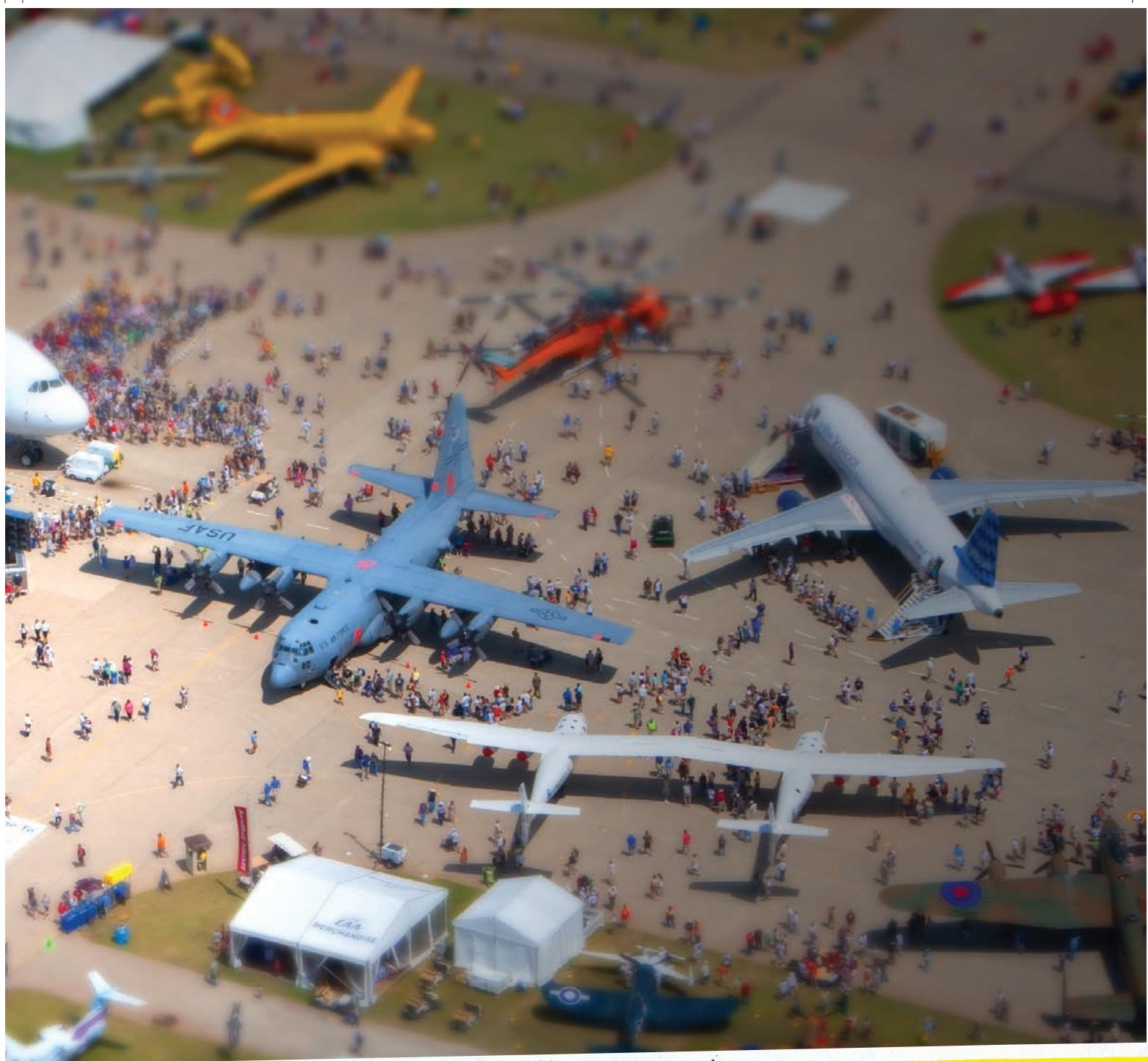
Normalized deviations are so pervasive that many pilots never give them a second thought until something regrettable happens. In fact, the easiest way to detect one is to imagine a mishap, like, say, running off the end of a runway and then thinking how stupid you would feel later when the FAA finds out you didn’t know you were overloaded because you didn’t bother to check the density altitude and calculate the takeoff distance because, well...it was inconvenient.

