
SPORT
Aerobatics
AUGUST 2019
OFFICIAL MAGAZINE
INTERNATIONAL AEROBATIC CLUB
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Contents

FEATURES

DEPARTMENTS

COVER

On the cover: VH YoB, previously tail number N202A and is serial number 24, a beautiful G-202 imported to Australia in May 2010. Owner is Scott Robinson of New South Wales.
Photo by Scott Robinson.

Above: Zlin N526A. The plane was originally designed by Zlin Aircraft in 1959. Its two-seat version is called the Trener Master.
The layout was organized with the pilot in the rear and the student in front.
Photo by George Kalbfleisch.

Editor's Log

AirVenture and this Big Aerobatic Family

BY LORRIE PENNER, IAC 431036

LAST MONTH'S ISSUE OF *SPORT AEROBATICS* has been affectionately known as the Oshkosh hand-out issue. We order extra copies of our freshly printed magazines and hand them out to all the people who stop in at the IAC Vicki Cruse Educational Pavilion on Boeing Plaza during AirVenture. This year we handed out 500 extra magazines!

Back in the 1980s I gently dipped my toe in the pool of aviation by working for a regional carrier. Initially, stuck in the office in the customer service call center, I was not too excited about aviation. It seemed like just another job, and I really didn't see how aviation could be considered exciting. Even my stint for a year as a flight attendant didn't give me a feeling akin to a quote by Wilbur Wright, "More than anything else the sensation is one of perfect peace mingled with an excitement that strains every nerve to the utmost …."

Fortunately, I married a man who was a CFI, had a Decathlon, and flew in aerobatic competitions. Wow, what a difference from the drudgery and exhausting hours of being an airline employee! Even before we married, my husband started taking me to regional contests in the Mid-America Region, and my eyes were opened to a completely new aerobatic lifestyle.

Fast-forward to 2005, when my husband and I brought our children to EAA AirVenture Oshkosh. It was the first time I was immersed in such a large event with thousands of aviators and aviation enthusiasts. I didn't know what to expect, I had not even known such a thing existed, but it was everything I could imagine and much more. That year happened to be the year that SpaceShipOne and White Knight came to Oshkosh. Between that and a helicopter ride for the kids, one of the best things was meeting up with my friends from the regional contests I had been attending.

For those of you who made it to Oshkosh this year, I hope you were able to stop by the IAC building and the IAC Member Gathering on Friday evening. The gathering at the EAA Nature Center has been a real highlight for many. Seeing old friends and making new ones. Most anyone in aerobatics will tell you that one of the things they enjoy the most, besides the thrill of flying unusual attitudes, is the friends you make along the way. Many will be lifelong friends who become your aerobatic family.

Thank you to all of our IAC members who are a part of this big aerobatic family! I hope to see you at a chapter event, a regional contest, or at the U.S. National Aerobatic Championships in September. IAC

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Making Everything Happen

AirVenture, Nationals, and the rule book

BY ROBERT ARMSTRONG, IAC 6712

GREETINGS, ALL IAC MEMBERS! If you did not make it to EAA AirVenture Oshkosh 2019, you were missed!

By now you have read about all of the happenings during AirVenture, the fantastic air show performances and performers, the information-packed IAC forums, the beautiful new, old, and spectacularly innovative home-built and certified aircraft, and a thousand other events, things, and people in and around Wittman Regional Airport. Suffice it to say that if you have not put the fly-in convention on the calendar for 2020 — IAC's 50th birthday party — do it today!

As happens in the publication of *Sport Aerobatics*, this issue you are reading now is being put to bed just as AirVenture is gearing up so coverage will come in a later issue. There will be featured items on everything AirVenture related in upcoming *In The Loop* issues as well as the members web portal at www.IAC.org. Be sure to like us on Facebook and add us to your Instagram feed to keep abreast with current IAC goings-on. Check for the links in our magazine.

A number of key volunteers are neck deep in the final planning of the U.S. National Aerobatic Championships to be held in Salina, Kansas, September 21-27. This crown jewel of the IAC will be an exceptional event thanks to the hard work of Contest Director Ron Schreck, Assistant Contest Director Duncan Koerbel, and his support staff of many. All are keen on making this U.S. Nationals the best it can be in our new location smack in the middle of the United States. This year we will choose our U.S. Advanced Aerobatic Team, and the expectations are high. Bulletins No. 1 and No. 2 are on IAC.org so you can get the timeliest information. Make your reservations at any of the fine hotels on the west side of Salina so you can be close to the action.

