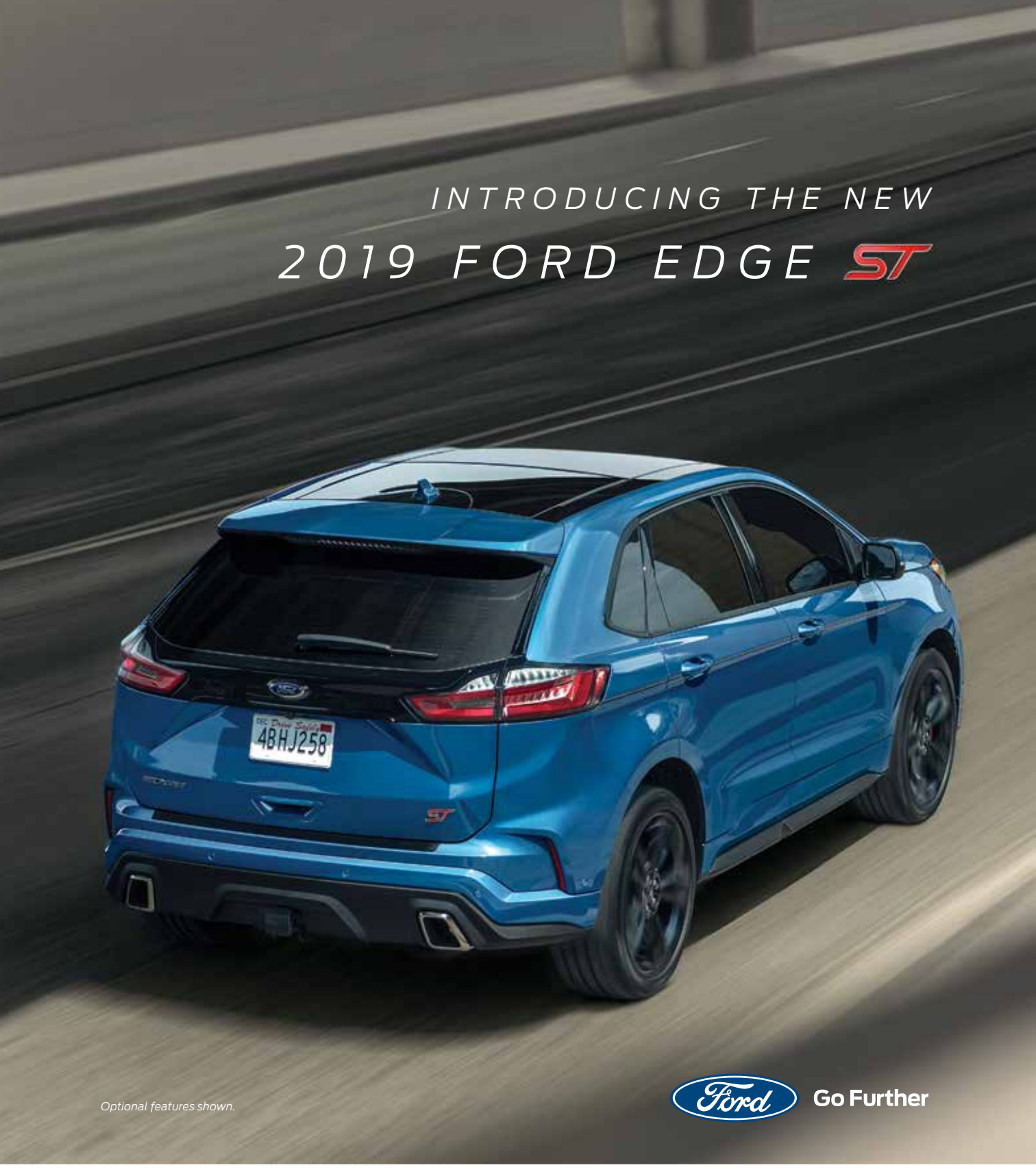
# SPORT Aerobatics

MARCH 2019

OFFICIAL MAGAZINE of the INTERNATIONAL AEROBATIC CLUB

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SPORT Aerobatics
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## FEATURES




## COVER

On the cover: One hallmark of safe flight is repetition. Illustration by Cordell Walker.

Above: Greg Koontz in inverted flight at EAA AirVenture. Photo by DeKevin Thornton.

## DEPARTMENTS

# The Quiz

BY JONATHAN APFELBAUM, IAC 433983

1. What is the difference between angle of attack and angle of incidence?
2. At an IAC event there is a technical committee. Who is part of this committee, and what is its role?
3. True or false: The use of a helmet, flight suit, and gloves is mandatory for competitors at IAC events.
4. What is the lowest altitude permitted for aerobatic flight in non-waivered airspace?
5. Parachutes are required as part of safety equipment. When was the first parachute invented? When was the first use of a parachute in an emergency?

LOOK FOR THE ANSWERS ON PAGE 23

**SUBMISSIONS:** Photos, articles, news, and letters to the editor intended for publication should be emailed to editor@iac.org. Please include your IAC number, city, and state/country. Letters should be concise, polite, and to the point. All letters are subject to editing for clarity and length.





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# As Contest Season Starts, Focus on Safety

BY ROBERT ARMSTRONG, IAC 6712

**WINTER WAS REAL** for many IAC members just a few weeks ago. With parts of the Midwest experiencing record-low temperatures it seems hard to believe contest flying begins this month. The calendar has competitions listed for Florida and Texas. In addition, for many more there are chapter-organized practice days planned in North Carolina, Georgia, and elsewhere. Some good news came from Pennsylvania in February when some type of animal was unable to see its shadow. I don't hold much for this type of folklore, but this time I will hope it is true!

This issue of *Sport Aerobatics* is focused on a seasonal subject — *safety*! This may not grab you as important, but the fact that you are reading this indicates that you have practiced some type of risk assessment many times correctly. This is the basic principle that results in a safe outcome to whatever situation was reviewed.

The worst situation that exists in this sport, or anything that has multiple criteria to be executed properly, is secrecy. Just because you did something wrong and did not get hurt is not a reason to keep quiet! The next person may be a few millimeters off and not have the same result.

Several of the articles in this issue resonate this. In my many years of aviation I have found that safety is a continuous learning and review situation. Those members who are professional pilots can reinforce this, as each year a portion of the annual recurrent training is dedicated to a review of what has happened in the past and how to prevent a recurrence of the events.

The International Aerobatic Club has had a safety committee for decades. Before Jim Bourke served as chair for several months prior to taking on a new position, not much had been done for years. This is one volunteer position that will be filled shortly. It is a wonderful situation when I and the board of directors will be selecting a safety chair from *five* members who have offered their talents and time to fill this vital post. This is the type of process that only has a good resolution. Look for a new safety chair after the spring board meeting.

Wow! There has been a lot of activity behind the curtains this winter! At the fall board meeting I challenged the board with the task of finding a location better suited for the U.S. Nationals. Many members have been involved in this process, and the depth of exploration is amazing. The volunteer force has researched information on at least 44 locations. The type of data compiled even includes information on the number of hours that aerobatics could be flown based on historical weather. This alone required many man-hours looking at wind, cloud, hours of daylight, and of course temperatures for 14 days over five years at 40-plus locations. Not a small task, and I thank all who have helped on this very important mission. The final result should produce a location that will serve all of the IAC members well.

When this work is finished, some other big issues will need attention. The first is to select a contest director. In the past we have had co-directors, and this could certainly be an option. The IAC has a very detailed checklist to help in the organization of the event so no one will be needing to reinvent the wheel. This, along with the enthusiasm we have received from some of the potential sites, should make for a less stressful task. Any willing volunteers?

Now for my monthly sales pitch. The IAC is a club made up of a diverse group of people who have an interest in flying that is not limited to straight and level. You are the customers. The purpose of the management of the IAC is to produce a product that you are happy to buy where the main ingredient is fun! If the customers do not like the product, that's not good. This creates my drive to make the IAC the best it can be for all the members!

One part of this is for members to open up and let us know how we are doing! The board members are elected at large, so every board member is your board member. All of the contacts are listed in the members section of the IAC website, select About, then Leadership, and then Yellow Pages, and send us your ideas! IAC

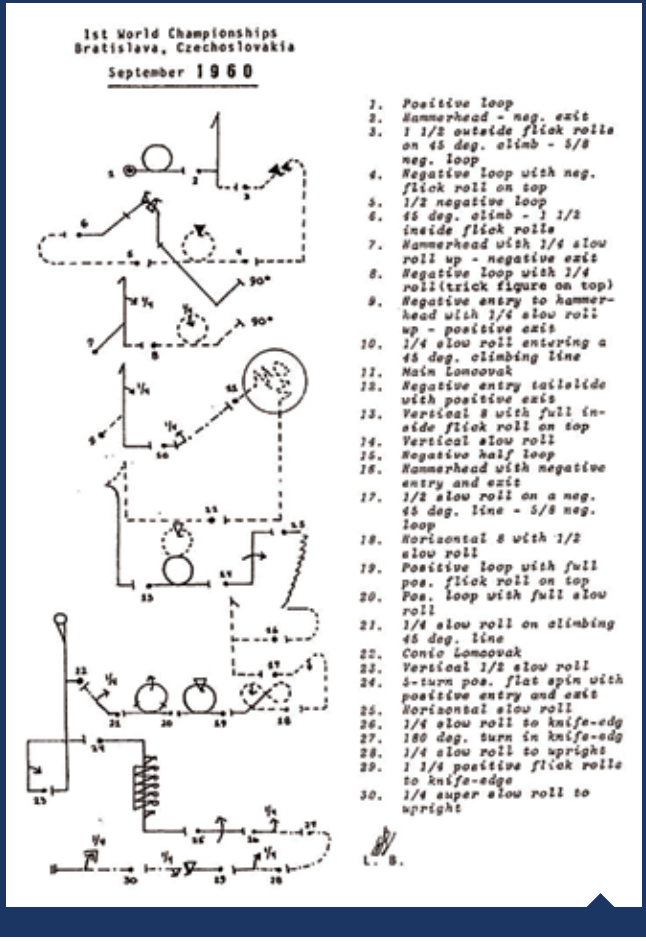
▸ Please send your comments, questions, or suggestions to president@iac.org.