Steep climb-outs in aerobatic airplanes are a normalized deviation. All that horsepower is a setup for a flight condition from which you cannot recover, but don’t just take my word for it. Get some altitude someday and try it...even when pulling the engine back to idle power, you will be in for a surprising altitude loss, but nothing compared to a surprise engine failure. Armed with that knowledge, don’t keep normalizing it. Recognize a steep climb-out for what it really is: a deviation from established safe procedures. Construct your own takeoff profile to use your energy wisely. Observers may then recognize you as one who really does know how to handle a high-performance airplane. 

Rod Hootor is the manager of production flight test and flight sciences for Bombardier Learjet in Wichita, Kansas.



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Chuck Arron performing aerobatics in the Red Bull Helicopter.



Phil High

Aerobic pilot Jill "Raggs" Long sharing her passion for aviation.



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A Pitts S2B sparkles in the AirVenture sun.



Reggie Paultk

Attendees admire the aerobatic mounts at IAC headquarters, next to AeroShell Square.



DeKevin Thornton



Smoke 'em if you got 'em . . . at the air show.

Reggie Paulk



Touring the cavernous interior of the A380 Airbus.

Phil High



The Liberty parachute team thrills the crowds.

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Embry Riddle Aeronautical University's "mascot."



The Collaborators aerobatic team over lake Winnebago.

Chris Miller



Bill Finagin speaks at an IAC forum.



Tyson Rinnerer

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A patriotic Extra 230 at rest in the aerobatic paddock.

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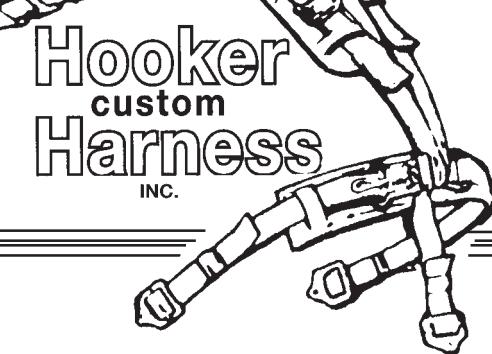
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Just for Starters

Greg Koontz

More thoughts about instructors

Flight instructing is a peculiarly upside-down profession. I'm not talking about the aircraft attitude for our kind of instructing, but the place flight instructing has in the aviation community. Look at it. Instructing is the unwelcome plight of the beginning pilot who is often forced to work the profession to gain the experience needed to qualify for a real flying job!

Isn't there something just a little flip-flopped here? Why do we place our training in the hands of someone who is just getting this stuff figured out for himself? A person who may or may not have any teaching skills in the first place. Shouldn't we be riding in a plane next to the "old pro from Kokomo" who has a lifetime of flying experience to share? But the truth is that pilots start out in aviation with no experience, so they teach. Then they get a job flying charter in ill-equipped machines that have only the most basic of instruments and an antique autopilot with a permanent INOP label. Next they land a little

better position at a corporate job that has an aircraft that at least burns kerosene (and contains a working autopilot). Eventually they move on to big corporate or airline jets that have all the bells and whistles needed to fly themselves.

So, as they make this progression from the perceived bottom to the top, they find themselves starting out needing the best flying skills to make the least money and finally retiring to make the biggest paycheck using the minimum amount of their flying expertise. Go figure. The truth is that we're all probably only one Intel chip away from turning our fancy flying machines into George Jetson's self-flying scooter. Who's going to get paid what to fly that?