Some of you have asked me about the progress on the rule book rewrite, and I'm pleased to let everyone know that director Jim Bourke, who was assigned the task of initializing the rewrite, is reporting excellent progress through the first phase. In a recent email, Jim said, "You may recall that this was to be a two-year effort with the second phase beginning in January 2020. I feel like I'm on a roll and would prefer to just keep working through the phase 2 changes as well. This is an acceleration of our original goals. ... We've dropped the rule book from 269 pages to 188 so far. I do not expect the size of the book to drop much in phase 2, but I do hope to dramatically improve readability and also bring the document file itself up to today's standards." I don't know about everyone else, but I'm looking forward with great anticipation to seeing the reworked rule book! When you see Jim at AirVenture, I urge you to let him know how appreciative you are of his efforts. This is a monumental step forward.

The IAC is a club that is for anyone and everyone with an interest in aerobatics. While much of the visual in print in *Sport Aerobatics*, *In The Loop*, and other places is dedicated to those who fly, we are much more than just flying. The first contest flight cannot be made without many volunteers making everything happen. Attend any one of our 40 or so aerobatic contests across the United States and you can see this in real time. I don't know if any of our members have done a study to see how many volunteers it takes to get one pilot in the air, but I'm guessing that number is surprising. Five? Eight? Fifteen? My belief is that this is where we need to improve our core and be reminded of the care with which we need to treat each one of our volunteers who make it happen. To make improvements, your IAC needs to hear from you directly and understand the wishes and desires of the membership so we can make the IAC work for you. The board members are representing every member regardless of the geographic region you live in. If you have any input at all, please refer to the Leadership tab on IAC.org and give any or all of us a call.

My final paragraph in this president's column ends with a note about our editor of *Sport Aerobatics,* Evan Peers. Evan ended his time with the IAC in June. Without a doubt, Evan elevated our publication to an enviable status among aircraft publications with the beautiful photography. Evan was dedicated to bringing the meat of our sport to its members through his skilled use of the camera, which he did quite well. We are grateful to have had him as editor, and on behalf of the IAC officers, directors, and the membership, I thank him for his dedication and time spent with the IAC. We will be seeing Evan on the ramp in Oshkosh during AirVenture so please give him your best and a thank-you when you see him.

Safe flying and tailwinds both directions for the U.S. Nationals. IAC

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

TOP STORY

IAC Member Greg Howard Performance at AirVenture

Celebrating the Giles 200 anniversary plane

GREG HOWARD, IAC 5954, celebrated the 25th anniversary of the Giles 200 in his own G-200 on Monday, July 22, in the afternoon air show at EAA AirVenture, Oshkosh. His G-200, tail number N97GH, is a homebuilt airplane that took him seven years to complete.

In 1994, Greg met Richard Giles at a local IAC meeting. Richard was in the process of developing a new aircraft – the G-200. It was a lightweight monoplane with phenomenal roll rate. Over the next several months, Greg would be one of the test pilots helping fine tune the prototype G-200.

Greg has been performing precision aerobatics in the Northwest since 1980 and has more than 4,000 aerobatic hours logged, 1,500 of them in the G-200. He is a five-time Northwest Regional Aerobatic Champion in the Unlimited category and former member of the U.S. National Aerobatic Team.

Prior to Greg's air show performance, six IAC members provided a flyby of various models of the Giles: Phil Sciuk in his G-202, Mike Tryggvason also flying a G-202, Jay Hanson flying a modified G-202 that was the MX2 prototype, David Taylor flying a G-200, David Engh in his G-202, and Steve Bergevin in his homebuilt serial No. 8 G-202.

GONE WEST – IAC COLLEGIATE PROGRAM MEMBER CHARLIE ATTERBURY

BY JORDAN ASHLEY, IAC 434846, COLLEGIATE PROGRAM CHAIR

CHARLIE ATTERBURY, IAC 436620, passed away on July 1. He joined the IAC Collegiate Program committee in 2017 and quickly became a driving voice of wisdom for the program.

Having more than 50 years and over 10,000 hours of flying time, mostly as a corporate pilot, he was a quiet force in the aviation community who was very much loved by those whose lives he touched. He was someone who shared his years of experiences and wisdom with those around him, not because he wanted to be the smartest person in the room but because he genuinely loved aviation and wanted to share his passion with everyone around him.

He was often heard encouraging young pilots to never abandon their dreams by pursuing aviation experience wherever it may come. Most notably, Charlie was a great supporter of young people, aviation, aerobatics, and the IAC. More recently, he worked with several members of the University of North Dakota team who wished to pursue aerobatics beyond the capabilities of the UND aircraft. Two of those team members qualified and flew at the World Advanced Aerobatic Championships.