TOP STORY

# First World Aerobatic Champion Ladislav Bezák Gone West

**WE HAVE RATHER BELATEDLY** learned that Ladislav Bezák, the Czechoslovakian pilot who won the very first World Aerobatic Championships at the inaugural WAC in 1960, died at the end of November 2018. Since the first WAC event, CIVA has declared more than 140 world and European (continental) aerobatic champions in the extended range of categories we now enjoy. "I think it is appropriate to pay tribute to Ladislav and his many successors for the tremendous progress that has been made in this unique branch of sporting aviation," wrote CIVA President Nick Buckenham.

Among the maneuvers Ladislav flew in his Zlin 226 aircraft was the astonishing lomcovak, where the gyroscopic effects of rotating propeller inertia are used to encourage the airplane through a seemingly impossible arcing series of combined axis rotations that appear almost out of control, though it quickly became clear that this was not the case. This word has since become part of the lexicon of aerobatic pilots, and may have stemmed from conversational use of the French term l'homme Slovaque. The term interestingly also translates colloquially as wood head or headache in Slovakian.



## 2019 U.S. NATIONAL AEROBATIC CHAMPIONSHIPS TO BE HELD IN SALINA, KANSAS

**A SITE REVIEW OF** potential U.S. National Aerobatic Championships venues, which was commissioned by the International Aerobatic Club board of directors at the fall 2018 meeting, has recently been completed. The working group leader was IAC board member Bob Freeman, and he was assisted by a team consisting of IAC Executive Director Lorrie Penner, IAC Secretary Lynn Bowes, former director and founding member of Wichita Chapter 119 A.J. Hefel, and Kansas City Chapter 15 members John Morrissey and Linda Meyers-Morrissey.

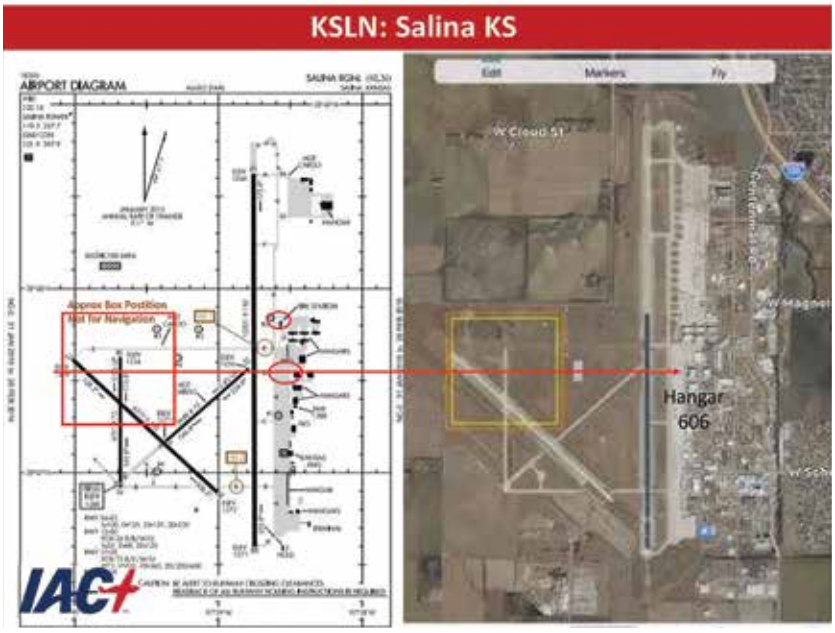
In all, 44 centrally located airfields were assessed, including previous U.S. Nationals sites, Sherman-Denison, Texas, and Oshkosh, Wisconsin. Following Bob's presentation and upon the recommendation of his working group, the IAC board of directors voted unanimously to select Salina, Kansas, as the location for the 2019 U.S. Nationals. The contest dates have been confirmed for Saturday, September 21, through Friday, September 27, 2019.

Bob and the working group cited a number of reasons why the Salina Regional Airport — the former Schilling Air Force Base — came out on top, including its experience in hosting similar and even larger aviation events, including the National Intercollegiate Flying Association's SAFECON national championships and the U.S. military Jaded Thunder exercise hosting more than 1,300 participants.

An event the size of the U.S. Nationals, which attracts nearly 100 pilots, requires a lot of space and Salina provides that in excess with a 39,000-square-foot hangar plus 14,000 square feet of office space for contest operations. The town itself has many hotel options and a wide variety of national and locally owned restaurants, car rental options, and more.

The U.S. Nationals participants will enjoy nice fall weather in Salina, with 65 flyable hours (based on a five-year average) and an aerobatic box that allows all boundary markers and judges to be on airport property, and the towered airport will allow simultaneous and uninterrupted contest operation with the active runway.

We are looking forward to a great 2019 U.S. Nationals in Salina and hope to see you all there! IAC



INTERNATIONAL AEROBATIC CLUB
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# NOMINATIONS
## SOUGHT FOR
## IAC BOARD OF DIRECTORS

# DEADLINE IS
# APRIL 12, 2019

**OWN YOUR DESTINY WITH ACTION.** Help lead the IAC into the future by nominating a colleague or yourself for a position on the IAC board of directors. Officers and directors consider a wide range of information and data affecting the sport of aerobatics and set the direction for the organization for years to come.

The International Aerobatic Club is now accepting nominations to serve on its volunteer board of directors. The IAC has an open election process with nominations for candidates accepted directly from the membership. There are six positions open to be elected: vice president, treasurer, and four board members. Elected candidates serve a two-year term beginning at the IAC's annual general meeting in Oshkosh in July.

We hope to receive a significant number of nominations with a view to having a diverse, talented, and dedicated pool of candidates to draw from to lead the IAC's activities and policies.

**VISIT WWW.IAC.ORG/2019-NOMINATIONS**


# IAC CONTEST SEASON BEGINS

| DATES | HOST CHAPTER | NAME | REGION | LOCATION | AIRPORT |
|---|---|---|---|---|---|
| Mar. 28, 2019 | 89 | Snowbird Classic | Southeast | Florida | X35 |
| Mar. 29, 2019 | 25 | Early Bird 2019 | South-Central | Texas | 26R |
| Apr. 12, 2019 | 36 | Hammerhead Round Up | Southwest | California | Lo8 |
| Apr. 19, 2019 | 19 | Mason-Dixon Clash | Northeast | Virginia | KFVX |
| May 3, 2019 | 23 | Sebring 79 | Southeast | Florida | KSEF |
| May 3, 2019 | | Duel in the Desert | Southwest | California | KAPV |
| May 3, 2019 | 24 | Lone Star Aerobatic Contest | South-Central | Texas | KBKD |
| May 18, 2019 | 61 | Giles Henderson Memorial Challenge | Mid-America | Illinois | KSLO |
| May 31, 2019 | 38 | Coalinga Western Showdown | Southwest | California | C80 |
| Jun. 1, 2019 | 12 | Ben Lowell Aerial Confrontation | South-Central | Colorado | AFF |
| Jun. 6, 2019 | 3 | Mark Fullerton Memorial 2019 Bear Creek Bash | Southeast | Georgia | KRMG |
| Jun. 14, 2019 | 67 | Apple Cup | Northwest | Washington | KEPH |
| Jun. 14, 2019 | 58 | Wildwoods Acroblast! | Northeast | New Jersey | KWWD |
| Jun. 22, 2019 | 80 | Midwest Aerobatic Championships | South-Central | Nebraska | KSWT |
| Jul. 12, 2019 | 35 | Green Mountain Aerobatic Contest | Northeast | Vermont | KVSF |
| Jul. 12, 2019 | 77 | The Covallis Corkscrew | Northwest | Oregon | KCVO |
| Jul. 13, 2019 | 12 | High Planes HotPoxia Fest | South-Central | Colorado | FMM |
| Jul. 13, 2019 | 88 | Michigan Aerobatic Open | Mid-America | Michigan | 3CM |
| Aug. 3, 2019 | 78 | Doug Yost Challenge | Mid America | Iowa | KSPW |
| Aug. 16, 2019 | 52 | Kathy Jaffe Challenge | Northeast | New Jersey | KVAY |
| Oct. 5, 2019 | 5 | The Clyde Cable Rocky Mountain Aerobatic Contest | South Central | Colorado | KLAA |

# Five Ways *You* Can Increase Participation

## Strategies of successful chapters hold the key

**BY JIM BOURKE,** IAC 434151

**AS NEWLY MINTED IAC MEMBERSHIP CHAIR** I hear tons of great ideas about how to increase membership. I also hear the occasional grumbling about how the IAC isn't doing enough. The fact is the same strategy we need to increase membership is the strategy successful chapters use to get people involved. Have you noticed that some chapters are vibrant, lively, and fun to be around? Let's learn from their success!

Here are five things you and your chapter can do to increase participation this year. When I made this list I avoided any idea that costs you money, except maybe for fuel, or that requires someone *else* to do the heavy lifting. Let's imagine it is all up to *you*.

### DO WHAT YOU LOVE

Something got you into this sport. Maybe you like to fly or maybe you like to volunteer. Maybe you just like to talk about airplanes. Whatever it is that you love to do, do a ton of it. The more people see you doing what you love the better because when you do something you love you smile, you laugh, and you make friends. In fact, you are just awesome to be around when you are having a good time, you handsome IACer you! The number one thing you can do for the IAC is have a great time reminding yourself of what got you into this sport in the first place.

