
SPORT
Aerobatics
August 2015
OFFICIAL MAGAZINE of the INTERNATIONAL AEROBATIC CLUB
IAC
INTERNATIONAL AEROBATIC CLUB
EAA
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2016 SHELBY GT350® MUSTANG

THE LEGEND CONTINUES

The all-new Shelby GT350 builds on Carroll Shelby's original idea – transform Mustang from a great everyday car into a dominant road racer. Shelby GT350 Mustang is the most track-capable production Mustang ever built.

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Pre-production vehicle shown. Available late 2015.

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SPORT Aerobatics

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I watched Jimmy (Franklin) fly this airplane many, many times. I was so flabbergasted at this amazing airplane that was just ridiculous and funny. It brought tears to my eyes.

—Jeff Boerboon

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A Pitts S-2C prepares to take off from Falcon Field at the United States Air Force Academy as part of Chapter 12's Ben Lowell Aerial Confrontation.

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PUBLISHER: Mike Heuer

IAC MANAGER: Trish Deimer-Steineke

EDITOR: Reggie Paulk

CONTRIBUTING AUTHORS:

Gary DeBaun
Phillip Gragg
Mike Heuer
Reggie Paulk
Gordon Penner
Allen Silver
Beth Stanton
Dave Watson

IAC CORRESPONDENCE
International Aerobatic Club, P.O. Box 3086
Oshkosh, WI 54903-3086
Tel: 920.426.6574 • **Fax:** 920.426.6579
E-mail: *reggie.paulk@gmail.com*

ADVERTISING
Vice President of Business Development:
Dave Chaimson *dchaimson@eaa.org*

Advertising Manager:
Sue Anderson *sanderson@eaa.org*

Business Relationship Manager:
Larry Phillip *lphillip@eaa.org*

MAILING: Change of address, lost or damaged magazines, back issues.

EAA-IAC Membership Services
Tel: 800.843.3612 **Fax:** 920.426.6761
E-mail: *membership@eaa.org*

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LETTER TO THE EDITOR
COMMENTARY / **GLEN BECKER**

Reggie, thanks for all the time and attention you put into *Sport Aerobatics*.

I'd like to add my feedback to the, hopefully legion, responses you're getting regarding some recent how-to-fly articles.

John Morrissey's "The Five Sequential Steps to Competition Aerobatics" (January 2014) has been pinned within view of my office chair since before I had even flown my airplane. What a wonderful blueprint! I'm using it to plan this project.

This article also made me realize my elevator trim doesn't have enough nose-down authority!

"Seeing the Perfect Maneuvers" by Dave Watson (March 2015) is a great breakdown of the competition (comp) turn, and his inclusion of things like his "big eyes mode" allowed me to start solidifying the beginnings of awareness that I'd felt creep into my practice but hadn't yet made sense of. (This article also made me realize my elevator trim doesn't have enough nose-down authority!) Gordon Penner's February 2015 article on the Sportsman sequence contained great detail on the roll, loop, and comp turn I'll need to start learning the basics. His intro to Alan's "sacred circle" and John's "deep focus" gems were the perfect amount of coaching detail to get me started without having to read every treatise on the subject first. (Though I already have Alan's Better Aerobatics, and it waits patiently for me to get to it.)

I attended my first competition yesterday (Wildwood Acroblast) as a volunteer and had a great time. I hope to make Kathy Jaffee my first flying competition, with more on the calendar next year as I can carve out more full weekends. And I'm excited to take the Pitts to Oshkosh this year!

Thanks again. ***IAC***

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

MIKE HEUER
COMMENTARY / **IAC PRESIDENT, IAC 4**

Please send your comments, questions, or suggestions to: *mike@mheuer.com*

The team

As I write this August column on an accelerated deadline schedule due to the commitments we all have at EAA AirVenture this year, it is 20 days from this huge event in Oshkosh, Wisconsin, and it will be over by the time you receive this magazine. We will have full coverage of the IAC's activities at AirVenture, including the Pitts anniversary celebrations. The extensive renovations to our IAC Pavilion and the preparation of the Pitts exhibit have occupied a huge amount of time on the part of your officers, directors, staff, and other volunteers, and I trust we will all come away with special memories of this important event.

I personally have been attending the EAA fly-in convention since 1963, and it was that first year, when I was only 13 years old, that I saw the first plans-built Pitts, Pat Ledford's N8L that is still active today. Two years later, again at the EAA fly-in, Bob Herendeen was introduced to the sport aviation world, and his performance in N66Y that year was something I will never forget. Bob took the airplane to Moscow the following year for the World Aerobatic Championships, and he and that S-1C changed the competition world.

Fast-forward five decades, and once again we have a U.S. Aerobatic Team competing at the World Aerobatic Championships, this being the 28th and to be held in Châteauroux, France. When this magazine reaches your mailbox, the team will have already completed several days of practice in Albert, France, and will be moving on to Châteauroux on or about August 16.

The United States has been represented at all 28 of those championships over the last 55 years, starting with Frank Price's solo entry in 1960 in Bratislava. That iconic picture of Frank, standing with our flag alongside a large Soviet team brandishing the hammer and sickle, is something that has been an inspiration to many team aspirants over the years.

Last year the IAC resumed full responsibility for all of the teams we send to world championships—Advanced, Unlimited, and Glider. In past years, our involvement has been limited to team pilot selection, and the fundraising and administration of the teams handled by separate corporate entities. This worked well for a very long time, but over the years, with change in personnel and a certain amount of burnout factored in, it no longer worked. Our letters of agreement were terminated, and we brought the teams fully back into the IAC family. We now select the teams at the U.S. National Aerobatic Championships and have taken on the full responsibility for their administration. Donations for the teams are now directed to the IAC—you can find a link on the IAC website for this purpose.

Because of the limited fundraising we have been able to do to this point, the U.S. Unlimited Team competing in France this year will be largely self-funded. Pilots have paid their own entry fees, which were more than $2,000, made their own arrangements and paid for shipping of their aircraft to France in containers, and funded most of their training. Thanks to a generous donation from an IAC member and director, the first training camp in Sebring, Florida, was paid for. But the two subsequent camps were financed by the pilots.

These men and women are much like Frank Price in 1960—who paid his own way to Europe because he strongly believed America should be represented in that first world contest. I hope and believe we can develop more effective funding programs for all of our teams in future years so that burden does not fall totally on the pilots. We have an obligation as a country and as an organization charged with managing and promoting aerobatics in the United States to see that this is done.

I know many competition pilots do not aspire to be world competitors. Many of us are limited by finances, family obligations, or time, and it is just not within reach. That said, I have known most of the team members personally since the 1960s, and I deeply admire their skills and dedication and look up to them as pilots and true athletes. Though the World Aerobatic Championships can seem far away and remote to many IAC members, it is one of those choices on the menu I have often written about for those who decide to try for it. That road begins at the local chapter level and regional competitions, and the IAC provides the structure and the rules.

Please join me in supporting our teams—I wish them safe flights and great success in France! *IAC*

Weekend With a Champion

Jeff Boerboon

by Phillip Gragg
IAC 431292

A sight you may never see: the Jack Link's Jet Waco during flight testing sans jet!

In late March 2015, John Klatt's Jack Link's air show team prepares for its second season campaigning the *Screamin' Sasquatch* Jet Waco across America. The final preparation and flight testing prior to the start of the season is being done in crew chief and builder Dell Coller's hangar in Caldwell, Idaho. Over the course of a week, Director of Operations Tim Jarvis and U.S. National Aerobatic Champion Jeff Boerboon work purposively alongside Dell to bring the Jet Waco to an even higher level of refinement and familiarity. During that time I was able to interview Jeff, Tim, and Dell about their experiences in air shows and aviation. Below is a portion of my conversation with Jeff. Look for further conversations with Jeff, Tim, and Dell in a future issue of *Sport Aerobatics*.

Phillip Gragg (**PG):** Why air shows and how is that an extension of your competition flying?

Jeff Bourboon (**JB):** I grew up in Minneapolis and first went to Oshkosh when I was 7 years old. Dad took me over there, and we got to see the likes of Art Scholl, Leo Loudenslager, Jimmy

Franklin. . .guys that sparked something in me. Now I'm flying something that one of my heroes, Jimmy Franklin, first brought to the air show industry. It's really surreal that I am the guy flying this airplane. I watched Jimmy fly this airplane many, many times. I was so flabbergasted at this amazing airplane that was just ridiculous and funny. It brought tears to my eyes.

So from early on it was air shows and aerobatics that really interested me. I went to University of North Dakota (UND) to learn how to fly. It's where I did my first aerobatic training in the CAP 10B. Then I was a flight instructor flying Super Decathlons. I spent the next 10 years building toward an airline job. I flew Grand Canyon tours, then commuter airlines, and got hired by a major airline in 1999, which then led to enough money to start flying aerobatics again. Between college and the majors, if I had 20 hours of aerobatics, that would have been a stretch.

PG: So, how many aerobatics hours do you have now?

JB: I don't keep exact numbers of just [aerobatic] hours, but if you add all the hours I have in all the airframes, you get somewhere around 2,000 hours in aerobatic-type airplanes. Of course a lot of that is cross-country. How many 17-minute flights do I have over the years training for competition flights and/or air shows? It's a lot.

Jeff describes the new flat black jet cowl as "sinister," but the show is about fun and wow factor. This is indeed a special aircraft.

One thing I like to tell people is there is no shortcut to getting to be an Unlimited pilot. Yeah, a lot of people can fly Unlimited, but to be competitive at a world level in Unlimited? There is no shortcut there. You start in the Super Decathlon, then you fly a Pitts, and maybe a more powerful Pitts, and then maybe an Extra 300L. Then you finally get to an Unlimited type of plane like the [Extra] 330SC that I'm flying now.

But you can't start in a 330SC. There are too many bricks in the foundation that aren't filled in if you go straight to an SC. I've seen this happen a number of times. People think that if they had an SC they're going to be able to win competitions. So they might have the appropriate bank account to get the SC, and then they get out there and get really frustrated and they quit. . .almost immediately. For 14 years. . .every year I see this.

I'm now in a position where people come to me and ask me, "How do you get there?" And I'll ask them what they've been flying and how long they've been flying these types of airplanes. And they might say, "Well, I bought an Xtreme, and I'm flying Sportsman. And I can't win anything, and I don't know what I'm doing." So I will say, "Maybe we should step backward, and get a Decathlon. Then maybe move from there." And that works.