Charlie was also a competitor himself, flying both a Pitts S-2 and Extra 300 in several contests on the West Coast. Most recently, he won the Old Buzzard Award at the 2015 U.S. National Aerobatic Championships. In addition to his support of aerobatics, Charlie also collaborated with young people in the Seattle, Washington, area to allow them to experience aviation at little to no cost. Charlie's passion for aviation and young people will be sorely missed. A memorial will be scheduled for August. *IAC*

Charlie Atterbury

First-Time Competitors

Making them feel welcome

BY RON SCHRECK, IAC 433751

Doug Bartlett

SHORTLY AFTER I JOINED the IAC board of directors, I did a little research and found that one in three pilots who attend their first IAC contest never return for another contest. I brought this statistic to the attention of the IAC executive committee and recommended that the online registration form be modified with a box for first-time competitors to check.

This notation in registration would give the contest directors the information they need to reach out to first-timers and provide a mentor to walk them through their first contest from start to finish.

I remember my first contest: It was at the Carolina Boogie in the spring of 2010 in Lumberton, North Carolina. Then IAC President Doug Bartlett was also competing. The first day of the contest was a total washout. We had the morning briefing and then sat back to watch the rain come down.

Doug had a better idea. He gathered a group of eight or 10 of us, and we sat in a circle in the hangar, listening to the rain on the roof while Doug held court. He told us how to prepare our planes and ourselves for competition, and how to enter the box in a dive with crisp wing-wags to tell the judges, "I'm here and I mean business!"

He also told us how to position our sequence in the box, how to manage the wind, how to get the most out of our airplanes and ourselves, and much, much more. RV competitors were scarce at that time, and Doug made a point to welcome me and let me know that my fellow RV pilots were welcome. He urged me to spread the word.

I have spread the word and will be forever grateful that Doug Bartlett made a special effort to introduce me to IAC competition aerobatics. I only hope that every first-time competitor has someone who will do the same for them. *IAC*

2019 U.S. National Aerobatic Championships

Chief judges are confirmed

BY RON SCHRECK, IAC 433751

THE U.S. NATIONAL AEROBATIC Championships is less than two months away. Registration is open online and will close on September 17, 2019. As soon as you register and pay, box master Gary DeBaun will get you a practice slot.

The official Contest Bulletin No. 1 was posted on the International Aerobatic Club website on July 5, 2019. Check it out here: https://www.iac.org/us-national-aerobatic-championships-2019. It has everything you need to know. We will update it at least once more before the contest.

In my previous article I wrote that coming to Nationals will make you a better pilot. For those of you who have attended, I would hope you would concur with me! If you have never attended, or it has been a while since you last competed at Nationals, I offer the following benefits to competing there.

- Professional videos of each of your flights are included in your entry fee. We can get judged, critiqued, and coached, but how often have you gotten a quality video of your flying? As the pilot, you are the only one *inside the aircraft* who has your perspective; matching that up against what *those on the outside see* is priceless. Watch the videos of other pilots in your category and see how you compare and why their flights might look better.

- You'll meet new people. I enjoy immensely traveling to my regional contests. We get to know our competitors, often our chapter mates, the judges, and volunteers. Come to Nationals and broaden these relationships. Talk to new people who have a plane similar to yours, who want to buy a plane, or who fly in your category. Sit with judges who have never seen you fly before and discuss what they liked and did not. You don't have to agree with all of the input, but it will broaden your horizons and make you a better pilot.

- You'll learn how to fly well under pressure. I don't think there is an IAC pilot out there who would not agree that it is just different when you are in the box versus practicing. I think this makes you a better pilot, and the more you compete, the faster your clock speed gets, the bigger your peripheral vison gets, and the slower your heart beats. All of this lets you fly better and improve your skills. Adding the pressure of Nationals will aid your journey as you progress in your skills.

- We have a new location. If you have been to Nationals before but took a break, think about coming back to our new venue and raising the bar on your season's flying and goals. If you're new and not sure you're *ready* to come, know that we all have a first time. Make it your first time this year, and you will be better prepared for next.

- For those of you with longer term aspirations, the World Advanced Aerobatic Championships (WAAC) will be held in Las Vegas in October 2022. This is the first time the Advanced championships will be in the United States since 2008. Talk to any former team member to get the gist of why competing in the world championships in the United States is so much more efficient, easier, and more cost effective than going to Europe. Advance team selection for 2022 is 2021. Come fly at Nationals this year to see where you stand and get used to flying in Salina.

- Nationals is fun. You will meet new people, see old friends, and make new ones. You never know when you need a hangar, part, or place to stay as you travel around the country in your acro bird. Nationals will expand your network and give you more opportunities.