### HOST A CHAPTER CRITIQUE SESSION, FORMATION FLYING, OR PATCH DAY

IAC members love contests, but there is more to aerobatics than "bringing home wood." It's important we get together and bond over meals or just good-natured fun. A practice day is pretty easy to get going. You can turn that into a "patch day" where your flying friends can earn Smooth awards in a noncompetitive environment. You could try doing some formation flying to get a burger. Nothing feels cooler than breaking out of a formation flight to join the downwind in an aerobatic plane. Use these opportunities to invite newcomers and potential chaptermates.

### MAKE THE SPORT SOUND FUN, SAFE, AND AFFORDABLE

I love hearing pilots talk, but one trap we fall into that bugs me is we talk in ways that aren't inviting to newcomers. The pitch we usually make goes something like, "Hi, I fly aerobatics. It's really hard to do, it costs all my money, and I've barely survived it. Would you like to do that with me?" Come down from your pedestal, buddy! This sport isn't about war stories, it's about the pleasure of flying your own personal roller coaster. Every day that I fly my airplane I feel like I'm walking on a cloud. I don't even know how to deal with the checkout lady at the store. She rings me up and asks if I want a bag for my groceries, and I want to scream, "Bag? *Bag*? I was just flying upside down 30 minutes ago!" What we do is almost too fun to describe, we pretty much always do it safely, and so what if it is expensive? It's worth it.

### SHARE INFORMATION

A lot of us grew up when information was shared verbally, and we passed information on to others by letting them look over our shoulder to see how it's done. Nowadays you have to understand technology a bit to be effective passing on what you know. You can reach more people now, but your presentation needs to be honed enough to stand up to repeated viewings. This can be a bit daunting. But even if you aren't the most polished speaker you can still contribute to the body of knowledge online. A lot of people flying aerobatics have no one to draw on for help locally. They'll be grateful for anything you can do to smooth out the bumps felt by a beginner. You could write an article for *Sport Aerobatics*, you could create a blog, post videos of your flying, or if you aren't a writer, you could be subscribing to video channels and encouraging new pilots when they post something. You've learned things in this sport, and it's your duty, bucko, to pass them on. Get to it!

### APPLY FOR AN AEROBATIC PRACTICE AREA (APA)

Everyone complains about the FAA, but it's not an easy job, with tons of rules to memorize, paperwork to shuffle, and the occasional government shutdown getting in the way of your good time. Did you know that you can file for waivered airspace on a short-term basis without needing any approval from the national office? Your local FSDO can handle it on its own! Try filing an aerobatic practice area (APA) application for a weekend 60 or 90 days out and watch your government at work. Chances are you will be approved. If not, at least you'll learn something about the process, and the local FSDO will have some practice that will come in handy next time. Once you do have your APA, go back to ideas one and two.

There are a lot of great ideas that didn't make the list this time. Email me at *jtbourke@gmail.com* and let me know what has worked for you. I can always write an article called "Five *More* Ways You Can Increase Participation!" IAC

# OBLIGATIONS

BY GREG KOONTZ, IAC 20242

"HOURS AND HOURS OF BOREDOM interrupted by brief moments of sheer terror." That was my dad's favorite description of his corporate pilot career. I spent 26 years in that same profession, preceded by 10 years of charter flying along with other duties while working for FBOs building my flight experience.

I set my sights on a career in air shows and aerobatics when I was merely 7 years old. My dad took me to a small-town air show in Gadsden, Alabama. Bevo Howard flew his Bücker, Dick Shram did comedy in a borrowed Cub, and Bill Barber made noise and smoke in his big-engine Stearman. I even had a personal conversation with Bevo after the show.

But it was later when I was learning to fly that I also came to grasp the concept that I had to already have gobs of money if I was going to just be an air show pilot. So in 1972 at age 18 I went straight into instructing, as most aspiring professional pilots do. This eventually led to flying charter in Senecas and Navajos and running the flight department for Aero Sport Inc. in Florida. After eight years of FBO work intertwined with air show flying, I was interested in building a better future than this could supply and took a job in Birmingham, Alabama, as a full-time corporate pilot.

Aero Sport was one of the biggest and wildest aerobatic centers in the country. Moving to corporate flying was nothing less than culture shock. I left low-level aerobatics for turboprops and jets, and I was back in the same town and the same airport where my dad's career had taken place. Whoda thunk!

The company I worked for had serious needs to make their appointments so we were expected to fly to the capabilities of the aircraft to get them there. Tweaking through lines of thunderstorms and minimum ILS approaches are what corporate pilots do, and it took the kind of diligence

aerobatics requires. It developed teamwork in my flying and good uses of the great resources available in modern corporate jets.

In 1993 I was able to buy a Super Decathlon and instructed acro on weekends and flew small shows here and there. It grew into eight shows a year, about as much as I could handle around my corporate flying job and family time. Jump ahead 10 years when my kids were grown and leaving for college. I was so happy with my aerobatic school and doing shows that I quit my corporate job and launched a full-time career self-employed as Greg Koontz Airshows. American Champion Aircraft soon sponsored me, and my air show schedule went from eight a year to 12, then 16, and then 20!

Obligating to lots of shows and representing sponsors creates pressure to be where you said you would be. A Super Decathlon is not exactly a corporate jet and doesn't even come with a co-pilot; in fact, not even an autopilot! Scooting around to local shows a hundred miles away a few times a year was one thing. Covering half the country to meet a demanding schedule was a completely new concept. A side job doing

***"WEATHER IS FICKLE. TO THINK YOU HAVE IT ALL FIGURED OUT IS MISTAKING LUCK FOR SUCCESS. WHEN YOU ARE AT FLIGHT LEVEL 350 WITH ALL THE RESOURCES OF MODERN TECHNOLOGY ONBOARD AND A CO-WORKER IN THE OTHER SEAT KEEPING YOU HONEST YOU CAN FEEL PRETTY GOOD ABOUT WEATHER DECISION-MAKING."***

shows at my pleasure was plain old fun. This had become what working as a professional air show pilot was all about.

My first memory of pushing myself to meet these obligations was coming home from a show in Indiana. I had to make it home to get turned around for another show the next week. The clouds were low, but visibility was decent. I launched for home maintaining 900 feet AGL for a while, but soon I was required to fly a little lower to stay clear of clouds and soon after that, even lower. Each time I descended I was justifying the situation with less and less real justification. My GPS was showing me the towers, right? I had a couple of miles of good visibility. Before I knew it I had talked myself into covering the last 200 miles with a 400-foot ceiling and poor forward visibility. The fact that I had made it without a single scare justified the whole thing.

I now had possession of one of the most dangerous things in aviation: I had an excess of self-confidence. By that time I had accumulated more than 20,000 accident-free hours. I had spent a whole career dealing with all types of bad weather and considered myself an expert in reading the sky in front of me to find my way through. I was successful.

Weather is fickle. To think you have it all figured out is mistaking luck for success. When you are at flight level 350 with all the resources of modern technology onboard and a co-worker in the other seat keeping you honest you can feel pretty good about weather decision-making. At 400 feet dragging your rudder in the clouds and hunting for towers over the nose it isn't the same. That's exactly what happened next.

After years of successful scud running, I was convinced I was one of the best at it. I had to get home from Ozark, Alabama, to attend a pre-marriage dinner for my daughter. The weather, of course, was bad but tempting. I departed in a Model 12 Pitts for home. The Pitts had no horizon, not even a turn and bank indicator. It had a Garmin 195, about as simple a navigation system as you could have. I was holding track and bearing the same as I scooting along. As it goes so many times, the ceiling was going down and the terrain was coming up. I had slowed the big Pitts down to have more time to see terrain or towers in front. But the M14P engine up front was now blocking forward vision at the higher angle of attack. Soon, I was dragging that rudder in the clouds and the wheels near the trees. A good 30 minutes later than I should have, I decided to do a 180 and go back to Ozark. I glanced at my track and calculated the reciprocal. I had no time

for long looks in the cockpit without drifting into clouds or, worse, hitting the trees. With my eyes calculating attitude outside with great care I started a 180-degree turn.

With my best guess I rolled out and made a quick check of the new track. I was 20 degrees short of the heading to Ozark so I rolled into another turn. At that instant, a big fat antenna zipped by the cockpit window. It was so close that only a miracle kept the wing from contacting it. If I had started the course correction a split second later I would have missed my daughter's wedding and the rest of my life.

Of course, that incident made me raise my cloud minimums. But I still was so confident that, being the best at this weather flying stuff, I had only made a little mistake in judgment being pressed to get home like I was. But there were still a lot of shows to fly. So far, I had never launched to go to a show without arriving there. It is an obsession, not really an obligation.

So, what were my weather minimums by then? I never really set a number, I just promised myself to do better. But in the desire to make every show, the minimums were variable. It depended on the circumstances. With that attitude I had not really changed a thing. I had not faced the demon that lurked out there waiting to kill me.

A person determined to shed an addiction will promise to cut back or even quit. The results of such resolve will almost always result in a relapse; the next over-indulgence commonly being worse. They say the only hope for most addicts is to have a dramatic event, something to cause hitting a rock bottom so hard you become motivated to break the chain of events.

Maybe, I hope, that has happened for me. I finally might have confronted my addiction. Sure, I still think I am really good at reading the weather in front of my course; 50 years of flying from point A to B has been a great teacher. I am still confident in my abilities. But I concede that my demon is my desire to be at that air show. I would never really stop pushing weather until I decided being there was not really that important. My 7-year-old self was still trying to be an air show pilot. It was time to tell myself I am what I wanted to be — one more show wasn't going to change that. It had become time to weigh the importance of the rest of my life, something I wasn't willing to sacrifice to be there. Grandkids will do that to you.