In a Decathlon or an SC, you do a roll with the nose up and top side rudder and forward stick and a bunch of opposite top side rudder, and then you finish off. In an SC you do all those exact same things. Only you are rolling at 450 degrees per second. So each move goes by very quickly, but you still have to have them there. If you haven't built this foun-

Jeff cruises in the Jet Waco displaying its new livery, confidently taming the beast with one elbow out of the cockpit.

dation on lower-performing airplanes and stepping those skills up, you can't go straight to something like the SC. So this is my advice to competition pilots especially: Don't get in a hurry. There is no shortcut.

PG: You've obviously transitioned into a lot of different airplanes. What advice do you have for people transitioning into their first or third aerobatic airplane?

JB: That's a good question. I do fly a lot of different airplanes. Most people when they get in an airplane, they're afraid to fly slowly. The first thing I like to do in an airplane is get it below the stall speed and see what it will do. Then get it upside down and wallow around and search out that envelope...it's one of my favorite things to do because anyone can fly an airplane fast. That's easy. I can put anyone in an airplane, whether they've ever flown, and say, "Grab the stick," and they can fly it. Now you put that same airplane at 30 mph... what are you going to do? And that's where you start learning about an airplane.

The Jet Waco is a very fast airplane, but it's also very slow because it will sit in a hover. In order to be safe in this kind of machine, you really need to know *all* the limits. In this airplane the envelope is from 0-250 mph. In the 330SC, it's 220 knots down to -50. You have to understand that part of the envelope, too. We don't fly the Jet Waco backward, but in many aerobatic airplanes we do, and you have to be able to understand what's involved with that.

To transition into an airplane like the Jet Waco, for example, I was very involved with Dell putting the plane together. I was there *a lot* during the testing and refining when the plane was new, learning everything about it. This is quite a complicated machine. There are a lot of different petroleum products on the airplane, and there is a lot that can go wrong. For me, understanding *all* of the systems, even if it's a Decathlon, is really important.

When you talk about the kind of airplanes we fly, you have to go through all the scenarios that can happen. I've had a lot of different things happen to me flying aerobatics, like stuck controls, but fortunately, I've never had to get out of one. It's a good idea to sit and think sometimes, if something were to happen, how are you going to handle it?

While the *Screamin' Sasquatch* Jet Waco is a single place aircraft, a few lucky media will get to fly with Jeff or other team members in the Jack Link's Extra 300L.

The Jet Waco is a very fast airplane, but it's also very slow because it will sit in a hover.

PG: What's the Jet Waco like to fly?

JB: I asked Dell one time, if you could fly any plane that's ever been built, what would you fly? He said, "Jet Waco." It's that unique. It's one of a kind. To be here flying this airplane is truly something special.

PG: It's certainly aviation history. It really is.

JB: There's no doubt. And it's tied to one of the greats in our industry, Jimmy Franklin. This was his idea. We have the same engine...the airframe is a little bit different. What's cool about this air show, besides the Jet Waco, is you've got John Klatt Airshows, one of the industry-leading air show companies, with Jack Link's as the sponsor. They've got the *Screaming Sasquatch* mascot, and it's the perfect marriage of the branding, the sponsor, the air show company, and a one-of-a-kind airplane. I wouldn't change a thing.

PG: How does it fly with the jet off versus on? Is it similar to a 450 Stearman?

JB: Yeah, it's just like a Super Stearman. It's a big, old, heavy biplane. It's two entirely different machines. When you put the jet on it's as if there is no limit. You just point the thing straight up. I can get over 20,000 fpm when I first pull vertical, but it stabilizes at 7,000-8,000 fpm, and it just continues to go straight up.

PG: Have you shut the [Pratt & Whitney] R-985 down and run just the jet?

JB: No, never done that. We've tested all the way back to

idle, and it flies fine. This is a full-feathering prop, so if the 985 did fail, I would bring the prop back to a full feathered position and just fly it on the jet. That would not be a problem at all. If the jet flames out, I can run on the 985.

PG: What would IAC members want to know about this airplane?

JB: If you haven't seen Jimmy or this airplane fly, you can watch YouTube videos all you want, but until you see a 4,000-pound biplane hovering at 1,500 feet and accelerate straight up? You can't see that in the video. You have to come out and watch it.

PG: What are you doing in terms of energy and safety margins with some of these hovering-type maneuvers?

JB: I practice shutting the engine down. Two days ago I was in a hover, and I pulled the jet to cut-off to see what the effect is. You still have 1,500 pounds of thrust coming from the 985, and there is a lot of elevator authority, so it's just a matter of pushing the nose over a little bit and you just fly out of it.

PG: You don't have to shove the nose toward the ground?

JB: No. I lose on average 200-300 feet. From a dead hover, to shut-off, to flying away.

PG: What's a dream maneuver you're working on?

JB: One thing I'd really like to do is a waterfall figure (from the RC world) where you're hovering and you push the nose around all the way back into a hover. This is something I will work on this year if I can figure out how to do it.

PG: Is there anything that tops this as a dream aircraft? Leo Loudenslager's Shark?

JB: Yeah, the Shark would be cool. For sure. I'd like to fly any and every airplane. I've flown about 150 types of aircraft. Airplanes are amazing, and aerobatic airplanes are just a step above. *IAC*

Volumes of Information	
8 gallons oil (serviced at 5 gallons for air shows)	Pratt & Whitney R-985
4 quarts oil	GE CJ610 jet engine
30 gallons	Smoke oil
28 gallons	100LL fuel
56 gallons	Jet A

What to Expect

Aerobatics is precision flying, not stunt flying.

Aerobatics is about personally being the best you can be, about expanding your mental horizons, and about flying at a higher level, which improves safety. We at the International Aerobatic Club (IAC) believe in recreational aerobatics, which is what 80 percent to 90 percent of pilots want, but contest flying is a fun animal in its own right. It is like Olympic gymnastics, not like an air show. There is no smoke, and there are five grading judges and a chief judge.

There are trophies but no prize money. Contest aerobatics is an amateur event with a nice social component. Pilots compete in the air, not on the ground, so there are no strutting or head games. You can feel comfortable asking anybody anything. If they need to mentally prepare for the next flight, they will tell you. If they are out on the ramp walking through the sequence, doing what we call "hand-batics" or "the dance," they are preparing for an upcoming flight.

Each contestant in each of the five categories—Primary, Sportsman, Intermediate, Advanced, and Unlimited—flies three flights in front of the judges. The Primary, Sportsman, and Intermediate Known Compulsory sequences are designed within each country. The Advanced and Unlimited Known Compulsory sequences are the same worldwide.

Even those pilots who only do recreational aerobatics will use the categories as descriptors for both airplanes and pilots. They will say that the aircraft is capable of Advanced-level aerobatics, or a pilot may say they are capable of Sportsman-level aerobatics.

The aerobatic contests are usually regional-level events. There are six regions in the United States. The regions are mostly for administration. You can compete in multiple regions in any year.

There is also a national-level contest for each country. The U.S. National Aerobatic Championships are held in Texas in September. Then there are the world contests: one for Advanced and one for Unlimited. The Unlimited-level World Aerobatic Championships is on

A new person's guide to aerobatic contests

by Gordon Penner
MCFI-A

the odd-numbered years, and the Advanced-level World Aerobatic Championships is on the even-numbered years.

The first flight of the three is the Known or Known Compulsory flight, which is the qualification flight. The judges can disqualify a competitor for unsafe flying or for not possessing the ability to get through the sequence of maneuvers on the card. There are also tech inspections of the aircraft at the beginning of the contest to rule out unsafe aircraft. These elements are some of the reasons why contest flying has such an excellent safety record.

The second flight is the Freestyle flight, or Free, where each competitor creates a freestyle sequence within the allowable guidelines. The third flight is the Unknown flight, where the competitors fly a card they were given 12 or more hours prior and that they were not allowed to practice.

Since they are just starting out, Primary pilots just fly the Known flight three times, even though the flights are still called the Known, Freestyle, and Unknown. The Sportsman category doesn't fly an Unknown, but they can fly a Freestyle if they elect. The Sportsman pilots can fly the Known three times, or they can fly the Known, the Freestyle, and then the Freestyle again to replace the Unknown.

Contest flying is also about education, and the Freestyle is a great tool for that. Learning the Known Compulsories for each category is obviously an education in and of itself, and pilots are not required to move up a category if they are winning, as they are required to do in some sports. Each category has its own set of challenges, but if pilots wanted to prepare themselves to move up a category, they could put elements in their Freestyle that teach them what they need to know down the road.

Pilots of modest means can stay in a category forever if they so choose and still be challenged and educated. First of all, the Known Compulsory sequences change every year, except for Primary. Pilots can then use the Freestyle to challenge themselves, to learn something new, as well as to show their airplane and their skills in the best possible light.

Continuing the theme of education, aerobatics is really about more than just learning to fly at a higher level. You are learning more about how you learn, you are changing how you see the world, and you are learning more about yourself. The members of the French Connection air show team were fond of telling their students that if they came for aerobatic training and all they learned was how to do the maneuvers, they got gypped!

Any complex task that is mental as well as physical, whether it be aerobatics, gymnastics, ice skating, infantry maneuvers, welding, etc., forces you not only to learn how to physically do the task, but also to constantly upgrade how you picture the task in your mind, and how you picture its "flow." Notice that all the above tasks are technical in nature and also art forms.

If you decided to take aerobatic training (which does not have an FAA checkride attached—just an endorsement) the standard 10-hour course given throughout much of the country would prepare you for the Sportsman level of flying. A five-hour aerobatic course plus a little extra training would prepare you for Primary.

Emergency maneuver training (EMT) courses are targeted toward safety training, meaning mostly spin training, upset recovery training, flight with broken flight controls, and emergency landings. As a believer and promoter of EMT, I have to say that you would need a bit of different, extra training to be prepared for Primary.

The jump from Primary to Sportsman is pretty easy, and some pilots compete just fine in a rented Decathlon in the Sportsman category with a safety (or insurance-required) pilot in the back seat.

Check out the YouTube video of the great Bob Hoover pouring a glass of iced tea while rolling upside down.

There is such a thing as smooth aerobatics, and you can see the precision with which he flies. While he is rolling, watch the white ball hanging from a string under the drink platform. Not only does he not spill a drop, he stays so coordinated that the white ball hardly moves from side to side. That is the level we aspire to. We want to be as precise as Bob Hoover, the master of smooth.