I am pleased to announce that we have nominated and confirmed the 2019 chief judges.
Primary and Sportsman — Mark F. Matticola
Intermediate — Peggy Riedinger
Advanced — Bob Meyer
Unlimited — Hector Ramirez
4-Minute Free — Hector Ramirez

These are critical assignments for this event, and I want to thank them personally at the outset for their commitment to our sport and the 2019 U.S. Nationals.

Lastly, we have the first version of the 2019 schedule published and posted on the website. This is our plan to deviate from. Our goal is to fly all competitors three times first and then think about additional team flights and the 4-Minute Free. You can see we have contingency built in — and that is what it's for, to allow time for weather and other issues. The overall sequence is illustrated below. The complete details are on the web.

Here is a fun fact: We anticipate 100 pilots at this year's event. We built the plan on a flight being completed every 10 minutes. The Ben Lowell Aerial Confrontation contest held at the United States Air Force Academy is the most complicated contest in our country after Nationals. This year it had 41 pilots with gliders in Primary, Sportsman, and Intermediate categories and powered entrants in everything but Unlimited. Organizers there hit tempos that matched nine minutes per flight. What is a minute worth? If we manage nine minutes at Nationals versus 11 minutes, it reduces the total contest flying by approximately 11 hours — a whole day.

Having said that, be assured of the following: When the box is yours, it is yours for as long as you need it with no pressure. What we do want is everyone at the briefings as scheduled, at the line on time and ready to go in your airplanes and in your assigned holds when and where you are supposed to be. Hold close as published, not 3 miles away. We have great starters at the Nationals, and fuel logistics will be much simpler than in the past two years. If the weather cooperates, we might get a fourth flight in for Primary and Sportsman to make up for their shortfall in 2018.

The official box will be open for controlled practice session slots on Friday, September 20, and on Saturday morning. If you arrive before Friday, practice is on your own with your fellow pilots. Hangaring your aircraft before Thursday night is also on your own as the contest Hangar 606 is not open until Thursday. You can check with the Salina airport's FBOs for arrangements.

I look forward to seeing you there! ***IAC***

G-Force and P-Factor

The two variables

BY BILL FINAGIN, IAC 10059

SOMETIMES EXCELLENT ARTICLES MOTIVATE one to try to expand the explanations used to describe an event. Imagery and words are extremely important, as is one's personal experience. In John Morrissey's article "The Pull From Level Flight" in the June issue of *Sport Aerobatics*, I read with interest the often mistaken use of rudder in the pull from horizontal to a 45-degree up angle. All of his statements are quite correct.

In my attempt to explain this event to my students, I begin by having them attempt to explain two distinctly different phenomena, the first being how gyroscopic force influences the direction of the nose of the airplane when you rapidly pull back on the stick when flying horizontally in an upright position. Then, and very separately, tell me an easy way to understand and determine the influence of P-factor on the direction of the airplane when executing that same pull from horizontal flight. Usually after several attempts and often very confusing statements, some having no relevance whatsoever, the student gives up in frustration. My first response to this dilemma is to point out that if one was in an airplane at this moment, it would not be a good time to traverse through a decision tree method of arriving at these answers.

So how do I explain these two variables? Here goes.

Regarding *g* effect, let's use some imagery. Most of us probably had a large clock over our blackboards when we were in first grade. Let's take that clock and superimpose it on our airplane's instrument panel. Make believe you are in your airplane positioned at the center of the clock. Draw a line from 1:30 to 7:30. That 45-degree line will represent our *g*-force line. Some students like to remember it as the airplane's G-string. (Anything to vividly imprint it on your brain!) Whenever we pull, we can imagine the nose moving toward the 1:30 position. Likewise, whenever we push, the nose will move toward the 7:30 position. So, to keep the nose directly forward in a pull you must apply left rudder to counteract the yaw to the 1:30 position, and whenever you push you must apply the right rudder to keep the nose moving straight toward the wheels. Why did I just use wheels in the description? Because we sometimes fly inverted. The correction for *g*-force vectors are the same. Keep in mind the 1:30 to 7:30 *g* line on your instrument panel (your image from the clock). Pushing the stick forward while inverted will require right rudder to counteract the yaw. Just remember this image of the line superimposed on your instrument panel.

Now let's handle the P-factor component. Again, we all studied these terms for our private pilot certificate in the past, but what relevance does it manifest when we are in our airplane pulling up to a 45-degree angle and continuing up that 45-degree line? Most importantly, the P-factor is related to a change in the angle of attack of the aircraft. As the AOA increases, the downward-moving propeller blade is biting more air and the upward blade is biting less air, thus the plane will have a left turning tendency when upright. More P-factor produces more left turning tendency. To counteract it you must apply right rudder. So, let's make this simple to remember. Identify the propeller blade going toward the earth and step on the rudder on that side of the airplane, or more easily remembered, "Step on the rudder to beat the blade to the ground." Rolling inverted, you will easily see which blade is going toward the earth, and to counteract the P-factor you simply step on the rudder to beat the blade to the ground. Upright you will use right rudder to counteract P-factor, and inverted you will use left rudder. But don't try to remember that; simply step on the rudder to beat the blade to the ground.