My turning point took its biggest arc when Jim Malone flew his Chipmunk into terrain on his way to an air show. Jim was not only one of the nicest, level-headed people in the air show business, he was also very successful in his life. He was a senior Delta Air Lines captain and former military jet fighter pilot with honors such as top gun instructor. I looked up to Jim. He was killed trying to get to a simple air show, leaving behind such a great legacy of friends and family. I don't think for a minute that Jim valued anything over his family. I do understand how we can so easily push ourselves to get to an event trying to justify the risk.

The record shows that sport aerobatics is very safe — much safer because altitude is our friend! But, for every one of us, going from point A to point B can be the most dangerous thing we do. I hope you always have confidence in your aerobatic flying and humility when you see that weather in front of you. Take it from me — you don't have to be there. IAC

# UNIQUE CHALLENGES OF AEROBATIC AIRCRAFT MAINTENANCE

BY MICHAEL FLAGELLA, IAC 431429

EVER SINCE I STARTED FLYING, I've been obsessed with aircraft safety. As an A&P mechanic with inspection authorization who is focused on aerobatic planes, I find that maintaining them brings additional challenges beyond your standard GA aircraft. I've seen what a botched aerobatic maneuver can do to an aircraft structure. Therefore, it is our duty to understand what could go wrong and why, and then try to find these issues before they become a problem.

Understanding how these aircraft are flown helps guide our maintenance and routine inspections in addition to the standard checklists. Aerobatic flights are generally short-duration, high-intensity affairs that routinely use the aircraft's entire flight envelope — and sometimes go outside of it. Aerobatic maneuvers can place demanding loads on various structures and components, and include rapid changes from high-*g* to low-*g* loading (rolling circles), torsional stresses (snap rolls), and even reversed airflow over control surfaces (tailslides). Thinking about these loads and affected structures suggest areas that you and your mechanic should be carefully inspecting in order to identify problematic items early, and attempt to mitigate the risk of a major failure in the future. Using the examples above, careful attention would be given to the wing and cabane/strut attachment fittings, steel engine mounts and their associated hardware, and the hinge attach points of control surfaces.

Interestingly, reviewing the older IAC literature suggests that more chronic issues are likely to be problems for a pilot. During the tech inspection at the 1977 IAC Fond du Lac contest, a number of problems were reported that year, but those that we can learn the most from are those that were repeatedly

found (*Technical Tips Manual, IAC, 1981*). The following were noted to be found many and very many times that day: chafed brake lines, corroded propellers, loose aileron hinge fittings, deteriorated engine mount bushings, loose tail brace wires, worn tail wheel interconnect springs and clips, worn rudder horn cable attach points, looseness between elevator halves, oil-soaked belly fabric, and, finally, foreign objects in the tail cone.

With the exception of the "foreign objects in the tail cone," an astute observer will recognize that everything else on the list are items that might be attributed to wear and tear, or problems that can get worse, almost imperceptibly, over time. An owner looking at their aircraft every day might not actually realize or recognize how bad something has become until someone else points it out. Therefore, it's a good idea to get another set of eyes on your airplane, especially if you are the one signing it off for the annual/condition inspection. Perhaps even invite a fellow pilot to pair up during a practice session and swap tech inspections with them.

Regarding the findings of foreign objects in the tail cone, it's never a bad time to review foreign object debris (FOD). In AC 150/5210-24, the FAA defines

FOD as "any object that is located in an inappropriate location in the airport environment that has the capacity to injure airport or air carrier personnel and damage aircraft. ... FOD has the potential to damage aircraft during critical phases of flight, which can lead to catastrophic loss of life and aircraft." The types of FOD are varied and include aircraft hardware (nuts, bolts, safety wire), mechanics tools, flightline items (water bottles, soda cans, pencils), airport ramp items (plastic bags, wheel chocks), and natural materials (rocks, dirt, wasp nests). The sources of FOD in the context of the typical airport environment within which our aircraft operate are personnel, such as pilots, passengers, and mechanics; the equipment operating on the field, such as fuel trucks and other aircraft; and the environment, such as wildlife or weathered pavement. FOD can get lodged in flight controls, short out electrical circuits, and get sucked into intake systems. None of these is particularly compatible with concluding a flight safely.

FOD hazards can be reduced by bringing awareness of its dangers and implementing practices intended to prevent, detect, and remove it from the environment. How many of you were taught, prior to an aerobatic flight, to empty your pockets? How many passengers are told to do this during a preflight briefing prior to that Sunday joyride? If you rent your aerobatic aircraft, you need to be extra vigilant because a previous renter may have lost something in the cockpit. Aerobatic maneuvers and all the associated forces can throw FOD around inside a cockpit and tail cone, and you just can't predict where it will come to rest. One good preflight practice is to tap the bottom of the belly (if fabric) and listen for things bouncing inside. Another is to remove an inspection cover from the tail cone and give the insides a good visual look-over. You'd rather find something back there while on the ground than in the air after it's too late.

The tech inspection used at contests is based on a history of malfunctions, defect reports, and maintenance inspections that were gathered by the IAC over the years, and it is this knowledge that has led to the excellent safety record at contests. While not exhaustive, this article is intended to remind pilots and mechanics that safety is an ongoing endeavor, to be aware of what we're putting our aircraft through, and to be extra mindful of this during inspections, including pre- and post-flight. If we pay attention and iteratively improve our practices, we can achieve the goal of flying with an increased level of safety for ourselves and those we look after. IAC

# AEROBATIC OR UNUSUAL ATTITUDE TRAINING

## What's the difference?

BY BUDD DAVISSON

**FOLKS, WHAT YOU ARE ABOUT TO READ IS** definitely defined as "opinion," a statement for which no basis in fact can be found. In this case, it's a casual conversation about taking aerobatic or unusual attitude training and coming up with a conclusion about which is best for the normal (assuming any of us are normal) non-aerobatic pilot.

I don't know of any hardcore statistics that can show that a person (or two or three) was saved when rolled on their back on final by an airliner because they took either kind of course. Of course, no one keeps track of successful saves, and unsuccessful ones are camouflaged as part of accident statistics. In other words, no one actually knows whether taking a basic aerobatic course is better than a course in unusual attitude recovery when it comes to making a pilot safer. But that doesn't stop some of us from having opinions on the matter, and I expect to hear some from those who read this.

First, remember that we're talking about beginner aerobatic courses, not more advanced ones. It might be worth defining what the two courses do and do not teach us. Then we need to compare that to what is needed in most pilots' lives to make them safer.

It's highly possible that it's not fair to compare basic aerobatic training and unusual attitude training courses because their goals are so different. Aerobatics is designed to teach us how to do a whole bunch of individual maneuvers and then combine them together into sequences. The aerobatic courses deal entirely with complete maneuvers that might be stuck together in a fractional manner, e.g., Cubans, Immelmanns, etc. The basis of these maneuvers is that we know what they're supposed to look like ahead of time, and we fly with that in mind. We know the maneuvers going in.

Unusual attitude training (UAT) is entirely different. There, the goal is to know how to handle the unexpected departure from level flight in such a way that we don't hit the ground nor disassemble the airplane in flight. Essentially, we are dealing with bits and pieces of aerobatic maneuvers, but we don't know what those maneuvers are or when we'll be dealing with them. We *don't* know the maneuvers going in because, among other things, they aren't maneuvers. They are three-dimensional situations gone wrong so they can't be practiced.

Here's a major caveat that summarizes the entire article that follows in one sentence should you decide to bail on us: The goal of unusual attitude training is to teach pilots to immediately recognize that the airplane is being pushed beyond safe attitude limits and enable them to instantly stop that attitude change with appropriate control inputs. In other words, when that airliner starts to roll a pilot on their back, they'll catch it early by immediately going to full aileron and some rudder and stop the roll before it develops. Instant recognition and reaction are the butt-saving key points. Preventing an unusual attitude from developing is at least as important as knowing how to recover from it.

### THINGS BOTH COURSES TEACH US

The two instructional approaches overlap and are going to teach a number of the same things.

- **Airspeed versus *g*-force awareness.** Not understanding the relationship between speed and *g*-force is the unknown bit of knowledge that can hurt a pilot when losing control of an airplane in any situation. In both types of training we are taught, and shown, that speed alone is unlikely to hurt us unless we pull too hard when going too fast.
- **Increase awareness of attitude changes.** There's an old saying that goes, "If you've never been there before, how will you know what to do when you find yourself there?" There is no substitute for seeing the horizon from a different perspective. Once you've seen it from an inverted or vertical point of view, you'll be more likely to recognize it without panicking. This will allow your brain to function and will guide you to a successful outcome.
- **Develops a feel for *g*-force.** To any pilot, *g*'s are initially confusing and sometimes terrifying. Exposure to them breeds a familiarity that enables the pilot to continue piloting, rather than crumbling.
- **Cures the apprehension attached to unknown attitudes.** A major goal of both UAT and aerobatics is to enable a pilot to recognize an attitude and give them the skill to recover from it. A certain amount of apprehension is always attached to this and has to be dealt with.

### BASIC AEROBATICS: WHAT IT TEACHES US AND WHAT IT DOESN'T

Beginning aerobatic courses are maneuver-specific. Efforts are made to develop proficiency as it relates to given maneuvers and doesn't usually deal with the unexpected.

- **It doesn't break the urge to pull in an emergency.** That's a universal urge of most non-aerobatic pilots.
- **Does make full aileron deflections familiar, when called for.** Very few pilots have felt the aileron stops in the air. Even CFIs are familiar only with the middle of the envelope. Aerobatics cures that. Ditto UAT.
- **Aerobatics trains us to visualize the maneuver in our head.** Aerobatic training teaches us to see the maneuver in our head and make the appropriate control movements to fly it from beginning to end.

### UNUSUAL ATTITUDE TRAINING: WHAT IT TEACHES US

A non-aerobatic pilot is unlikely to find themselves inadvertently doing a loop or a roll. It is, however, possible they'll find themselves caught by environmental overloads that their instincts aren't developed to handle, and UAT is aimed at developing those new instincts.