You can also check out the website for IAC at *www.IAC.org*. You will find aerobatic schools and local chapters in there.

Enjoy! IAC

Seeing the Perfect Maneuvers

Aileron rolls

ARTICLE AND PHOTOS BY DAVE WATSON
IAC 26557

In the March issue of *Sport Aerobatics* we began this series with how to use your eyes to see your way through an aerobatic turn. Let's move on to the aileron roll.

As I discussed in the lead article, I do not believe you can train your hands and feet to do aerobatics by *reading* how to do it and then training for those movements while stationary. Therefore, I am not going to emphasize what to do with the aircraft controls to perform these maneuvers, rather I am going to focus on *where* and *how* to look and *what you should see*.

Nothing in aerobatics can or should be committed purely to "muscle memory." What I am going to do instead is help you train the fluffy back part of your brain to control your hands and feet while the lumpy top part of your brain stays the heck out of the way. I hope this article will help your eyes *see* the (nearly) perfect competition aileron roll so that your cerebellum can learn it and later make it happen on its own without your having to think (so much) during it.

Important note: Please don't try any new aerobatic maneuvers without a properly trained instructor or safety pilot on board.

A 'Roll' by Any Other Name

Throughout the aerobatic literature, there is a lack of consistency regarding the terms that define certain rolls. The IAC itself has inconsistencies between its definitions of certain rolls on the web page and the definition in the rule book for those same named rolls.

Per the IAC web page at: *www.IAC.org/legacy/aerobatic-figures*.

Aileron Rolls

Aileron rolls are flown with the rudder and elevator in the neutral position during the roll. The aileron is fully deflected in the direction of the roll. This is the easiest of the rolls to fly. The aileron roll is started by pulling the nose up to 20 to 30 degrees above the horizon. The elevator is then neutralized and the aileron fully deflected in the direction of the roll. The controls are maintained in that position until the roll is completed. After the roll is completed the nose is usually 20 to 30 degrees below the horizon.

Please do not be confused by this; that is absolutely NOT what is expected of an aileron roll in IAC competition, and it would score a 0.0 if flown as described. For this article, I am focusing on the roll that is described and expected to be performed in competition per the IAC rule book. Per the good book, "Aileron rolls" come in two forms: "slow rolls" and "hesitation rolls." This article focuses on the 360-degree full "slow roll" from upright on a horizontal line. "Hesitation rolls" are flown and judged exactly as "slow rolls" but with added stops of rotation at defined cardinal points, so I use the term "aileron roll" (the broader category) for this article since these described techniques apply to both the continuously rotating "slow roll" and the "hesitation roll."

The Competition Aileron Roll

As simple as an "aileron roll" may sound from the description on the IAC web page, the competition aileron roll is a very complex uncoordinated maneuver. Unlike air show barrel rolls or ballistic rolls (or as inappropriately described on the web), the aileron roll must be performed at a constant altitude and on a straight

flight path. For this article we are going to focus on the full slow roll from horizontal upright; the cornerstone maneuver of Primary and Sportsman and the building block for all the other rolls (except snap rolls).

The IAC rule book requirements of a perfect aileron roll:

- The roll starts on heading at wings-level horizontal flight.
- Maintain a constant rate of roll throughout the required rotation (360 degrees).
- Maintain a constant altitude.
- Unchanging flight path (not to be confused with fuselage heading).
- The roll stops on heading at wings-level horizontal flight.

The judges will primarily be looking for the flight path of the plane's CG to remain at constant altitude and moving along a straight line (on heading). This requires that the pitch attitude of the plane will be constantly changing throughout the maneuver, but the flight path must remain constant. The amount of pitch change is totally dependent on the aircraft being flown and its airspeed. For this article, I have included photos of rolls from three types of planes: a Super Decathlon, a Pitts S-2B, and a semi-high-performance monoplane (Lazer 230). More on this as we move on. I have posted three video clips on YouTube that these photos were extracted from. You can find them at:

Super D - *http://youtu.be/zlaaZ4krgO0*

S-2B - *http://youtu.be/UlFvNl1qhnQ*

Lazer - *http://youtu.be/tNtW2zKsVGA*

You may find these helpful in training your eyes what you should see during a roll with the various planes. Note the rolls in the Lazer were done at about 1/2 aileron deflection for the benefit of the viewer.

Description of the photos:

Photo 1a-c, Start of roll in Super

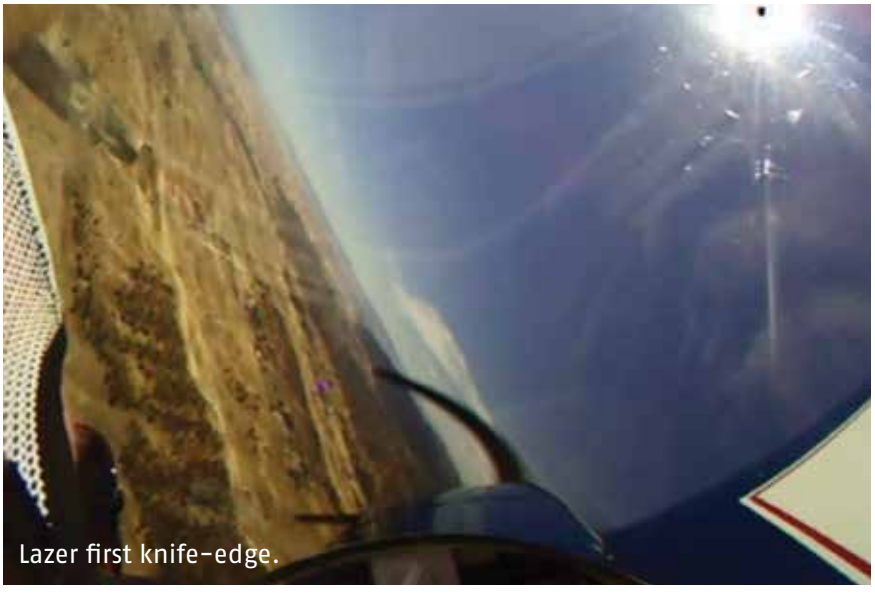
Super D roll start.

Pitts roll start.

Lazer roll start.


Super D first knife-edge.


Pitts first knife-edge.


Lazer first knife-edge.

D(a), Pitts S-2B(b) and Lazer(c);

Photo 2a-c, First knife-edge of roll;

Photo 3a-c, Inverted;

Photo 4a-c, Second knife-edge;

Photo 5a-c, Finish position.

First Things First: Straight and Level Sight Pictures

The first thing to train your eyes to see is the straight and level (S&L) upright (should be the same at the start and the finish) and the S&L inverted sight picture (halfway through). Before you start a roll, ensure that you can fly S&L and at constant altitude. For beginning to learn the roll, I recommend you attain maximum cruise speed at whatever power level you are comfortable with (usually full smash for competition aerobatics). This way your sight picture should be very consistent every time if the airspeed is consistent. Also, set the elevator trim to a position appropriate to your plane. If you are flying a Citabria or other flat-bottomed wing, you should trim to some nose-down trim. If you let go of the stick, the nose should drop smartly 5 to 10 degrees in a couple of seconds. In a high-performance monoplane, you should trim for neutral elevator.

Every plane, depending on angle of incidence and airfoil symmetry, should be somewhere between those two extremes so that inverted flight does not take significantly more stick force than upright. In my Super D, I dive to 160 mph and set the trim for neutral; this standardizes the trim for all varying load and weather conditions. Set up your standard trim condition in your plane and memorize where the nose is in relation to the horizon directly in front of you and make sure you are maintaining consistent altitude (one eye on the altimeter). Use whatever sight mechanism that helps you to *see* and memorize exactly how far below the nose is in relation to the horizon is as you sim-

ply maintain straight and level flight at that max cruise airspeed (photos 1a-1c).

The key here is to look (focus but not tunnel in) in the distance, above the horizon approximately the same height as you are above it. If you are lucky enough to have some low distant clouds, pick one dead ahead of you and fly straight at it. Keep looking at this point, not the nose or spinner. The reason we are not going to stare at our spinner is that it is going to translate the resemblance of a circle around the world in front of you as roll, and you do not want your attention to follow it or it will draw you off your goal, which is to keep going straight!

In your mind's eye, imagine a string extending from between your eyes and extending tightly to that cloud in front of you. Just like when you played telephone with two cans and a string (yes, that certainly dates me), you will hear the word "10" echoed back to you if you can keep your flight path and line-of-sight along this string, keeping it straight and tight. The angle between your imaginary string and the nose is a very important aspect, and you need to be able to see and duplicate this angular measurement over and over.

Now that you have memorized the nose attitude start position, consider that your airspeed is not going to change much within the next few seconds (if your roll is clean and not too draggy), so one requirement for your perfect roll is that you are going to end with the aircraft's nose in *exactly* the same place as where it started (at the same distance below, and pointing at exactly the same feature on the distant horizon). We now know our start and finish attitudes.

Constructing Your "Sacred Oval"

The next attitude you need to *see* is the S&L inverted position. You will be inverted at the halfway point in this roll so this attitude is your "target" for the first half of the roll (photos 3a-3c). So roll your plane to inverted (any way you can at first) and hold it there for a moment at inverted S&L. Check your altitude while inverted and make sure it has not changed and is not changing. If you are descending, push the stick a bit harder, or stop pushing so much if you are climbing. Do this many times before you proceed with trying to make a full IAC-rules aileron roll. Once you have determined the proper attitude for straight and level inverted flight, take note of how far above the horizon your nose is. Contrast this to its position at upright. Compare those angles (imaginary string to the nose at upright and inverted). Also take note on how hard you had to push the stick to hold inverted. This can be a lot of push in planes with non-symmetrical wings! Okay, now we *see* our start, inverted, and finish attitudes.