One other note to remember: You only need to counteract *g*-force vectors if the inclinometer (ball) is moving. Ball not moving, no need to worry about *g*-force vectors. Think about it!

Let's apply these above facts to an actual figure to see what happens.

A 45-degree line will represent our *g*-force.

PHOTOGRAPHY COURTESY OF **BILL FINAGIN**

Bill Finagin and Sofia Lindberg.

We are flying along straight and level at approximately 130 mph and are preparing to pull a 4*g* pull to the 45-degree upline, fly up the upline until we slow to 90 mph, and push quickly to horizontal and fly off in a straight line. The first event will be to pull to the 45. To keep the airplane straight on the same heading, we must put in left rudder on the pull to counteract the gyroscopic force moving the nose toward the 1:30 position. How much left rudder can be determined by looking left at the wing and keeping it level on the horizon? Too much left rudder will lower the left wing (actually turning the nose to the left); too little left rudder will cause the left wing to rise (actually turning the nose to the right).

We have found here that the use of a sighting device is helpful. The important point is that once the 45-degree line is established you must release the left rudder that you applied, as you no longer are counteracting a *g*-force load. (Check your *g* meter to verify.) As we begin to slow down, the P-factor comes into play. As our AOA begins to increase, we must step on the downward-turning blade of the propeller, which in this case is the right rudder. As we continue to slow, we continue to add right rudder to keep our path of flight straight.

As we push to horizontal, we must counteract two independent force vectors. First we must maintain the right rudder pressure for the P-factor, and we must add right rudder to counteract the *g*-force of our pushing of the stick. (Remember that force is toward the 7:30 position.) You have a need for a lot of right rudder, but as we accelerate, the P-factor need of right rudder diminishes, so we reduce the right rudder "push." And as we level out on a straight line, our need for the *g* correction goes away.

Now roll the airplane inverted and do the same exercise. If you remember the *g* line on your instrument panel and the beat the blade to the ground imagery, you will be fine.

Enjoy your flying and be safe. IAC

ZLIN Z-526

First impressions are everything

BY CHRISTINA BASKEN

YOU'VE HEARD THE PHRASE — first impressions are everything. Well, that remains true, even 51 years later. This 1969 Zlin Z-526 was here for the first EAA Oshkosh fly-in and since then has had many owners. Though the ownership has changed, the impressions it has left behind are the same.

The first prototype Zlin Z-526 flew in 1966, and production deliveries began shortly afterward. The Zlin Z-526 is a modification of the Zlin Z-326. Modifications included the fitting of a V 503 constant-speed propeller and transfer of the main pilot's position to the rear of the cockpit. Use of the V 503 propeller permitted full use of the available engine power, particularly during vertical climb, to decrease the entry speed for individual maneuvers and to increase the overall maneuverability of the aircraft.

Trener Master

PHOTOGRAPHY COURTESY OF **GEORGE KALBFLEISCH**

As of 1968, more than 1,400 aircraft of the Zlin Z-26, Zlin Z-126, Zlin Z-226, Zlin Z-326, and Zlin Z-526 series had been built at Otrokovice (previously part of Czechoslovakia, now part of Czech Republic) since 1947 and were operating in 34 countries. Sporting successes of the Zlin included first place in the first, second, and third World Aerobatic Championships in 1960, 1962, and 1964, and first place in the Lockheed Trophy aerobatic competition in Britain in 1957, 1958, 1961, 1963, 1964, and 1965.

The Zlin is a rare sight to see, having never been produced in mass quantities in the United States. Today, the plane is owned by aviation enthusiast George Kalbfleisch, EAA 599769 and IAC 429986.

"I have always loved airplanes. I used to hang out at airports when I was little, and I've always loved watching airplanes fly," George said. "The summer of '78, I went to Oshkosh for the air show. And watching the Christen Eagle biplanes fly formation just really hooked me in the fact that I'd always wanted to be a pilot, and that's where my passion should take me."

Watching the Christen Eagles inspired George to enroll at Oklahoma State University and get a degree in business management and aviation. Since then, George has flown over 100 different types of airplanes and has about 16,000 hours under his belt, most of which is due to his career as a director of operations, flying a DC-8 for international disaster relief for Samaritan's Purse.

Aerobatics had always been in the back of George's brain, but he never had the budget to learn aerobatics while he was in college. Fast-forward 18 years, and the dream doesn't seem too far away anymore for George.