- **Develops instant reaction to roll and pitch.** As stated earlier, the most important part of UAT is that a normal pilot becomes sensitized to increasing, uncommanded roll rate. So, if they see a wing suddenly coming up without them asking it to, they'll have no problem slamming full aileron against it along with a bunch of rudder. When doing aerobatics, we know how attitudes will change and how we got there. No surprises. UAT is all about dealing with surprises. The windshield is like flash cards where we have to recognize an unknown the instant it is shown to us.
- **Breaks the default pull reaction.** In a new, surprising situation, the normal reaction of most pilots is to pull, even though that may be pulling the nose toward the ground. UAT is aimed at breaking that reaction.
- **Trains to instantly know when power should be cut or increased.** Nose-high and nose-low conditions demand power be handled appropriately. Through exposure to blue-versus-dirt-colored windshields, pilots know when to pull or push the throttle.
- **Has more roll to horizon before pulling training.** Rolling pulls can be fatal to a non-aerobatic airplane so in UAT an emphasis is placed on getting the airplane square (roll to the horizon) before putting *g* on it.
- **Nose attitude control is central.** Emphasis is on stopping the situation from getting worse. This includes stopping a falling or rising nose and instituting appropriate recovery techniques.

### CAUTION, OPINION AHEAD

In my opinion, if a private pilot is only going to take one course, beginning aerobatics or unusual attitude training, I vote for UAT. This is because in UAT the pilot is dealing with unexpected bits and pieces of maneuvers, not whole maneuvers. The goal, which has been stated several times, is to recognize the situation as it is developing and stop it. Even if the proverbial airliner is capable of rolling us on our back (which is highly improbable, by the way), virtually every airplane is capable of stopping that roll if full aileron and some rudder is slammed in the instant the roll begins. The key is in recognition. You can't fix what you can't see, and unusual attitude training will increase your ability to recognize what is happening earlier so you can deal with it before it reaches catastrophic levels. IAC+

# WHERE MAGIC LIVES

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# THE NORMAL RULES STILL APPLY

BY STEVE JOHNSON, IAC 20081

**IN OCTOBER 2017** during practice for an IAC aerobatic contest, two airplanes met head on while both were landing at the nontowerd airport where the contest was being held.

Runway 03 was in use with a NOTAM issued for right traffic to keep transient aircraft out of the box on the northwest side of the runway. The wind was calm and the weather was clear. As the first aircraft, a Pitts Special, cleared the box the pilot called entering a right downwind for Runway 03. This required the pilot to cross over the runway from the northwest side to the southeast side to enter the right downwind. As the Pitts was setting up for the downwind leg of the pattern, the second aircraft, a Staudacher S-300, took off from Runway 03, and made a left turn toward the aerobatic box. As the Staudacher pilot entered the box, the pilot rolled the airplane for an inverted start. When inverted, the Staudacher pilot found a water bottle floating loose in the cockpit. The pilot rolled upright and called on the box frequency that he had a loose item in the cockpit and was going to land. He asked for someone to meet him near the runway to get the water bottle. The box master called that someone would.

The Staudacher pilot switched to the CTAF frequency and called that he would enter right downwind for Runway 03. This would have set him up behind the Pitts that had previously exited the box. However, the Staudacher pilot entered a downwind for Runway 21 instead. There are trees near the end of Runway 21 that make it difficult for the box master or CTAF monitor to see traffic on a right base or final if landing on 21. The Pitts landed and was rolling out. The Staudacher pilot landed on 21, but by the time the CTAF monitor saw it, they had no time to call an abort or make any warning calls. Both aircraft were tailwheels with limited forward visibility when in the three-point attitude on the ground. The two aircraft collided on the runway while traveling in opposite directions. The Staudacher pilot had only minor injuries, but the Pitts pilot was significantly injured and was hospitalized.

The box monitor and CTAF monitor were both listening on frequency, and expected to see the Staudacher aircraft behind the Pitts as it was landing on Runway 03 but neither noticed the Staudacher coming from the opposite direction. There was another aircraft inbound to the airport, which may have distracted the box and CTAF monitors.

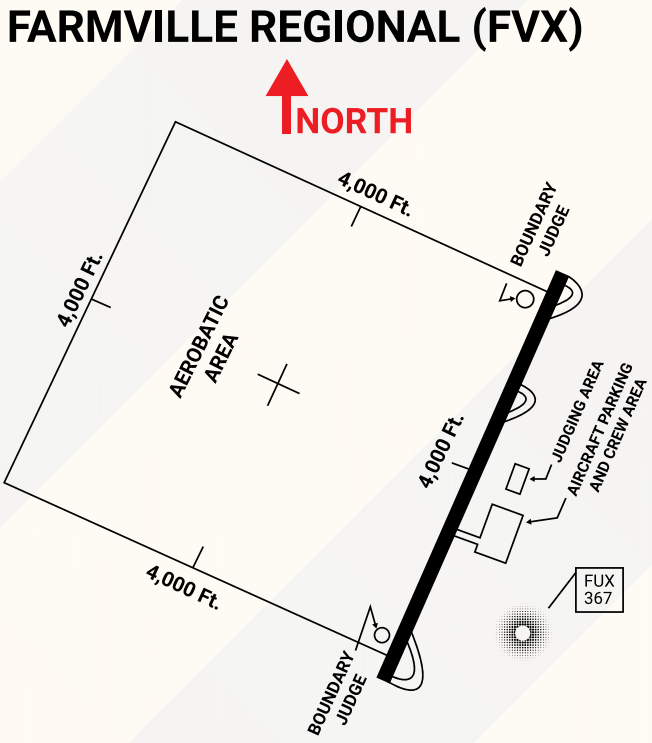
Once an aerobatic aircraft is leaving the aerobatic box, they must follow the FAA rules for airport operations, AC 90-66B *Non-Towered Airport Flight Operations*, as well as normal see and be seen guidelines. The airport is a normally uncontrolled airport, but because of the contest there was more than normal traffic. Box and CTAF monitors were in place to help with traffic and box coordination, but the accident still occurred.

So what happened? Why did this accident occur?

There is rarely one item that can be pointed out as the single causal factor in an accident. In this case, one pilot went the wrong direction in the pattern and landed going the opposite way of normal traffic flow. The box monitor and CTAF monitor didn't see the Staudacher going the other way. The box and CTAF monitors were expecting the Staudacher to follow the Pitts, and maybe weren't looking the other way. The Pitts pilot was focusing on landing, which we know does take special concentration. There was no aircraft "directly" in front of the Pitts pilot so he expected to be the first to land. The Staudacher pilot was obviously distracted by the loose bottle in the cockpit, and probably by losing some of his practice time in the aerobatic box as well.

Once we are cleared into the box, we focus on our aerobatic flight, and we're generally not looking for other traffic. That's why we have our waivered airspace in the box. But the waivered aerobatic box does not provide a wall to protect us while in the box. Nearly all of us have had other (typically non-aerobatic) airplanes pass through the box while we're flying aerobatics. During a contest, pilots depend on the judges and assistants to watch the airspace while we're flying; they can call us on the radio to tell us of potential conflicts. Normally, in a contest environment this system works well. There are enough eyes on the ground watching to provide a heads-up if needed. Once we leave the box, and potentially during less formal practice flights, we pilots must be watching out for ourselves, keeping our heads on a swivel.

When landing our aerobatic airplanes, our focus becomes narrowed to getting the airplane on the runway safely, and we have to stop looking around so we can focus on just the landing. In our tailwheel airplanes, we normally fly a tighter, smaller pattern with a curving downwind to base to final approach so we can keep the landing end of the runway in sight. Our focus tends to narrow onto that portion of the runway where we expect to land. My home airport, John C. Tune Airport in Nashville, Tennessee, is a very busy nontowered airport with everything from Cubs and Champs to big, fast business jets using the runways. Sometimes experienced




pilots want to use the "convenient" runway, not necessarily the preferred runway, or even the runway other aircraft are using. Our local students can get confused on proper landing procedures as well. I have learned to search the entire length of the runway during my final curving approach, including the taxiways onto the runway, just to ensure no other airplane can taxi onto the runway while I'm landing, or that no one is landing going the other way. Could this technique have prevented this accident? Perhaps, but I wasn't flying that day so can't answer the question.

We need to use every method, trick, and procedure we can to make our flight safely, all the way through the landing. We must fly the airplane all the way to the hangar, meaning we can't relax our flying skills and scans until we shut down at our hangar or ramp. This was a bad accident causing serious injury to one pilot. The accident was not related to aerobatic flight, but even the FAA officials who investigated had a hard time understanding and keeping the aerobatics separate from the pattern flight that led to the accident.

Help us keep IAC competitions and aerobatic flight the safe sport it truly is. To do that we need to extend our vigilance outside the box to keep our normal flight in the pattern and our cross-country flights to the contests safe as well! ***IAC***

**THE NTSB REPORT CAN BE FOUND HERE:** https://app.ntsb.gov/pdfgenerator/ReportGeneratorFileashx?EventID=20171020X15857&AKey=1&RType=HTML&IType=CA

# HOW TO GROUND LOOP YOUR TAILDRAGGER

## A helpful guide to the surprise maneuver

**BY WES LIU,** IAC 10467

*The following is adapted, with gracious permission, from an article by Swift Museum Foundation Honorary President Jim "Frog" Jones and Executive Director Scott Anderson.*

Judging by how frequently it is performed, the ground loop is indeed a popular maneuver. The ground loop is an extreme low-level figure that is highly acrobatic in nature, which may be executed in many exciting variations. It is customarily performed as the last figure in a sequence, but I have seen the ground loop attempted as a preliminary or warmup maneuver.