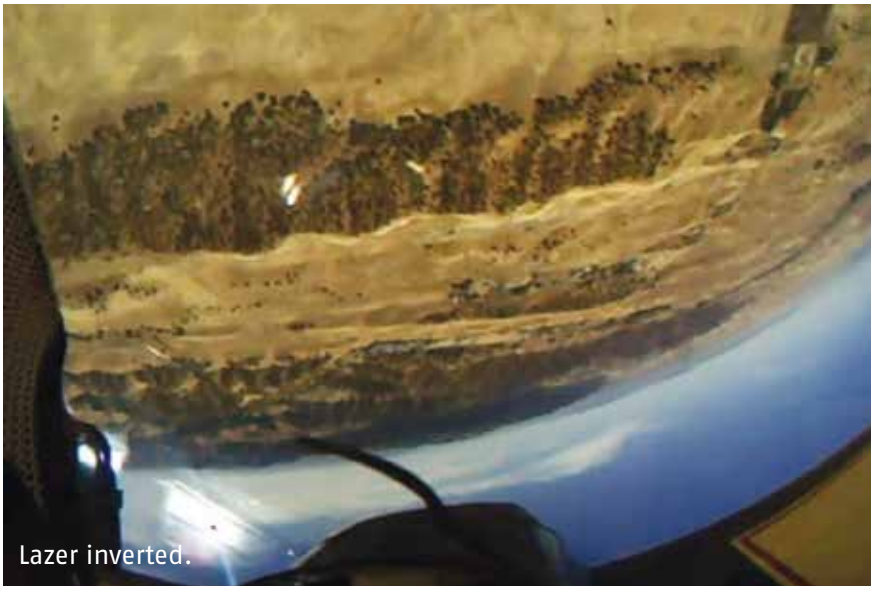
Imagine now you are at the first knife-edge (right wing high), you are still looking down (in relation to you) at your nose, and yet your string is still tight to the horizon in the distance. Your nose must therefore appear right of your original heading (string) if you are still flying along the same flight path (photos 2a -2c). In general principles, it should appear just as far to the right of your original heading as it was below it in your original upright S&L sight picture. This amount will vary from plane to plane (and your sitting height above your nose). Also, your nose attitude must be higher (in relation to the horizon) than your starting attitude because of two things: 1) you need fuselage lift so as not to descend, and 2) our changing attitude throughout the roll must be performed smoothly. The nose needs to get from below the horizon (typically) to that inverted attitude with the nose above the horizon (photos 2a-2c) in a nice, smooth fashion (see videos). By knife-edge, the nose attitude should also have shifted up (lifted) approximately half the amount it needs to achieve the height above the horizon as it needs for the S&L inverted position.

The second knife-edge point should be a mirror image of the first (with your string defining the plane of the mirror (photos 4a-4c). The astute observer may notice that in these pictures the nose height for the second knife-edge is higher on the horizon than in the first. Although my rolls in these examples are not perfect, this is actually a parallax artifact from the camera being mounted on my right earcup. If your eyes are mounted directly on the centerline of your airplane, these views should be mirror images of each other. In a Cessna Aerobat or other side-by-side plane, the view will not be symmetrical. There are other artifacts from the camera not being aligned with my eyes, but this is the most noticeable.

Now that we have the sight picture for essentially all the cardinal points, a perfect aileron roll will connect them with the smooth blended transitions of a vertical oval. Oval! You say? Not circle? Sacrilege! Well, yes a circle, maybe. A circle is an X-Y symmetrical oval. Our nose in our roll will only transcribe a perfect circle if the plane we are flying has exactly the same S&L inverted angle of attack as it has upright, (i.e., a fully symmetrical wing mounted without angle of incidence). Does your plane have both of those? If not, your nose is likely considerably higher (in relation to the horizon) inverted as it was upright so it will construct an elongated circle (i.e., oval) as it connects the dots of the cardinal points we described. Right? Now you can do a roll in your mind's eye and follow along with the pictures and or videos. Don't try to memorize stick movements; just memorize what you need to *see*.

Super D inverted.

Pitts inverted.



Lazer inverted.

Let's Do One

Moving on to our aerobatic aileron roll, we are back in our plane, at altitude, safety pilot on board, parachutes are on and legal, and you have cleared the area. I am assuming you have plenty of flight time in your aircraft, so you should know what happens when you push or pull the stick or press on a rudder. Remember, you are fixed solidly in the airplane, those same straight-and-level control inputs will make the plane react in relation to you regardless of where the horizon is in your sight picture. Do not stare at the spinner or top of your cowl; use the full range of your vision and keep the whole world in front of you in perspective. Just like when you drive a car, you don't (hopefully) stare at the ground in front of your bumper, look as distantly as you can and aim your machine with "big eyes," not tunnel vision, and draw that string to infinity. Take a quick look at the altimeter and get your start altitude. Now forget about the stuff inside the cockpit for five seconds (or one-third second in a Giles), you and the plane are one and the world will pass through and around you *smoothly*.

Initiate

The first movement in the aerobatic roll is initiated by a crisp full-deflection of the ailerons to the stop (left in our photos). At first, try to keep the elevator pressure as it was for straight and level flight. As you roll, keep your vision in big-eyes mode. Do not let the rapidly changing sight picture allow your vision to tunnel in or follow the spinner, as it will instinctively. If you keep a wide-angle vision (like the GoPro does), you will see a few things. The horizon will go up on the left (you are rolling that way), and your nose may lift a bit and it will shift to the right (consequences of adverse yaw).

At the very beginning of the roll, the wings are still pretty much level, so the right-wing-back adverse yaw will initially draw your nose (and flight path) off heading right, of course; this is not good (hence, adverse!). As the plane starts to roll, that right adverse yaw will eventually be in the upward direction (as you approach knife-edge). This becomes a good thing; remember you need your nose up. Use whatever control inputs are necessary to get to that first cardinal point by keeping the string tight and your flight path on heading during the roll in. This may require a momentary touch of *left* rudder at the initiation of the roll to defeat that initial nose-right yaw. But very shortly thereafter you do want to let the nose go *up* in relation to the horizon and right in relation to your sight picture (string or original heading). Let adverse yaw do most of the work for you.

The first thing to train your eyes to see is the straight and level (S&L) upright (should be the same at the start and the finish) and the S&L inverted sight picture (halfway through).

Your nose must move to the right of your heading (as you view it) as we discussed because you are typically looking down at your nose when in S&L flight. Most importantly, so long as you keep your attention focused (but not with tunnel vision) to the distant horizon, the world should roll directly along your line of sight (keeping that string tight) with the center of rotation not shifting at all directly along the path of the CG of your plane (your eyes

Super D second knife-edge.

Pitts second knife-edge.

Lazer second knife-edge.

are generally close enough).

In a Super D or Citabria (and many planes, I suspect), the adverse yaw may not be enough to get your nose going up fast enough to get you to your first and inverted cardinal points. You may need to initially compensate for the brief left rudder with a slight and brief tug of aft elevator to help the nose start going up around that oval. If you find this helps, hold the string straight, and make darn sure you do *not* do that tug until the roll has started.

If you tug first, you are initiating the roll in an ascending flight path (i.e., "ballistic" roll), and the judges will adversely reward you accordingly. Focus your attention straight ahead with big eyes and use only as much rudder as it takes to keep that sight picture pointing at your reference point, and let adverse yaw and your brief tug and minor adjustments to bring the nose up and right of your sight picture as you watch the world before you *purely rotate without shifting* as you approach first knife-edge. As we proceed through the roll, the amount of lift on the wings will vary tremendously from plus 1 to 0 to negative 1 to zero and back to plus 1*g*. This is going to take significant elevator pressure changes throughout the roll, too.

Try not to cock your head in an attempt to keep your head in relation to the horizon. In these photos, the camera was mounted to my headset's right earcup. Note that my head does not shift much in relation to the inside of the plane; tilting your head to try to stay orientated to the horizon hinders your ability to keep your physical orientation to the plane intact, and eventually, unless you are demonically possessed, you just don't have enough range of motion to do this in a roll!

I find it impossible not to tilt your head somewhat, but try to minimize it. You now see the ho-

Most importantly, so long as you keep your attention focused (but not with tunnel vision) to the distant horizon, the world should roll directly along your line of sight. . .

rizon approaching 90 degrees; the nose has risen and the sight picture ahead has you still pointing directly at your original start point but slightly higher. At knife-edge, the wing must be at zero lift or you will be driving left of heading (with any residual back-stick) or right of heading if you start pushing too soon. Just keep that distant object (cloud) directly in front of your eyes; don't let some involuntary push or pull (that your cerebrum thinks it needs) of the stick allow it to move. At this knife-edge, your nose is up, your wings are at zero-lift (zero *g*), the aileron is full over, and our cloud has not moved. Life is good!

Keep Her Rollin'

After first knife-edge, the wing(s) will start to become upside-down. You must start to load negative *g* on because, at inverted, you must be at -1*g*. Do this smoothly. Start to apply that forward stick, remembering how hard you will ultimately need to be pushing at the inverted S&L attitude (you memorized this in your earlier flights). Get to that degree of push *smoothly* as your eyes watch the rotation of the world bring you to the inverted cardinal point. (Unfortunately, *smoothly* is not linear; all the transitions on the control surfaces during a roll are generally sinusoidal not linear, but you will figure that out by maintaining your sight picture and not from the math.)

At inverted, you know the attitude and the stick and rudder forces from the inverted S&L activities described and hopefully done earlier. You are at your maximum (the amount you need for inverted S&L, not full forward stick) forward elevator pressure (hopefully at -1*g*), your sight picture and fuselage heading must be aligned with your initial heading so you *must* be applying a touch of left rudder (to compensate for the right adverse yaw), and ailerons are still hard to the stop. Keep going; now it gets interesting.

Once the rotation goes past inverted, the adverse

Super D finish position.

Pitts finish position.

Lazer finish position.

yaw that helped get the nose up wants to drive the nose and your sight picture down into the brown stuff, but you want to keep it up in the blue for a while yet. So do what your eyes tell you; start putting that left rudder harder as you approach second knife-edge. If you are now confused on which rudder is left (as I often do), it's the one in the blue (top rudder). Start putting it in. In fact, in a Super D (or similar) at second knife-edge, you may want more left rudder than your plane can give you—you may find yourself at the stop; this is normal.

You are back to knife-edge so that means zero lift on the wings. The amount you were pushing to be inverted must have diminished to zero or you would be seeing your nose being pushed or pulled off heading as we discussed at first knife-edge. Keep that string tight and straight. If your nose is still in the blue and a little to the left of your original heading, you are doing great.