"I was flying with Rob Dorsey on the DC-8 cross-country, and I was talking to Rob about aerobatics," George said. "And he said, 'George, if you want to learn how to fly aerobatics, the best airplane in the world to learn in is a Zlin 526.' I didn't really even know what a Zlin 526 was at the time, but I pulled the thing up on the internet and started keeping a casual search out for Zlin 526 airplanes."

Rob Dorsey, former International Aerobatic Club president, had George sold on the Zlin when he told him he could fly short cross-country trips with two people and have space for luggage.

"He told me they were very graceful; they were very responsive between really talking to you and letting you know what it was doing," George said. "And you were kind of one with the machine — that they were a big, graceful aerobatic airplane. It's also a plane you can go out and do up through Intermediate aerobatics with ease in it. And I thought, well, he's got a great point."

To no surprise, George ended up purchasing a Zlin, and the decision paid off. "You show up in a place, and you're just another one of the same. But when you show up at a place with the Zlin, there's usually not another one there," George said. "It's pretty rare that you see two of them at the same airport. It's neat because you can land at an airport, and somebody will walk up to you and go, 'I should probably know what that is, but tell me, because I don't know what it is.' And it's a great conversation piece that people come up and talk to you."

George bought his first Zlin on *Trade-A-Plane* that he would eventually sell, and he convinced Rob to sell his own Zlin to him. When George bought Rob's Zlin Z-526 in 2007, it had a zero-time engine in it and brand-new propeller, nav/comm, and paint.

"All the restoration work had been done prior to me buying it," George said. "So the plane was in extremely nice condition; it was overhauled by Pavel Novak in Canada, and he's a Czechoslovakian maintenance expert."

AGE AIN'T NOTHING BUT A NUMBER

For the Zlin, age has nothing on its reputation. From 1969 to present day, there's something to be said about the Zlin.

Budd Davisson, EAA 22483, talks about his first flight in 1969 in Phil Paul's Zlin Trener Master, the same plane that would later be owned by Rob and George:

"The Z-526 is a flying contradiction. The long, long angular wing should make for a sluggish roll rate. The little teeny, knock-kneed gear should make it a real ground-looper, and that swizzle-stick-sized prop should make it a joke. It's such an airplane that it practically axe-murdered the competition when it first appeared in aerobatic competitions around 1965, and it's still doing it. Many of the pros consider the Zlin to be the finest aerobatic airplane in production today. Fuel pressure up, starter system switch on, mags, and hit the starter. It's a real shocker to

hit a starter button and see the prop back up; I'd forgotten about the left-hand rotation. The engine catches in that throaty kind of coughing roar that comes from in-line short stacks. It's not unlike a Merlin and is very pleasant. At first, you feel as blind as a nearsighted bat because the panel is quite close to your schnoz, the nose covers the view ahead, and the wing is a bit forward, cutting off some side vision. After a few seconds, though, I noticed that the narrow fuselage blocks very little view, and the tail wheel was so positive, it tracked like a tricycle bird. When I fly a strange bird for the first time, I'm all nerve end, and this time especially. I eased the power in, moved the stick up to a neutral position, and let the airplane fly itself off while I kept it moving straight. I was already off the ground before I realized I wasn't having to work very hard to keep it straight. We leveled out at 3,000 feet, and I racked it around in a couple turns and proceeded to go out of my mind! The thing was fantastic! The aileron pressures were next to nothing, and it was so smooth, it was obscene. With the flick of a wrist, I spun the New Jersey horizon in a slow roll. Absolutely fantastic! Totally effortless! From that point on, I just played it off the wall. At the end of an hour, I still had no idea how a Zlin flew, but I sure knew how it did aerobatics!"