If we lived in a real world instead of

"bizarro world," flight instructors would be the experienced pilots enjoying the fruits of their years of labor as they teach newcomers the ins and outs of the aviation world. A low-time pilot trying to gain flying time by teaching people

how to survive up there would be unheard of. What you would have would be your own Yoda sharing the ways of the sky. You would be sitting around listening to why you should control your airspeed by way of an interesting anecdote from a long-past experience. You wouldn't be thrown a book and be told to read chapters 1 and 2 on basic aerodynamics. You would be listening to an interesting lecture full of memorable analogies and poignant examples. Your teacher would never cancel your lesson for a chance to ride copilot on a local corporate flight. Oh no, your instructor would already have more of that experience than would ever be needed. Besides, the instruction you receive would be so valuable your instructor would be making enough dough to have no need for those distractions. But, of course, all that is if we lived in a normal world.

Instructing for most pilots is just a necessity; a means to an end. For most it is a passage through which they must go to be accepted into the next level. But for some, and only a few, it is a great way to experience flying. But it is great only to those who love to teach. You have

"But it is great only to those who love to teach."

to get the satisfaction that comes with seeing a person achieve things you yourself felt were rewarding to achieve. For this type of instructor, teaching a person to do a slow roll correctly is as rewarding as doing it right herself.

That is who you want teaching you. If you had one of those great teachers during your initial flight training, it would be great to use him for aerobatics, too. But the problem is that particular instructor might not be an aerobatic instructor. You might be back on the search. But you *must* search because aerobatics are just as important as any other flight operations. Learning it right the first time is essential to your aerobatic future!

Being a good aerobatic instructor demands more than the typical instructing experience and will require a good résumé of aerobatic achievement. A logbook like that takes time and money to accomplish. I would be highly suspicious of anyone who didn't want good compensation for her teaching abilities. It is a safe bet that someone who says "I'm just doing it for the fun of it" is more likely someone still looking to build her experience. There is nothing really wrong with building experience as long as you know what's going on.

There is a good reason why the terms *amateur* and *professional* conjure up completely different images. The good aerobatic instructor needs not

only to charge a fair amount of compensation for his efforts to be that good instructor, but should also respect the profession enough to hold a professional standard. Someone who thinks he is doing anyone a favor by giving his skills away hurts the ability of a conscientious new instructor to compete, survive, and grow. That kind of naïve attitude damages the quality of the industry for everyone. As instructors or students we all are guardians of our industry.

The real truth is your choice aerobatic instructor really doesn't need to be a retired jet-jock or graying champion. Look for someone with real aerobatic experience, a person with a reputation for being a true teacher, and definitely someone you think you're going to like. Be ready to travel; it could be better to take a little trip than to compromise quality for convenience. And for goodness sake, don't shop price alone. Great training is always a bargain! ☺

Greg Koontz has been involved in sport aerobatics since 1971. Greg flies air shows sponsored by American Champion Aircraft, is an aerobatic competency evaluator for the International Council of Air Shows, operates Sky Country Lodge aerobatic school, and is a Master Instructor-Aerobatics. Visit www.GKAirShows.com. Please send your stories and ideas to Greg@GKAirshows.com.

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Practice/Registration: Thurs., October 8 - Fri., October 9

Rain/Weather: Friday, October 9

Power: Primary through Unlimited

Location: Farmville Regional Airport (KFXV):

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Tel.: 434.251.9467 • E-Mail: Michael.Davis@areva.com

Website: www.iac19.org

Borrego Akrofest (Southwest)

Friday, October 16 - Saturday, October 17, 2009

Practice/Registration: Thursday, October 15

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Location: Borrego Valley Airport (L08):

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Website: www.iac36.org

Rocky Mountain Invitational (South Central)

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Practice/Registration: Friday, October 9

Gliders Categories: Sportsman Intermediate

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Location: Lamar Municipal Airport (KLAA): Lamar, CO

Contest Director: Jamie S. Treat

Tel.: 303.648.0130 • E-Mail: JamieTreat@Q.com

Website: www.iac5.org

Bear Creek Boogie (Southeast)

Friday, October 23 - Saturday, October 24, 2009

Practice/Registration: Thursday, October 22 - Friday, October 23

Rain/Weather: Sunday, October 25

Power Categories: Primary Sportsman Intermediate Advanced

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Allen Silver

Ask Allen

A master rigger answers your questions about parachutes.