It is rarely scored, however, because it is most often performed out of the judges' line of sight. Also, the ground loop is categorized as a surprise maneuver, and therefore nobody is really prepared when it is executed. In fact, the figure is not considered genuine unless judges, spectators, and the pilot-in-command are all surprised! The many interesting and dynamic variations do not have a degree of difficulty, or K, attached, but rather are rated on the international HC, or Holy Cow, scale.

### HISTORICAL PERSPECTIVE

The ground loop is one of the earliest recorded aerobatic figures. It has been performed with virtually all of the taildraggers dating back to aviation's infancy. The maneuver really came into its own during the Golden Era of the Ground Loop, which was the period when cross-wind landing was invented.

### ANALYSIS

Most ground loops are weathercocking-related phenomena. This means that at least one main wheel must be touching the earth and a wind must be blowing. Traditionally, the maneuver is started in a crosswind; during the landing rollout the tail is allowed to be blown downwind. At this point there are a variety of options that can be exercised depending on your inputs, and the maneuver can take off in almost any direction and finish in a variety of attitudes. Ground loops that occur under calm conditions are rarer and require vigorous control inputs, so you really have to work at it to get a decent one.

### ESSENTIAL BACKGROUND KNOWLEDGE

Avoid the study of the following subjects: crosswind landings and takeoffs, and ground-handling in winds. Avoid seeking instruction on these subjects for it will greatly reduce your chances of producing a truly world-class ground loop.



ILLUSTRATION BY **CORDELL WALKER**

## PREPARATION

To be successful, we must prepare both pilot and aircraft.

**Pilot:** To perform good ground loops, the best preparation is no preparation.

**Aircraft:** The aircraft can be prepared in a variety of ways to ensure consistently good ground loops. First of all, the main wheels should be shimmed to a toe-in condition. If the wheels are adjusted to track straight ahead or are shimmed slightly toe-out, the tracking will be too stable to assist your attempts at ground looping. Keep the tire pressures different from one another. It isn't necessary to change the tires until you can see the second ply of fabric showing; a blowout can be the start of a dazzling ground loop.

Install the push-to-talk switch in a remote area of the cockpit. When the tower talks to you on the rollout, you can look down into the cockpit to locate the button, and when you look up, you may be treated to the wonderful green and blue kaleidoscope of rotation about the vertical axis.

## VARIATIONS

There are many variations of the ground loop. A few of them are listed below.

***45-Degree Overland Express:*** This one is best done at about 40 mph. The airplane is allowed to weathercock slightly, the upwind wing and wheel are allowed to rise about 30 degrees, and the airplane swings into the wind. At 45 degrees off the runway heading, sharp downwind brake, full aft stick, and aileron into the wind are added to stop the ground loop. The plane is now headed off overland. This is useful for taking a shortcut to the washrooms after a long flight.

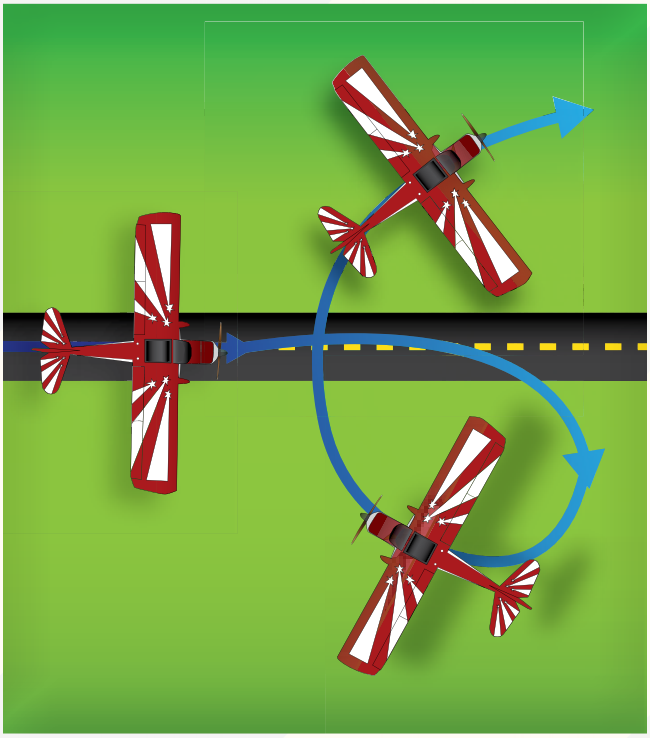
***Pitts Special Twin Arcs:*** Start the ground loop from the rollout at about 25 mph. Remove all crosswind inputs and allow the airplane to weathercock. Move the stick forward to at least neutral to lighten the tail wheel and reduce its directional control. The little biplane will rise on the downwind wheel and begin a concise pirouette. The downwind wingtip will hit the runway and begin scribing an arc of red butyrate, Dacron, and plywood. Without hesitation, slam in full upwind aileron, as if to attempt to lift the lower wing. The downwind aileron will shoot down and describe a beautiful red arc parallel to that made by the wingtip. Pull the stick full back and push full downwind brake with full rudder and a burst of power to erect the plane. These little red arcs are very artistic and will attract a good crowd in the evening following the day's flying.

***Ground Loop With Bunt:*** This is certainly one of the more dramatic figures in the ground loop family. You'll want to be traveling a little faster to get this one — say 35 mph. The figure should start slowly and then get faster and tighter as rotation sets in. A dry runway is necessary, and a quartering tailwind from the left is best. Once rotation starts, shove in full downwind stick and full forward elevator. This will really tighten up the rotation. Now add full brakes and full power. The tail will shoot upward and the airplane will do a kind of shoulder roll onto its back. This is really low-level inverted, and you should ensure that your belts are very tight. This figure should be reserved for the last flight of the day.

## CONCLUSION

The ground loop has been around for almost a century, and I'm sure it will be with us forever. And to keep it alive, all we have to do is be a little complacent, a little cocksure, and a little in a hurry. Most important, one needs a thorough misunderstanding of weathercocking, crosswind takeoffs, landings, and ground-handling. Sounds pretty easy to me.

Enjoy your spin-around! ***IAC+***



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# The Quiz Answers

1. Angle of attack: The angle at which the wings of an airplane meet the relative airflow. Can be either positive or negative.

   Angle of incidence: The angle at which the wing is physically mounted to the aircraft's fuselage. If this angle is other than zero, the aircraft fuselage will not appear to be in a vertical attitude when the zero lift axis is flown.

2. Each contest will have a technical committee for the primary purpose of assisting pilots in discovering potential safety hazards in their aircraft. The technical committee will consist of the contest director, a chief judge, and the chief technical monitor who is appointed by the contest director. Additional technical committee members may be appointed by the contest director as needed. The technical committee will be responsible for the following:

   (a) Verifying that the competitor possesses required certificates and aircraft documents.

   (b) Determining the validity of a competitor's claim of mechanical defect and whether the failure was beyond the control of the competitor.

   (c) Denying further participation of an aircraft with an alleged technical fault until the fault is corrected to the satisfaction of the technical committee.

3. False: The use of a helmet, flight suit, and gloves is strongly recommended for all competitors and safety pilots, but is not mandatory.

4. According to Federal Aviation Regulation (FAR) 91 (General Operation and Flight Rules), Subpart D, section 303 the minimum altitude is 1,500 feet AGL.

5. The first documented test of a parachute was in 1617 by Croatian inventor Faust Vrancic, who based his work on Leonardo da Vinci's sketches. He tested his design by jumping off towers in Venice, Italy. He called his invention Homo volans (flying man). The term parachute was coined by Frenchman Sebastien Lenormand in 1783, and his compatriot Jean-Pierre Blanchard is felt to be the first person to use a parachute in an emergency when he escaped from a ruptured hot air balloon in 1793.

# THE SAFETY CHECK MANEUVER

## An important first maneuver in any aerobatic sequence

BY JOHN SMUTNY, IAC 25010

**IT'S A PRETTY SIMPLE** and straightforward process: Roll inverted, give the stick a quick jab, watch for any loose objects in the cockpit, and hope you don't bang your head on the canopy. Roll upright, give the ratchet belt a cycle or two, position the plane to dive into the box, and impress the judges with your aerobatic prowess.

The safety check, or safety roll, is the last chance a competitive pilot has to confirm they are secure in the seat and there is nothing loose around them before starting the aerobatic sequence. That whole process takes about 120 seconds — two minutes per flight. A relatively short time span for that one last check to ensure you and your aircraft are ready to fly the sequence.

Yet, when the day runs long and the contest has been grinding on for hours, it becomes one of the first activities at risk of being suspended. While serving as contest director for the U.S. National Aerobatic Championships in 2018, I was flabbergasted by the number of seasoned IAC members that came to me to suggest I update my briefing to advocate dropping the safety check from each flight. We need to be doing just the opposite — encouraging our pilots to perform the maneuver, not dissuading them from doing it. It is an important, and integral, part of the competition flight.

The typical IAC contest is a rushed affair, pushing a fast-paced schedule from the early morning briefings to getting that last flight in before sunset. Often, competitors will speed from the judging line to the cockpit in the most minimal time possible, not really allowing a healthy transition mentally from one discipline to the next.

We are all painfully aware of the myriad articles in aviation publications about how accidents are always a chain of events and breaking any one link in that chain could have prevented the tragedy. In our competition environment we don't have many places where our process makes us stop, think, and assess the situation. That is exactly what the belt check does. After rushing into the air, the belt check gives us that one last moment of contemplation before the sequence starts to make sure our cockpit is sterile, our safety belts are working, the airplane is handling as we expect, and our fuel cap is in its place.