Fifty-one years later, Rob Dorsey takes a moment to reflect on his special memories with the Zlin: "I first saw this airplane in 1969 when I was flying my Stearman in the ACA Nationals at Oak Grove Airport in Fort Worth. It had been imported by Phil Paul who worked for Mira Slovak at Santa Paula Airport in California. Phil was kind enough to let me fly the airplane, and I fell in love with it. That was also the year that a half-dozen of us gathered in Frank Christensen's hotel room and formed the IAC. The next time I saw it was in 1973 just after I returned from two years teaching aerobatics in England. The airplane was for sale, and I purchased it instantly. I then flew it very happily until 1979 when a job move to New York forced me to sell it back to the owner I had bought it from. During the six years I owned the airplane, I flew several competitions in Intermediate category and a few air shows around Texas. In 2003, I discovered that my old Zlin had been purchased by my old friend Jack Williamson, who had it completely rebuilt by Pavel Novak of Canada and then decided to sell it. It went to a Delta pilot in Atlanta who sold it to me that year. I kept it and flew it with great pleasure — Pavel came down and helped me put a brand-new, zero-time Avia engine in it we bought from the estate of the late, very great friend Chris Smisson — until physical problems ended my flying life in 2005. I love this airplane; it has served as a very important part of my flying life, and though I had to sell it, I desperately wanted it to go to a good home. That was when my buddy George Kalbfleisch stepped up and bought it. I could not be happier than to know that my dear friend George is flying my dear Zlin 526. The Zlin 526 is the last of the Zlin 26 series of training and aerobatic airplanes. It stems from an original design by the great Carl Bücker, designer of the Jungmeister and Jungmann trainers of World War II vintage. It is a classic aerobatic airplane in every way and responds to classic technique. The controls are beautifully harmonized, and control pressures are similar to those of a glider. Although far outclassed for Unlimited competition by the modern fleet, it is still capable of turning in a good showing in Intermediate or even Advanced in authoritative hands. However, this particular airplane, perhaps the nicest 526 in the world, I chose not to subject to the rigors of competition but rather to treat it as it has always treated me, as a friend and colleague of advancing age."

A BEGINNER'S FIRST RIDE

George refers to the Zlin as his first aerobatic airplane, having only flown a Decathlon one time in college prior to the Zlin.

"When you get her up on her main wheels going down the runway, you'll feel like you're going to nose over, but you're in the right attitude," George said. "You don't realize how much rote memory you have that every takeoff and single-engine airplane is right rudder, and you instinctively put in right rudder and realize, 'Oh, yeah, the guy just told me I need to put into the opposite rudder for that.' We got the airplane up and flying — I was infatuated. It was so responsive, it could do anything, go exactly where you told it to go. Wasn't like flying a regular single-engine airplane. Told it to go left, it went left right now. You could see everything the plane was doing; it was very forgiving and very nice."

Taking off takes a little bit of left rudder, a little bit of down elevator, and smoothly bringing the power up. "Once the speed gets coming, you plane into a level attitude," George said. "It's okay to become airborne around 55, 60 miles an hour. It's a very graceful airplane on takeoff. Very easy."

George said the Zlin has a great glide ratio on landing and a fair amount of drag when you configure the Zlin flap. "It has split flaps on it that are big, and it can create a lot of drag. So you can get nice and slow and get in and out of a short runway," George said. "That thing can easily operate out of probably a 1,200-foot runway if you wanted to. Landing gear down, the plane has two flap positions, being half and full. Usually turn base, go flaps aft, then flaps down. About 70 mph on final approach is a good approach speed. Thrust will have been about 60 mph. It does beautiful wheel landings, or three-point landings of your choice; you can land it either way. It's a very graceful wheel-landing airplane. It does it very nicely."

When one first catches sight of the Zlin, the senses are assaulted by a profusion of straight lines — not curves, but lines. Everything is straight and businesslike — no frills, no fiberglass. It's beautiful.

Budd really liked the electrical system setup. "It has two sets of masters," Budd said. "There is the usual master on the left side of the panel, but then each subsystem — the landing gear, the instruments, the starter, and so forth — has its own switch. This bank of subsystems is on the right side and is protected by little guard rails to keep from tripping them with chute straps. So, actually you have to throw three switches to get the gear up: the master, the subsystem switch, and the gear switch. Redundant but safe."

One unique characteristic of a Zlin is you pilot it from the back seat. The Zlin is referred to as a trainer because it's a two-seater, but the primary pilot sits in the back seat.

"What's neat about a Zlin is when you fly it by yourself, you've got about 10 feet of nose in front of you, so you really get a good sense of where the airplane's going and what rudder inputs you're doing to the airplane," George said.

A lot of aerobatic planes have a sighting device built into the wing so you can figure out where you are in relation to the horizon. Whereas with the Zlin, when you look left or right from the back seat, the sighting device is the back of the wing.

"The wingtips line up perfectly with the horizon when you stand the plane up going vertical or at a 45-degree line, so you get an instantaneous feeling of left or right," George said. "And you can tell if the wing is straight with the horizon, or whether you have a slight bit of angle in it. So it gives you a very good perspective, from the pilot seat, of what's going on with the airplane, and it makes it very easy to keep it exactly where you want it to be.

"The other thing that's cool about a Zlin is they were built to be easy to maintain, and the airplane is very mechanic-friendly, unlike some airplanes. It's very easy to open it up and take the plane apart for annual inspection. So it's a great airplane to work on."

"WHAT'S NEAT ABOUT A ZLIN IS WHEN YOU FLY IT BY YOURSELF, YOU'VE GOT ABOUT 10 FEET OF NOSE IN FRONT OF YOU, SO YOU REALLY GET A GOOD SENSE OF WHERE THE AIRPLANE'S GOING AND WHAT RUDDER INPUTS YOU'RE DOING TO THE AIRPLANE."