Now you have to get to your upright S&L attitude with the original starting attitude and stick forces of the beginning as the roll finishes. You have to start getting off that left rudder and start loading the wing smoothly back to +1*g* right as you hit wings level. The moment you hit wings level, don't forget to yank your ailerons back to neutral to stop your roll. Do not anticipate the rollout by more than a few degrees. Your plane should stop rolling abruptly as you unload the ailerons. Anticipation will slow the roll rate at the finish—judges are keen to this. Keep flying S&L and immediately look at your altimeter (and other instruments to make sure all is well). Compare your altitudes start and finish. If you are at or within a few feet (+/- less than 25 feet) of the start altitude, you nailed it. Fun! Otherwise you need to make corrections.

Some Last Tips

If your roll is "barreling": Chances are you are doing too much of something at the wrong time. Examples: pushing too hard or too soon, holding back-stick through first knife-edge, too much top rudder on the first half of the roll.

If your roll is "dishing": If you find the nose getting below your start attitude in the last one-fourth of the roll, you are either (or both) not getting in enough forward pressure at inverted or not enough top rudder in the second knife-edge. Don't just yank on your controls at the end of the roll to correct this. Try again with a little more push or more left rudder. Once you get to the point where the world just spins on your nose like a phono record (dating myself again), you know you have mastered the aileron roll.

If all else fails and you just can't seem to get it to look right (and you have no access to someone qualified to fly with you), take a video camera and duct-tape it to your head like I did. Play it back in slow motion and you can probably figure out what you are doing wrong by watching when that imaginary string gets cattywampus and that spot on the horizon goes somewhere else but straight ahead! Note: The farther the camera is from your eyes, the more the point in the distance will move as an artifact since the camera is rotating about the line of sight (string) too (i.e., those artifacts I discussed about earlier).

One other really good way to develop hand-eye skills for these rolls is to do Dutch rolls, or more correctly as I like to practice, half-Dutch rolls. In this exercise, achieve straight-and-level full-throttle attitude as described earlier, and then bank to 45 degrees and then, without any heading, change bank oppositely back to wings-level straight-and-level flight. Do not bank on through to the other side as you would in a Dutch roll; stop at straight and level with the nose having not varied in heading at all and finishing exactly where it started.

As your skills progress, increase the bank to at least 60 degrees, then 90 degrees, and then back to wings level while always keeping the line of sight on heading as described here. Practice the half-Dutch rolls in both directions equally. When doing them to left (left aileron to start), you are teaching your eyes to see the start of the roll (before you reverse back). When initiating them with right aileron, you are teaching your eyes and hands and feet how to stop the roll as you finish back to S&L. Doing these half-Dutch rolls will better teach you how to see and feel the start and finish elements of the roll more efficiently and, if kept to within the limits of non-aerobatic flight, can be practiced at almost any time, thus training your eyes and cerebellum alone to control the plane without you having to *think* too much about it. IAC

ALLEN SILVER
COLUMNS / **ASK ALLEN**
www.silverparachutes.com

Don't fall out of your parachute

Observations on safety

It's time to climb back onto my soapbox and share some of my concerns. I would like to talk about some safety issues I have preached about over the years in several of my columns about issues that keep rearing their ugly heads. I can't be everywhere to observe how you adjust your parachute, store it, or where you take it to be serviced. So I need your help.

I can only tell you what I have observed. This is where I need you to be my eyes in the field. What I observe usually occurs when I receive a parachute from a new customer sent to me for servicing the first time. What I see over and over are parachutes so far out of adjustment that if the person were to use it in an emergency, he or she would stand a very good chance of falling out of the harness or being seriously injured from the straps or metal hardware. Please, when you see this, speak up.

When I receive a parachute where the rubber bands holding the lines in place are embrittled and broken (see photo), I question whether it was actually packed or just signed off. Rubber bands do not wear out or become damaged overnight or between 180-day repacks. If that parachute truly had been packed, why were the rubber bands not replaced?

Parachutes arrive in my shop often missing elastic keepers. This may not seem important to you, but they hold the excess webbing in place after you have adjusted your harness. They help prevent the webbing from blowing in the wind and snagging on some part of your aircraft when you are trying to claw your way out. It is already a bad day, and getting hung up on some part of your disabled aircraft will only make a bad day worse. Be mindful of this on your own parachute as well as on others.

Brittle, broken rubber bands holding the lines in place are a sign of long-term damage and should be replaced.

Closing loops are another issue. I often find them several inches out of tolerance. Why were the closing loops (that the rip cord pins go through) not replaced or shortened back to factory specifications? This is something your parachute rigger should not overlook.

When I receive a parachute that looks like it was left out in the sun and has extensive UV damage or is covered with dirt and grime, I wonder what goes on in that person's mind. This is a lifesaving piece of equipment worthy of better treatment. It is not something that can be indiscriminately tossed about and expected to work properly if needed. Just today I received a parachute covered with oil and grease. I wouldn't even lay it on my packing table without first putting something on the table. It was not quite bad enough to condemn out, but I still had to clean my packing table afterward so I didn't contaminate the next parachute I serviced.

Proper parachute adjustment, careful professional rigger attention, and thoughtful user care are just a few reasons why your parachute should be serviced on a regular basis by a rigger who is thoroughly familiar with it. Almost every day I receive parachutes with worn-out parts. Spare parts are easy to order from the manufacturer, and many can be fabricated with the proper equipment. While your rigger may be doing a good job in keeping you safe, worn or missing parts need to be re-

placed. And they should know they can turn on a computer and find the latest packing manuals. All have pictures to help pack your parachute. The manufacturers also have phone numbers and e-mail addresses to contact for assistance. There is absolutely no excuse for your parachute to be poorly packed and maintained.

Many of you ship your parachute to your rigger, and others just drop it off and pick it up in a few days. Whether you ship or drop it off, why not consider pulling the rip cord for practice? I don't need the practice—I've pulled thousands of ripcords—but you likely do. Make sure the area you choose is clean and clear of obstacles. I would caution you, however; don't pull the rip cord near your Ming dynasty vase. The spring-loaded pilot chute will fly out several feet. Don't be afraid to remove your parachute from the container and look at it, but **be very, very careful** not to snag the suspension lines on the scratchy part of the Velcro tape or on anything else. This could cause considerable damage to them and can be expensive to repair. Pretty much every manufacturer uses Velcro tape or something similar to help hold things closed, and this is good. But, be careful.

When you're finished having fun, carefully place your parachute and the lines in a plastic garbage bag, so they cannot come in contact with the scratchy part of the Velcro tape. Remember: Never put loose Styrofoam chips in the box with your parachute. They get into everything and are very difficult to remove. If you must use them to fill out the box, put them into a separate bag, and seal it so they will not come in contact with your parachute.

This is where I'd like you to come in. You are my eyes in the field. *Please step up to the plate when you observe something about a parachute that looks out of place and say something.* You might suggest to your fellow pilot that he/she contact his or her rigger. I am also more than happy to talk to anyone you think has a potential life-threatening problem related to his or her parachute. You could also suggest pilots go to my website and check out several of my columns that discuss how to properly care for and wear a parachute. All my columns are listed on my website. Go to my home page and click on "Ask Allen." Here are several columns you may find useful: March 2014, September 2013, August 2012, August 2011, November 2010, and April 2010. All deal with what I've been talking about. I also have several articles on my website that may be helpful. Just click on the word "Articles" on my home page.

If you question the fit of your parachute or someone else's, consider taking a photograph or two and e-mailing them to me. A photo is worth a thousand words, and it allows me to quickly see if there is a problem. Safety is everyone's business. Or as Smokey Bear says, "Only you can prevent forest fires." Oops, that's another phrase worth remembering. Maybe our phrase should be, "I can help prevent another disaster." Be proactive. Good friends and good parachutes save lives.

I also encourage you to go to the EAA website and watch the webinar I gave on May 21 of this year. All the webinars are free. Go to *www.EAA.org/webinar*. Once there, scroll down a bit, and just below the word **WEBINAR,** click on "View the EAA Webinar archives." Once on this page, in the upper left corner, is the search window. Type in "Emergency Bailout Seminar." My webinar will appear at the top of the many other great webinars. Click it on, sit back, and enjoy. I've been told it goes down well with a cold beverage and popcorn.

Continuing education is always important to me. Have you or your organization considered a bail-out seminar? Mine are always free. Travel expenses and a glass of wine or cold beer are extra. Until we meet again. I would also like to thank Marilyn, my partner and in-house editor, for her insight and input. IAC

BETH STANTON
COLUMNS / **BRILLIANCE AND BUFFOONERY**
bethestanton@gmail.com

Where Ants Don't Tread

No boundaries

When I moved to Tucson, Arizona, from Connecticut, I encountered people who took perverse pleasure in embellishing upon all manner of the prickly, creepy-crawly, poisonous, and bitey things that live here: jumping cactus, tarantulas, Gila monsters, and rattlesnakes. In their minds, surviving a demanding environment made them damned tough, and they were proud of it.

I think it's kind of this way with flying aerobatic contests.

Flying and volunteering at an aerobatic contest require a certain physical and mental toughness. Minions aren't peeling you grapes and fanning you with palm fronds. It's all hands on deck. During a contest, you are either preparing to fly and flying, or out on the judges line or boundary. Nonflying volunteers are treasured. They're motivated by pure dedication to the sport. We love you guys.

There is a long-standing and good-natured rivalry between competition pilots and air show pilots. Some air show pilots marvel at the fact that competition pilots endure the challenges and blows to the ego that are an inherent part of the sport.

When compared, you might marvel as well:

Air show: People clap when you get out of the plane.

Competition: You're handed columns of numbers that chronicle all the ways you sucked.

Air show: When not flying, you enjoy the comfort of a hospitality tent.

Competition: When not flying, you enjoy sweating.

Air show: You are handed a check.

Competition: You write a check.

Flying aerobatics is an intensely personal solo endeavor, whether it is competition, air shows, or recreational aerobatics.

Why, Then?

Flying aerobatics is an intensely personal solo endeavor, whether it is competition, air shows, or recreational aerobatics like the vast majority of IAC members. There are more than 3,000 members in the IAC. If you asked each one why they fly aerobatics, you'd probably get 3,000 different answers. Here are a few reasons given when I asked:

- So much fun I don't stop smiling for days afterward.

- Challenging.

- Increases aircraft control skills.

- Allows me to focus.

- Joy.

- Glory.

- Confidence.