The belt check itself need not take too much time to perform. Often, it can be done while climbing in the box or out in the hold, if that airspace meets FAR 91.303 minimums. Should the pilot be required to perform the safety roll just prior to sequence start within the boundaries of the aerobatic box, then all the pilot needs to do is fly just inside the box boundary itself to perform the check. Oftentimes pilots will fly to the center of the aerobatic box, or across its entirety, to accomplish the safety roll. That need not be the case, a simple pass down the inside of the box boundary closest to the desired side of entry is all that is needed. Remember, even when the certificate of waiver only indicates the aerobatic box as the airspace where aerobatics is allowed, you have 500 feet on each side as a safety buffer. So should you wander slightly outside the box boundaries, you are still well within the safety zone as set by the waiver.

In addition to ensuring aircraft systems are operating correctly and that your belts are snug, the safety check reveals objects that may be loose inside the cockpit. These potential threats offer the risk of distraction and could act as missiles flying through the cockpit striking the pilot or jamming bellcranks or linkages leading to loss of controlled flight. There are many examples in the history of aerobatics where loose objects have been the suspected culprit of various accidents. In its 36 years of competition, my Christen Eagle has had the radio come out and hit the pilot as well as miscellaneous pens, keys, hardware, and ball bearings appear in the canopy along with the occasional item appearing out of unzipped storage pockets. Let's make sure we don't have anything lurking unseen on the cockpit floor before that first push humpty.

The IAC Official Contest Rules do not mandate that the safety check be performed before each flight; it is very much an optional maneuver. It should, however, be second nature for every IAC pilot to perform the safety check prior to every aerobatic flight, whether it's practice, competition, or giving your friend a taste of your passion. Let's take that extra few seconds to make sure everything is working correctly, allowing us to have an enjoyable and winning flight. IAC

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# Risk Management – Boring or Brilliant?

BY THOMAS JOHNSON, IAC 436743

**A LONG TIME AGO,** I flew airplanes off ships for the U.S. Navy. We tried to talk about safety, but really, flying off the ship can be one of the most dangerous activities one can engage in. We realized that the idea of promoting safety in that environment seemed absurd and, quite frankly, boring.

It wasn't until I got out into the real world that safety took on a different meaning. I began to realize that focusing on the negative was counterproductive. Looking at what an individual did and trying not to do the same did not get to the heart of what was unsafe about the scenario.

I began to look at what decisions the pilot was making and why. What circumstance led the pilot to decide that a particular course of action was appropriate for a situation?

The more I looked into aviation safety, the more I realized it is really an exercise in risk management. Risk management can best be defined as "the forecasting and evaluation of aviation risks together with the identification of procedures to avoid or minimize their impact."

That was exactly what all the boring Navy safety guys had been trying to tell me all along. But they never stated it in those terms. We scoffed at dumb things pilots had done. We tried to forecast where the next accident would happen. We even bought into the idea that it could not happen to us because we were better pilots than them.

But to do aviation risk management well, you have to be able to identify the risks and develop reasonable mitigation strategies. You have to believe that you are at risk every time you strap the aircraft on.

One hard truth we have to accept is that we all like a bit of risk in our flying. If you were totally risk averse, you would not strap yourself into these machines and do the maneuvers we do. You relish the fact that you can enjoy and safely operate on a repeated basis in a corner of aviation that many consider dangerous.

So how do you identify the risks? You can watch or read about others and learn from their mistakes. You can listen to the miraculous tales of narrow escapes. You can do many things.

But how about a systematic approach to risk mitigation?

The aviation industry has many risk assessment models, PAVE (pilot, aircraft, environment, and external pressures) to name one. They are boring and can be cumbersome. But a careful analysis of each model is that they are "good old hangar flying" rebranded for academic and bureaucratic consumption.

Hangar flying? You mean old guys sitting around on a rainy, foggy afternoon telling "there I was" stories?

Exactly!

Hangar flying brought up a scenario, identified risks, and offered mitigation strategies to the risks. Hangar flying added to your ability to identify and mitigate risks in flight, but doing the same on the ground. Once in the air, when you encountered a similar situation, you could flip through your Rolodex and pull out the knowledge to safely handle the scenario.

If you have ever heard of scenario-based training, this is it in a nutshell. The military and the airlines figured this out a long time ago. But they have fancy simulators to help their pilots understand risk management. And they essentially have a captive audience; comply or don't fly.

Risk management can also be a very social activity. Hangar flying is fun. And because most of us want to belong in the group, when we trespass into an unsafe situation, the group should let it be known we have crossed the line into an unacceptable level of risk. For example, fly too low on your sequence at your next contest and let me know how well you score.

Risk management is also something you can do in your private time. Think about situations you found yourself in and ask yourself how you could have handled the scenario differently. Notice I did not use the term *better*, but *differently*. You may very well have done the best job possible, but could a different course of action have dealt with it just as well?

Conversely, it can help you identify decisions that lead to undesired results. This can be just as effective in helping you avoid adverse situations.

But how does all of this apply to us in the sport aerobatic community?

We all have to have a flight review as mandated by FAR 61.56. Advisory Circular 61-98D mandates that CFIs use scenario training in the conduct of the flight review. Pilot examiners are also required to use scenarios and discuss risk management with candidates for a rating.

So, I guess I was wrong. Safety really isn't as boring as I once thought. So get out there, do some hangar flying, and put those risk management skills to work. IAC

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# Great Times in a Great Lakes

## Iconic biplane takes California contests by storm

BY BETH E. STANTON, IAC 436050

**THE WHITE SILK SCARF** seemed like a good idea at the time. It was 2012, and for my first flight in an open-cockpit Great Lakes biplane, I was going full-on romantic vintage with the scarf and leather bomber jacket. With an unfortunate lack of foresight, when the prop started spinning the scarf came alive, whipping me about the face like a used car lot wacky waving inflatable-arm man. Struggling frantically to pin down the unruly fabric, I wound it around my neck multiple times, tied several knots and shoved it into the collar of my jacket. Thankfully, instructor Yuichi Takagi was in the front seat and didn't witness the buffoonery.

As we approached the practice area, he asked if I was okay with going inverted. Apparently, sometimes people are uncomfortable with the idea of going upside down in an open-cockpit airplane. That particular factor hadn't even occurred to me. Inside my head I was yelling, "Bring it on!" I guess I never really considered a plexiglass bubble as a safety barrier. The aerobatic planes I'd flown up to this point included the Extra 300, Super Decathlon, and Pitts. While a Great Lakes and a Pitts both have two sets of wings, the similarities stop there. But the fun certainly doesn't.

A Great Lakes is by no stretch a high performer. It has lots of drag, a limited amount of power, and a $V_{NE}$ of 153 mph. It has been described as honest, forgiving, and a pussycat to land. Control forces are balanced but heavy, roll rate is slow, and rudder is mandatory. That said, it flies basic aerobatic figures beautifully and shines in old-style flowing aerobatic sequences.

***NOW I'M BACK IN MY OLD LOVE, WRESTLING THE LAKES THROUGH INTERMEDIATE AGAIN."***

— Howard Kirker

Ownership, maintenance costs, and the performance of a Great Lakes are similar to a Citabria or Decathlon. But you just don't see that many Great Lakes at IAC contests. The March 2008 issue of *Sport Aerobatics* magazine featured Howard Kirker, who had become legendary for doing the seemingly impossible: flying Intermediate in a Great Lakes. He went on to fly the higher categories in a Laser, and when he finally got out of the Unlimited category business a few years ago, the Great Lakes was waiting for him. "Now I'm back in my old love, wrestling the Lakes through Intermediate again," he said with a grin.

Starting in 2015, watching Howard fly his eight-figure Intermediate Freestyle (including an inverted to inverted inside outside laydown eight and a down reverse half-Cuban from inverted with an *outside* 1-1/2 snap) became a contest highlight for everyone. The following year, Pawel Miko showed up for contests in his Great Lakes. Then something extraordinary happened in 2018 at the Chapter 38 Coalinga Western Showdown: *Four* Great Lakes were flown across the Primary, Sportsman, and Intermediate categories.

The pilots — Howard, Pawel, Chris Harrison, and Bryan Jones — instantly bonded like

long-lost best friends. At dinner, at the bar, and at the banquet, they huddled close and a golden glow emanated from the quartet as they reveled in the Fellowship of the Lakes in their own personal Middle Earth. After the contest, they had a private photo shoot and formation flight to commemorate the illustrious gathering (see the January centerfold of *Sport Aerobatics*).

Just when you thought it couldn't get any more momentous, a few months later at the Chapter 36 Borrego Springs Akrofest, seven (yes, seven!) Great Lakes pilots flew: Chris, Dan Chripczuk, Matthew Sparks, and Dan Strauss in Primary; Pawel and Bryan in Sportsman; and Howard in Intermediate.

After flying recreational aerobatics in his Great Lakes for a decade, Chris had finally decided to give IAC competition a try. "I was surprised and happy to see other Great Lakes pilots getting involved, too. I had fun so I'll probably continue next season," he said.

"The fact that you have to work a little more to fly nice figures makes it a great platform to learn aerobatics," Bryan said.

"It is easy to fly, but hard to fly well," Pawel said. "But whenever I start feeling like it can't do something, I watch Howard do it."

"It's neat to see them up against higher-performance aircraft and to realize you don't need a plane that's three times as much in cost in order to win a category," Dan said.

"The Great Lakes is almost as old as aviation itself," Bryan said. "When you're in one, there's just this subtle sense that all of flying lore is with you, that you sit where legends have sat, and that for the next little while, it's your turn to carry the torch forward."