By Allen Silver, IAC 431160

Q: How fast do I decelerate when I bail out?

A: This question often comes up. Pilots ask a lot of *what if* questions. Like *what if* the wings of my aircraft come off and I just become a very fast falling lawn dart. After a high speed (or any speed) bail out, do I need to wait before I pull the rip cord, to prevent possible damage to my parachute when it's deploying?

The best advice I can give you is that once clear of your aircraft, you need to locate your rip cord and pull it right away. You may be close to the ground where time is critical and waiting may cost you your life. We've all seen cartoons of Wile E. Coyote leaving an impression in the ground after a long fall and then getting up and shaking himself off. In real life that doesn't happen. You need to get under an open parachute as soon as possible. Most bailouts occur at lower altitudes where waiting to slow down before pulling your rip cord may leave you as a lasting impression in the ground. Do not think you have to wait before pulling your rip cord. That's why I've come up with the attached graph that gives you a rough idea of just how fast you slow down.

I don't want to hear from you engineers out there picking it to pieces as not quite accurate and bombard me with all sorts of formulas. I actually had a sky diver friend who just happens to be a test flight engineer for a small company in the Seattle area come up with this graph. Originally being an engineer, he came up with a graph that only Einstein and other engineers could decipher. While back at Oshkosh we sat down over a couple of beers and came up with this graph depicting **airspeed versus time for deceleration**. I figure that if I can understand and make sense of it, most everyone else could, too.

What became apparent is just how fast you decelerate once you bail out. Within just two to three seconds you typically slow by as much as 50 knots when bailing out at high speeds. It will take most of that time, if not longer, to look, find, reach, and pull your rip cord. What also was interesting was around seven seconds to about 11 seconds, when bailing out at higher speeds, you will start to re-accelerate slightly until you reach terminal velocity, which is about 110-120 mph. The chart is probably more

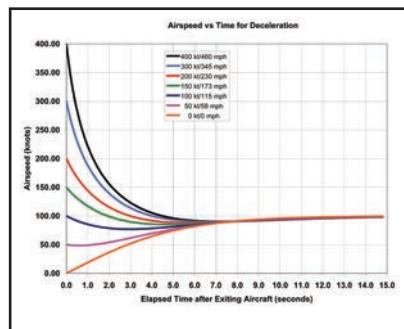
accurate if you're a sky diver and know how to get stable, but for the majority of you that is not an option. You need to concern yourself only with locating that shiny handle and pulling it like your life depended on it. Trying to get stable like a sky diver is not as important as finding the rip cord and pulling it. I don't care if you're on your back, spinning, tumbling, or are doing lomcevaks, **just pull your rip cord**; the spring-loaded pilot chute knows up from down, and within just a couple of seconds you'll be under an open parachute.

Q: What do plastic ties, tape, and Velcro have in common?

A: These are just a few of the items that I've seen used to attach all sorts of things to your parachute harnesses. Many could hinder or even prevent your parachute from deploying properly. Plastic ties are for garbage bags, and your parachute is not a garbage bag. Tape to hold things like glass cases, flashlights, or knives in place will eventually weaken the nylon it's touching. I've seen firsthand how creative pilots are when using the type of Velcro with the adhesive backing to attach items to their harnesses. Any type of glue will weaken nylon over time. After all, why should I consult a qualified rigger when I can save a few bucks and do it myself? Remember any type of glue/adhesive that comes in contact with any portion of your parachute assembly will cause damage over time. Even something as simple as some types of ink in marking pens can cause damage to nylon.

The bottom line is do not write on or attach anything to your harness without consulting your parachute rigger. Another good rule of thumb is do not attach anything to your harness above your chest strap. Many parachutes have flaps, particularly over the shoulder area, that must come open for your parachute to deploy properly. As I've stated before, what seems like a great idea and makes you wonder why no one has thought of it before, probably isn't. You do not need to nominate yourself for the Darwin Award.

I also wanted to take the time to thank all of you who attended my bailout seminars or came up to me and said hello at Oshkosh.





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