- It's the coolest thing I can think of

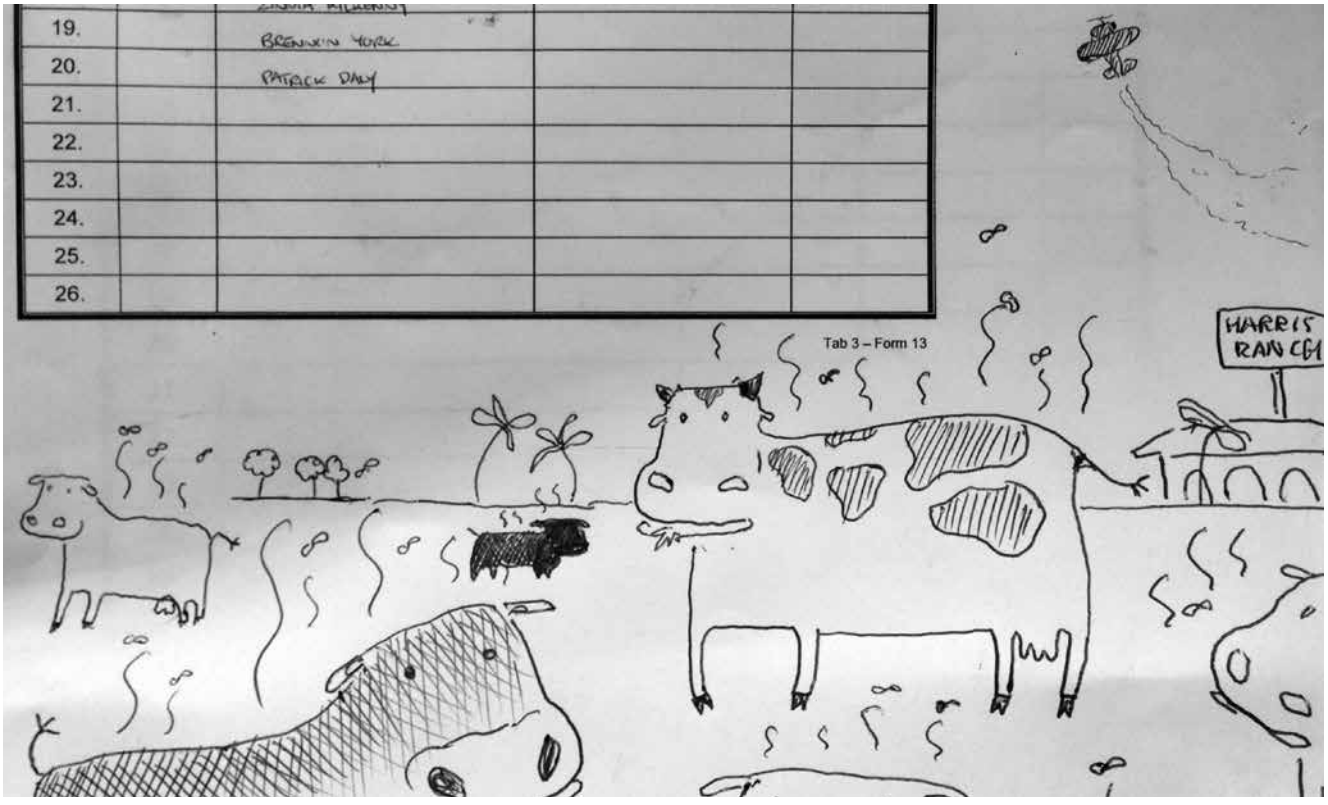
- Because there's no place I'd rather be.

- For the chicks.

- Strapping on a plane and making the sky my own personal roller coaster is amazing. I can't believe it's legal.

Flow

Psychologist Mihaly Csikszentmihalyi's nationally bestselling book *Flow* investigates "optimal experience." What makes an experience genuinely satisfying is a state of consciousness called *flow*. He describes a *flow activity* as "an activity that produces experiences so gratifying that people are willing to do it for its own sake, with little concern for what they will get out of it, even when it is difficult, or dangerous." After a dozen years of research, he came up with an overview of what makes an experience enjoyable and broke it down into elements. It's immediately apparent how flying aerobatics hits upon all these elements.



Elements of Enjoyment

• A challenging activity that requires skills.

The challenges of competition that require a certain skill are enjoyable. Enjoyment tends to fade when beating the opponent takes precedence over performing one's best. Competition is enjoyable only when it is a means to perfect one's skills; when it becomes an end in itself, it's no longer as much fun.

• The merging of action and awareness.

A person's attention is entirely absorbed by an activity when every possible skill is needed to handle it. Concentration is so focused that there is no mental energy left over to process any other information. You are so immersed you don't perceive yourself as separate from what you are doing.

• Clear goals and feedback.

When goals are clear and feedback is immediate, even activities that take a long time to attain competency are satisfying.

• Concentration on the task at hand.

When one is immersed in a flow activity that requires complete attention and focus, the worries and demands of everyday existence disappear.

• The paradox of control.

"Risky" activities allow a person to develop sufficient skill to reduce the margin of error. Rigorous preparation and discipline help to minimize potential danger. A person is in control when an unknown outcome is at stake and they can influence that outcome.

• The loss of self-consciousness.

We spend a lot of time in everyday life thinking about ourselves. The ego can get intimately entwined in many aspects of our lives. We lose ourselves in engrossing activities, and the preoccupation of the self disappears from our awareness.

• The transformation of time.

Time can flow either faster or slower, depending upon the rhythm of the activity. Complete involvement in an activity frees us from the tyranny of time and adds a heightened sense of exhilaration.

True Rewards

So, aerobatic competition pilots work hard and don't get financially rewarded for their efforts. The streamers of ribbons and planks of wood or chunks of acrylic we (sometimes) win are the symbols of our effort and accomplishment. Aerobatics enriches our lives in boundless ways. Transcending ego and fleeting goals, IAC 34 President Samuel Weaver perfectly sums up the essence of aerobatic flying:

"I fly aerobatics because it makes me a safer and more precise pilot, but really because it is fun and beautiful. We didn't invent the airplane to go farther and faster; we invented it to fly. To make the airplane sing and dance…that is what flying really is. To me, flying has always meant aerobatics in some form or another. It's the purest expression of the freedom of fight." IAC

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Chapter Relations	EAA Chapter office
Insurance	EAA Aircraft Insurance Plan

Contact Information

Name	Address	Telephone	Fax	Cell	Email
Tom Adams	P.O. Box 915, 6024 Earhart Rd, Springfield, TN 37172	615/384-1018	615/584-7146		fly4funta@gmail.com
Rene Aldrich	9464 Shady Park Rd., Portland, TN 37148-8469	605/484-6112			rene.aldrich@logan-aluminum.com
Louis Andrew, Jr.	55 South Main St, Fond du Lac, WI 54935	920/921-6000	920/921-0226		landrew@andrewlawoffice.com
Bruce Ballew	1636 Wildhorse Pkwy Dr., Chesterfield, MO 63005	636/778-0020		314/369-3723	bruceballew@earthlink.net
Doug Bartlett	1069 Bald Eagle Dr Unit 602, Marco Island, FL 34145		847/875-3339		Doug.bartlett79@gmail.com
Lynn Bowes	200 Rock Creek Rd., Raymond, NE 68428	402/785-1060		402/770-5966	lynn.bowes@hotmail.com
Tim Brill	10580 N McCarran Blvd # 115-249, Reno, NV 89503-2059	775/329-3366			tim@aerobaticcompany.com
Bob Buckley	6090 Fescue Drive, Colorado Springs, CO 80923		719/277-7017		BwanaBawb@Comcast.net
Margo Chase	99 Pasadena Ave Ste 9, South Pasadena, CA 91030	213/709-1354			margo@chasedesigngroup.com
Adam Cope	6484 Brick Hearth Ct, Alexandria, VA 22306-3308	703-623-9445			n_a_spin@yahoo.com
Bob Davis	N1561 Linn Road, Lake Geneva, WI 53147	262/248-6364			bdavis@owc.net
Trish Deimer-Steineke	PO Box 3086, Oshkosh, WI 54903-3086	920/426-6574	920/426-6579	920/379-0287	tdeimer@eaa.org
Norm DeWitt	148 Magnolia Drive, Atherton, CA 94027	650/321-8499	650/281-3343		norm.dewitt@gmail.com
Rob Dorsey	1548 Copper Creek Court, Florence, KY 41042-9194	859/657-6340	859/657-6341		robd@dorseyaero.com
Greg Dungan	46152 Levitan Way, Great Mills, MD 20634	301/994-0083		240/925-0980	greg.dungan@verizon.net
EAA Chapter Office	PO Box 3086, Oshkosh, WI 54903-3086	920/426-5914	920/426-6579		
Bill Finagin	6 Romar Drive, Annapolis, MD 21403	410/263-2740	410/263-4693	410/353-2622	wbfinagin@cs.com
Marty Flournoy	2520 Wynnton Rd., Columbus, GA 31906-2184	706/326-4877			martyflournoy77@gmail.com
Jonathan Gaffney	NAA Hangar 7 Ste 202, Washington, DC 20001	703/416-4888			jgaffney@naa.aero
Klein Gilhousen	599 High Tower Road, Bozeman, MT 59718	406/586-2517		406/579-1942	klein@qti.qualcomm.com
Phillip Gragg	1929 E Spring Meadow Ln., Boise, ID 83706	225/456-6847			philiscold@yahoo.com
Bob Hart	3019 N Ringwood Rd, McHenry, IL 60050-1324	815/363-8967			hrtlndfrm@aol.com
Giles Henderson	75 McLeod Ave, Charleston, IL, 61920-2951	217/345-7635			ghenderson@eiu.edu
Mike Heuer	4547 West Woodlawn Circle, Collierville, TN 38017	901/850-1301	440/220-9006	901/230-9006	mike@mheuer.com
Brian Howard	721 West Silver Eagle Court, Tucson, AZ 85755	520/531-9151	520/844-8132	520/360-7655	BK@NewAttAero.com
Rob Holland	117 Perimeter Rd, Nashua, NH 03063	603/401-0001			rob@ultimateairshows.com
Brett Hunter	5033 N State Route 42, Waynesville, OH, 45068-9543	513/897-9169			brett.hunter@earthlink.net
Insurance	POB 291388, Kerrville, TX 78028	866/647-4322			
Verne Jobst	2921 Sterling Drive, McHenry, IL 60050-2662	815/385-7277		815/861-1300	nx211@att.net
Steve Johnson	1128 Silverleaf Ter., Nashville, TN 37221-3363	615/662-8516		615/557-2364	gjunkie1@aol.com
Howard Kirker	2279 Ocaso Camino, Fremont, CA 94539-5645	510-651-6514			ha.cr.kirker@worldnet.att.net
Dave Lammers	4000 Meadowknolls Rd., Marion, IA 52302-9405	319/377-1425			davelammers@mchsi.com
Michael Lents	5173 W Maple Ave., Grand Forks, ND 58203	701/777-4848		218/779-2725	lents@aero.und.edu
Wes Liu	105 Mason Rd., Brookline, NH 03033	603/673-6538			weston.liu@charter.net
Doug Lovell	528 Main St Apt B., Beacon, NY 12508-2837	914/456-1594			doug@wbreeze.com
David Martin	3279 La Villa Rd., Graford, TX 76449-4559		817/319-5510		pkakro@earthlink.net
Mike Mays	10694 Denoeu Rd., Boynton Beach, FL, 33472-4530	561/734-1955			soaerobatics@aol.com