"After years and years, I finally get to see a Lakes perform in the box," Howard said. "Probably the best part of any contest is the people, the camaraderie, the joy of sharing our passion with like-minded others. To now be able to share this with Great Lakes pilots will keep me coming back for years." IAC

# Charlie Sikes

BY GARY DEBAUN, IAC 4145

**IAC 437399**
**Occupation:** Automotive machinist/performance engine builder
**Chapter Affiliation:** Chapter 3

**GD: CHARLIE, HOW DID YOU BECOME INVOLVED IN AVIATION AND AEROBATICS?**
CS: Probably my first "I have to do this" moment was when I was a kid at the Point Mugu Air Show. You know — Blue Angels, Bob Hoover, fast jets. All those things that get a little kid excited about his first dreams of adventure. I took many years to achieve my dreams, but flying came and went because of life. I finished my private certificate in Wisconsin and started flying aerobatics soon after in a Super D owned by my good friend Jeff Batzer. To say the least, I was hooked!

**GD: YOU AND I GO BACK SOME 39 YEARS. TELL US ABOUT YOUR 10TH BIRTHDAY VISIT TO SANTA PAULA AIRPORT.**
CS: We sure do, Gary. It was December 6, 1980. My 10th birthday. My mom and dad took me to lunch at the little restaurant at the Santa Paula Airport. We showed up, and like any kid with a brand new camera for his birthday I had to burn up some film. So there I was taking pictures of airplanes and I snapped one of some dude pushing a little black biplane. Many years later I was going through some pictures that my mom had given me, and there was that little black biplane. I thought, "Hey, I should see if my buddy Gary would know who owned that plane." So I sent the pictures to him via Facebook, and he said, "That's my plane!" Who would have thought! I took my first ride in a small plane that day. It was a surprise birthday gift. The aircraft was an Aeronca Champ. I will never forget it and will always cherish it. Thank you, Mr. Combs!

**GD: WHERE AND WHEN DID YOU FLY YOUR FIRST AEROBATIC CONTEST AND HOW DID IT GO?**
CS: My first was the fall Sebring contest in 2014. It was an amazing experience, and everyone was very helpful. I flew a Giles 202 with Marty Flournoy as safety pilot. I finished last after flying four figures in my last flight the wrong way. Fortunately it wasn't enough to be rewarded with the coveted Bozo Award. So far I have managed to keep from "winning" that one. I was disappointed with my finish, but I knew that it was definitely something I would do again.

**GD: YOU RECENTLY UPGRADED FROM THE PITTS S-2A TO A BEAUTIFUL EXTRA. HOW WAS THE TRANSITION?**

CS: Yes I did. It is an Extra 300S. It is nothing like the S-2A. It is an amazing airplane with phenomenal performance. It has been a challenge to learn all of its little quirks that a monoplane has versus a biplane. Every time I fly it I learn something new or it teaches me something new. As much as I love the Extra, I still enjoy flying the Pitts. It will always be my favorite airplane to fly, and I love sharing the experience with others.

**GD: DO YOU HAVE ANY SPECIFIC GOALS IN AEROBATICS?**

CS: Yes — first to learn and grow into the sport with all of the amazing assets that are available to us as IAC members. Then, hopefully, if I am lucky enough to make the cut, to fly at a world contest. I can't think of anything that would make me more proud than to compete at a world contest for my country.

**GD: WHO IN THE SPORT HAS BEEN AN INSPIRATION TO YOU?**

CS: There are many that I look up to and respect in this sport. There are some amazing and talented pilots in our ranks. But without a doubt, Marty Flournoy has influenced me the most. He has helped me learn and grow. He has pushed me to my limits and coached me along the way. He is the most knowledgeable person I know when it comes to grading a figure. He is also a very accomplished pilot in the Advanced category. I know without his help I would have never been able to do this. Through all of this we have become great friends, and I will never be able to thank him enough.

**GD: WHAT'S YOUR OPINION OF AFTER-CONTEST BANQUETS — ARE THEY TOO MUCH? WOULD YOU PREFER PIZZA IN THE HANGAR AND CALL IT A DAY?**

CS: One of the best parts of this deal is the friends that I have made. So spending time with them is very important to me. I can't think of a better way to spend that time with them than breaking bread after the contest is over. Banquets can get a little out of control, though. I prefer simple. Good food in a hangar is perfect in my book. One of my favorites is the Snowbird Contest banquet. Kevin Campbell and his group do an awesome job, and I look forward to it again this year.

**GD: I HEAR YOU WILL BE THE CONTEST DIRECTOR FOR THE ROME, GEORGIA, CONTEST. HOW IS THAT GOING?**

CS: It is an unbelievable amount of planning. So much goes into a contest that is behind the scenes. Fortunately I have a great group that has done this for many years before me. Without them I would be lost. I can't begin to thank them enough.

**GD: ON A SOMBER NOTE, THE AEROBATIC COMMUNITY LOST A WONDERFUL PILOT AND FRIEND WHEN WE LOST MARK FULLERTON LAST YEAR. TELL US HOW MARK AFFECTED YOUR LIFE.**

CS: This is a hard one, Gary. Mark and I were becoming closer and closer as time went by. He had helped me with my flying, and I helped him with the BCB — the Bear Creek Bunch. He was very passionate about aviation at all levels and was always involved some way or somehow in his community. He was very giving. He was always helpful. He was organized. He never complained. He was just a good person. When I got the news I flew up to Knoxville the next morning in the Extra. Paul Funk lives there so he picked me up. We went to the hospital to see Mark, and I didn't really know what to expect or how I would feel. I just knew I needed to see my friend. We were denied entry at first because we weren't family. I told the nurse that we were his brothers. Her response was that he had more brothers than anyone she had seen. It was true. Mark had a huge family. We all were Mark's family.

I said goodbye to Mark after sitting with him and his brother Marlin for a few hours. When I left I knew I would never see my friend again on this Earth. While flying home I was overwhelmed with sadness because even if Mark were to survive such a massive stroke he would never be the same. I did, though, take comfort that I would see Mark again, and I would one day fly with him again. Never take your time here on this Earth for granted. You never know when it could be your last day here.

**GD: DO YOU HAVE ANY OTHER PASSIONS IN LIFE — BESIDES FLYING?**

CS: I love to hang out with friends and family. I have an amazing little Jack Russell Terrorist named Gracie that runs around with me like a kid as mine are all grown. I shoot trap when I have time. *IAC*

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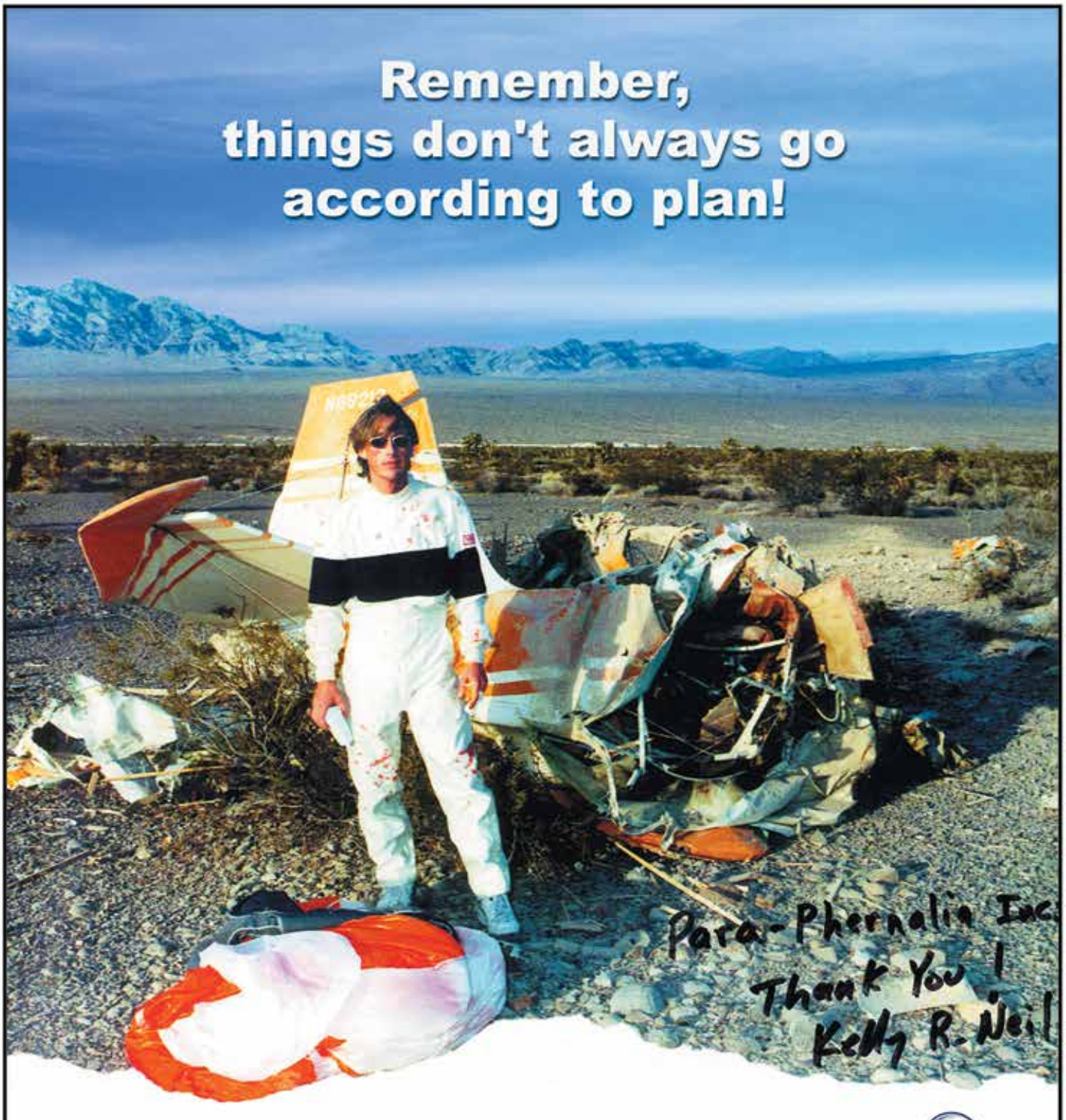


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