Doug McConnell	4203 E. Lake Shore Drive, Wonder Lake, IL 60097	815/653-1044		708/203-6192	doug_mcconnell@comcast.net
Matti Mecklin	Keriharju 3A, 00430 Helsinki, Finland	+38-1-008-5180			matti.mecklin@luukku.com
EAA-IAC Membership	P.O. Box 3086, Oshkosh, WI 54903-3086	800/843-3612	920/426-6761		membership@eaa.org
Gerry Molidor	5912 Whiting Drive, McHenry, IL 60050	815/344-3239		815/861-9877	GMolidor@aol.com
David Moll	PO Box 96, Greenwood, NE 68366-0096	402/613-5422			davidmoll66@gmail.com
DJ Molny	2713 15th Ave., Longmont, CO 80503		303/619-4814		djmolny@gmail.com
Steve Morris	24650 High Timber Lane, Agate, CO 80101	303/621-2835			N94rv@aol.com
John Morrissey	106 NW Hackberry St, Lees Summit, MO 64064-1435	816-373-8675			greatplanes@comcast.net
Tom Myers	443 Leland Avenue, Palo Alto, CA 94306-1131	650/328-2141		650/799-6854	tom.myers@stanfordalumni.org
Randy Owens	6585 E Fordham Cr., Anaheim Hills, CA 92807	714/250-1291			rdowens@sbcglobal.net
Reggie Paulk	PO Box 520, Tabernash, CO 80478		303/552-7963		Reggie.paulk@gmail.com
Lorrie Penner	7628 Plainfield Road, Cincinnati, OH 45236	513/791-7331		513/284-5076	penn.lorrie@gmail.com
Darren Pleasance	61402 Davis Lake Loop, Bend, OR 97702		650/245-2405		darren.pleasance@gmail.com
Dr. Richard Rihn	1101 Scots Lane, Walnut Creek, CA 94596	925/938-4236	925/938-4036		Rihnairco@aol.com
Debby Rihn-Harvey	4414 Island Hills Dr., Houston, TX 77059	281/470-8456			hurricane@sbcglobal.net
Wayne Roberts	547 Northwoods Dr., Grenada, MS 38901	662/226-4919	662/307-2706		wroberts@lakecityaero.com
Gene Soucy	2951 Marina Bay Dr. Suite 130-340, League City, TX 77573	281/513-6590			gene@genesoucy.com
Doug Sowder	118 East High Dr., Spokane, WA 99203	509/747-5478		509/220-8206	dougsowder@gmail.com
Chelsea Stein-Engberg	6400 Crescent Park East #228,	530/305-9550			csengberg@gmail.com
Michael Steveson	8434 E. Via Montoya, Scottsdale, AZ 85255	602/418-4009			msteveson@earthlink.net
Lynne Stoltenberg	656 Windy Acres Rd., Brenham, TX 77833	979/836-2610			ljstoltenberg@gmail.com
Rich Stowell	PO Box 1026, McCall, ID 83638	805/525-2037			rich@richstowell.com
Matt Tanner	2224 Riverwalk Pkwy., Colorado Springs, CO 80951-9741	719/359-6381			matt@matttanner.com
Don Taylor	6109 Copper Rose NE, Albuquerque NM 87111	505/858-0005			djt13@comcast.net
Dennis Thompson	6908 Railroad Blvd., Mays Landing, NJ 08330	973/219-5071	908/638-8463	973/219-5071	Dtedge2002@yahoo.com
Paul Thomson	8216 W 148th St, Overland Park, KS 66223-2779	913-638-6221			paul@iac15.org
Thore Thoresen	Brenneveien 41A, 1339 Voyenenga, Norway	+47-9-005-4327			extrathore@yahoo.com
Tony Wood	PO Box 9, Slidell, TX 76267-0009	512/633-1053			akrowood@mac.com

***For a complete list of contests** and for the most up-to-date contest calendar, visit* **www.IAC.org**.
If your chapter is hosting a contest, be sure to let the world know by posting your event on the IAC website.

Kathy Jaffee Challenge (Northeast)
Friday, August 7 – Sunday, August 9, 2015
Practice/Registration: Thursday, August 6 – Friday, August 7
Power: Primary through Unlimited
Location: South Jersey Regional Airport (VAY): Lumberton, NJ
Region: Northeast
Contest Director: John Fellenzer
Phone: 845-978-0511
E-Mail: *jdf@fellp.com*
Website: *http://iac52.org/*

Beaver State Regional (Northwest)
Friday, August 14 – Saturday, August 15, 2015
Practice/Registration: Wed., August 12 – Thurs., August 13
Power: Primary through Unlimited
Location: Pendletion Regional Airport (PDT): Pendleton, OR
Region: Northwest
Contest Director: Teri Branstitre
Phone: 503-407-2543
E-Mail: *oregonaerobatics@gmail.com*
Website: *http://www.iac77.eaachapter.org/*

2015 Canadian National Aerobatic Championship (Mid-America)
Saturday, August 15 – Sunday, August 16, 2015
Practice/Registration: Friday, August 14
Power: Primary through Unlimited
Location: Saugeen Municipal Airport (CYHS): Hanover, Ontario
Region: Mid-America
Contest Director: Phil Englishman
Phone: 519-377-3777
E-Mail: *mickeyd@wightman.ca*
Website: *aerobaticscanadachapter3.blogspot.ca*

Doug Yost Challenge (Mid-America)
Saturday, August 15 – Tuesday, August 18, 2015
Practice/Registration: Thursday, August 13 – Friday, August 14
Power: Primary through Unlimited
Location: Spencer Municipal Airport (SPW): Spencer, IA
Region: Mid-America
Contest Director: Justin Hickson (Temporary)
Phone: 651-338-3345
E-Mail: *jhisbatman@yahoo.com*
Website: *www.iac78.org*

The Bill Thomas U.S.-Canada Aerobatic Challenge (Northeast)
Saturday, August 22 – Sunday, August 23, 2015
Practice/Registration: Thursday, August 20 – Friday, August 21
Power: Primary through Unlimited
Location: Olean Municipal Airport (KOLE): Olean,New York
Region: Northeast
Contest Director: Pat Barrett
Phone: 716-361-7888
E-Mail: *cbpbmb@aol.com*
Website: *http://www.iac126.eaachapter.org/*

Ohio Aerobatic Open (Mid-America)
Friday, August 28 – Saturday, August 29, 2015
Practice/Registration: Thursday, August 27
Rain/Weather: Sunday, August 30
Power: Primary through Unlimited
Location: Bellefontaine Regional (EDJ): Bellefontaine, OH
Region: Mid-America
Contest Director: Gordon Penner
Phone: 513-520-6065
E-Mail: *penner.gk@gmail.com*
Website: *iac34.eaachapter.org*

Harold Neumann Barnstormer (South Central)
Saturday, August 29 – Sunday, August 30, 2015
Practice/Registration: Friday, August 28 – Saturday, August 29
Power: Primary through Unlimited
Location: New Century Aircenter (IXD): Olathe, KS
Region: South Central
Contest Director: John Wittenborn
Phone: 913-782-6442
E-Mail: *Chiller_52@yahoo.com*
Website: *www.iac15.org*

Rebel Regional Aerobatic Contest (Southeast)
Friday, September 4 – Saturday, September 5, 2015
Practice/Registration: Thursday, September 3
Rain/Weather: Sunday, September 6
Power: Primary through Unlimited
Location: Everett-Stewart Regional Airport (UCY): Union City, TN
Region: Southeast
Contest Director: Michael Tipton
Phone: 573-922-9600
E-Mail: *michael.tipton@hotmail.com*
Website: *www.iac27.org*

Rocky Mountain House Aerobatic Challenge (Northwest)
Saturday, September 5 – Sunday, September 6, 2015
Practice/Registration: Friday, September 4
Power: Primary through Unlimited
Location: Rocky Mountain House Airport (CYRM): Rocky Mountain House, Alberta
Region: Northwest
Contest Director: Dave Barbet
Phone: (403) 875-3467
E-Mail: *dbarbet@telus.net*
Website: *www.patspencer.ca/aerobaticscanada/AC/Chap7/RockyContest/*

Hill Country Hammerfest (South Central)
Saturday, September 5 – Sunday, September 6, 2015
Practice/Registration: Friday, September 4
Power: Primary through Unlimited
Location: Llano Municipal (AQO): Llano, TX
Region: South Central
Contest Director: Jeffery Poehlmann (acting)
Phone: 512 423 5333
E-Mail: *jeffery@texas.net*
Website: *www.iac107.org*

Happiness Is Delano (Southwest)
Saturday, September 5 – Sunday, September 6, 2015
Practice/Registration: Friday, September 4
Rain/Weather: Monday, September 7
Power: Primary through Unlimited
Location: Delano Airport (DLO): Delano, Ca
Region: Southwest
Contest Director: Steve De La Cruz
Phone: 760 963 6426
E-Mail: *DelanoCD@iacChapter26.org*
Website: *IACChapter26.org*

Apple Turnover (Northwest)
Friday, September 11 – Saturday, September 12, 2015
Practice/Registration: Wed., September 9 – Thurs, September 10
Power: Primary through Unlimited
Location: Ephrata Municipal Airport (EPH): Ephrata, WA
Region: Northwest
Contest Director: Jerry Riedinger
Phone: 425-985-9469
E-Mail: *jriedinger@perkinscoie.com*

East Coast Aerobatic Contest (Northeast)
Friday, September 11 – Sunday, September 13, 2015
Practice/Registration: Thursday, September 10 – Friday, September 11
Power: Primary through Unlimited
Location: Warrenton Fauquier Airport (KHWY): Warrenton, VA
Region: Northeast
Contest Director: krysta Paradis
Phone: 925-878-9830
E-Mail: *krysta.paradis@gmail.com*

Salem Regional Aerobatic Contest (Mid-America)
Saturday, September 12 – Sunday, September 13, 2015
Practice/Registration: Friday, September 11
Power: Primary through Unlimited
Location: Salem-Leckrone Airport (SLO): Salem, IL
Region: Mid-America
Contest Director: Joe Overman
Phone: 314-452-6049
E-Mail: *joeoverman2000@yahoo.com*

U.S. National Aerobatic Championships (South Central)
Saturday, September 19 – Saturday, September 26, 2015
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: North Texas Regional (GYI): Sherman – Denison TX
Region: South Central
Contest Director: Gary DeBaun
Phone: 612-810-6783
E-Mail: *B747Inst@aol.com*

Rocky Mountain Invitational Aerobatic Contest (South Central)
Friday, October 2 – Sunday, October 4, 2015
Practice/Registration: Friday, October 2
Gliders Categories: Sportsman Intermediate
Power: Primary through Unlimited
Location: Lamar Municipal Airport (KLAA): Lamar, CO
Region: South Central
Contest Director: Jamie S. Treat
Phone: 303-304-7937
E-Mail: *jamietreat@q.com*
Website: *www.IAC5.org*

Borrego Akrofest (Southwest)
Friday, October 9 – Saturday, October 10, 2015
Practice/Registration: Thursday, October 8
Rain/Weather: Sunday, October 11
Power: Primary through Unlimited
Location: Borrego Valley (L08): Borrego Springs
Region: Southwest
Contest Director: Brenda Frazier
Phone: 951-275-2420
E-Mail: *Hippychicky22@yahoo.com*
Website: Iac36.org

ACE'S High Fall Acrotober Fest (South Central)
Saturday, October 10 – Sunday, October 11, 2015
Practice/Registration: Thursday, October 8 – Friday, October 9
Power: Primary through Unlimited
Location: Newton City County Airport (EWK): Newton, KS
Region: South Central
Contest Director: Mark Wood
Phone: 602-361-3504
E-Mail: *mark@dreamcatcheraviation.com*

Sebring Fall #72 (Southeast)
Thursday, November 5 – Sunday, November 8, 2015
Practice/Registration: Saturday, Oct. 31 – Wednesday, Nov. 4
Rain/Weather: Sunday, Nov. 8
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Sebring Regional (SEF): Sebring, FL
Region: Southeast
Contest Director: Carol A. Brinker
Phone: 561-346-1676
E-Mail: *fltschoolmom@bellsouth.net*

BY GARY DEBAUN, IAC #4145

James D. Lyne

IAC 43505, EAA 80812
Nickname: Bondo ("James Bondo, licensed to fill")
Hometown: Westport, Connecticut
Occupation: Aviation attorney, flight instructor, A&P/IA, professor
Chapter affiliation: Marana (not a member but has worked the Tequila Cup a couple of years)
Age: 60

GD: James, I know you have a long and storied life as a pilot of powered aircraft, but tell us how you got started in glider aerobatics.

JDL: I first soloed a glider on my 14th birthday, but then discovered girls, beer, and hot rod cars and didn't get any license until I was in the Air Force. Thought "what a neat way to make a living" and flew powered aircraft and worked my way through my CFI, CFII, and multiengine and then the ATP and flight engineer. I got back into gliders in 1992 by virtue of letting my powered CFI lapse during law school—learning at Warner Springs in San Diego where Bret Willat, the air show pilot, is based. I started working there as an instructor and ride pilot, and Bret checked me out for acro in the Grob 103. Fast-forward 15 years and I was chief instructor at the Tucson Soaring Club. They had no aerobatics program, so I started one. There are four SZD-59s based there, which is about one-third of the U.S. population. I now work for Arizona Soaring at Estrella, where Jason Stephens is, so I'm getting mentoring from him in his MDM-1 Fox.

GD: What sailports have you been associated with? Which one is your favorite and why?

JDL: I soloed at Wurtsboro, New York, in 1968. Got my commercial and CFI-glider at Warner Springs in 1992. Flew at Texas Soaring Association in Midlothian, Texas, while working for the SBA in the wake of Hurricane Katrina. Ended up in Tucson in the middle of my divorce and got active with the Tucson Soaring Club, then Arizona Soaring at Estrella. I would have to say Estrella is my current favorite because I work there and because of the availability of the Unlimited aerobatic trainer, the MDM-1 Fox. It's an awesome machine, and Jason Stephens is a great aerobatic mentor.

GD: Where did you fly your first aerobatic contest, and how did you do?

JDL: The Tequila Cup at Marana, Arizona, in 2010. I placed third (out of three) by flying my first routine completely downwind. But after the contest, the glider was reusable and didn't require any paint work.

GD: You currently fly an SZD-59 Acro; what other aerobatic aircraft have you flown?

JDL: I originally learned aerobatics in a T-34 from Dan Larsen at the Edwards AFB Aero Club. Then a Decathlon while working for Art Scholl at Rialto, California, and the Grob 103 while working at Sky Sailing. The SZD is the first aerobatic aircraft I've owned.

GD: You are pretty handy with composite structures. I heard Burt Rutan had something to do with that. How so?

JDL: I was active duty at Edwards AFB from 1975 to '77, and there wasn't a hell of a lot to do out there in my off time. So I became a ramp rat around Mojave Airport during its homebuilder heyday. I became roommates with Gary Morris, who built the two prototype VariEzes for Burt. After I got out of active duty and before I went off to C-141 flight engineer school, we were both building VariEze parts at Fred Jiran Glider Repairs, the first composite repair station in the U.S. It was very educational, and I was privileged to be right in the middle of that whole "composite homebuilt revolution."

GD: You also spent some time with aerobatic legend Art Scholl; tell us a little about that.

JDL: I worked as a flight instructor for Art out of Rialto, California, while I was in college and took a leave of absence from Art Scholl Aviation to attend USAF Undergraduate Pilot Training (UPT). Shortly thereafter, I broke my back in a motorcycle accident, and that was the end of me and ejection seats. I was not able to complete UPT and soon found out the real-world value of my English/philosophy degree and so went off to law school in San Diego. I still hear from or see Art's widow, Judy, occasionally. She's a neat lady.

GD: You served in the Air Force as a C-141 flight engineer. How did you get that job, and where were you based?

JDL: I took an early out of active duty, under a program called Palace Chase, trading twice my remaining active time for active reserve time. I checked an innocuous-looking block labeled "willing to cross train" (hell, I was a jet engine mechanic in the High Desert; of course I was willing to cross train). The Air Force had a shortage of flight engineers just then, and I was a private pilot with two years of college, a 5-level in maintenance, and was an E-4; pretty much the minimum requisites for the job.

GD: Any other interesting things (aviationwise) you have done?

JDL: Soloed a glider on my 14th birthday and then soloed a 14-year-old girl on my 60th birthday. I am a Universal Life Church (mail-order) minister, and I married two couples in a three-place Schweizer 2-32 on the same day at Warner Springs back in the '90s. Got to fly some interesting stuff in my Rialto days, too: Lockheed Lodestar, Beech D-18, T-6, T-28, Stearman, N3N, and back seat in a P-51—that's the most fun I've ever had with my clothes on.

GD: Who, if anyone, has had the greatest impact on your flying career?

JDL: My father. He was a WWII cadet and graduated about the time the war ended. By about age 4, I was propped up on phone books in the right seat of various club aircraft, flying on the old "black on top, black on the bottom" artificial horizon because I couldn't see outside.

GD: Do you have any interests outside of aviation?

JDL: My twin 13-year-old daughters, who live with their "rightful owner" in the Atlanta area. I teach law as an adjunct professor for Embry-Riddle and Park universities at Davis-Monthan AFB in Tucson.

Countdown to the 2015 Nationals

by Gary DeBaun
Nationals Contest Director

Things are falling into place quite nicely for the 2015 version of the U.S. National Aerobatic Championships. Here is a list of the things that have been accomplished over the last couple months:

- The IAC Welcome Trailer has been secured, along with enough funds to support it. It will have air conditioning; Wi-Fi; a fridge stocked with cold drinks and fruits; a coffee maker plus coffee, cups, and sugar; and a hot water maker with oatmeal packets and bowls.
- All coffee and donuts for the morning briefings have been secured and funded. Morning coffee will be from the Java House up the road from the airport.
- All volunteer lunches have been secured and funded.
- All 12 trailer slots have been reserved. There will be a $25 per night charge for all trailer slots to pay for utilities.
- Hangar space for all aircraft has been secured. Mike Plyler will be charging the normal $100 per aircraft for the contest period. Space has also been secured at Lake Texoma Jet Center (please fill out the online paperwork on the Nationals website or the Texoma Jet Center website, *www.TexomaJet.com*).
- The west side judges line is being is being cleaned up and treated for fire ants.
- Sponsorships are still moving forward. 5g Aviation is funding Wi-Fi for the IAC Welcome Trailer.

If you are planning to rent a car for the event, please go to the Lake Texoma Jet Center website and fill out the appropriate paperwork—this is very important for you to secure your car reservation.

An opening ceremony will take place just prior to the initial pilot briefing on Sunday. Ellyn Robinson, our volunteer coordinator, is working hard to make this an awesome opening ceremony.

The Lake Texoma Jet Center will be sponsoring the Thursday night barbecue at the briefing hangar.

Finally, there are schedule changes in the works; please continue to monitor our website at *www.IAC.org/us-national-aerobatic-championships* and our Facebook page for these changes. IAC

AIRCRAFT

Beautiful 1998 Giles G-200, N621M, 477TT airframe, engine, & prop, Lycoming IO-360-A 200hp 477 SFRMN, Sky Dynamics cold air induction & 4 x 1 exhaust, SkyTec starter, B&C 8 amp alt., Whirlwind 200C propeller, 45 gallon fuel, 303-709-6465, *2bafree.man@gmail.com*

1993 Yak-55M, SN930907, 375TTAE, NDH, MTV-9-260-29 200TTSN, sight gauge, B&C, Cleveland W&Bs, smoke, NGK plugs, Air Wolf oil filter, spares crate, more. 4/15 Annual. $62,500 OBO, *rbasiliere170@gmail.com*

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