— GEORGE KALBFLEISCH

ADVICE FOR GETTING INTO AEROBATICS

"I would always go and seek qualified instruction," George said. "There's a lot better ways to learn than trying to teach yourself something, so make sure you know how the plane's going to respond in different scenarios. Make sure you realize what upset recovery techniques are, and know how to get out of something you put yourself in. So get somebody who's qualified in an airplane, like what you're buying or similar to what you're buying, so that you can be safe and know what to do when something goes wrong if you're learning aerobatics." IAC

SALINA KANSAS

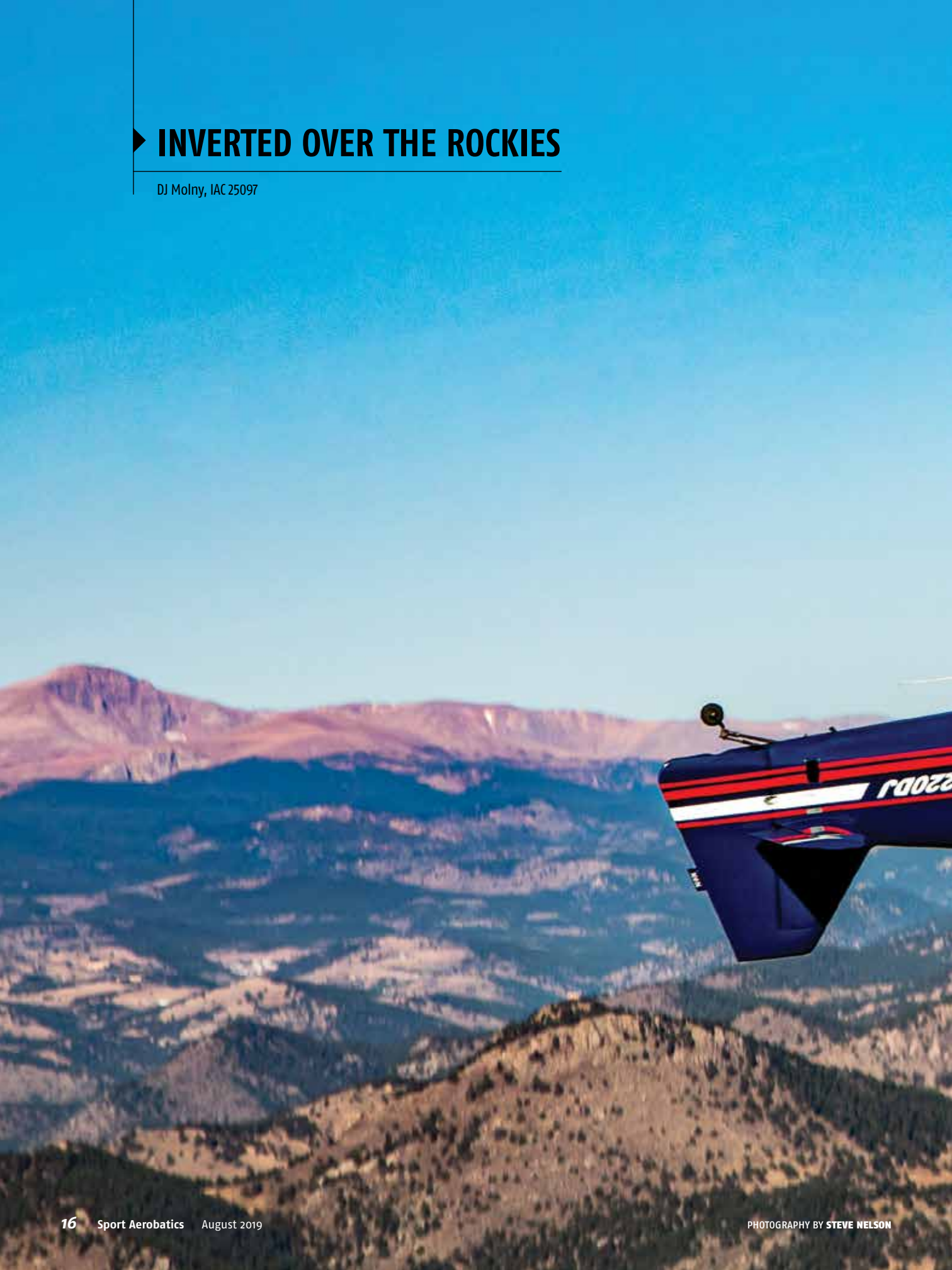
2019 U.S. NATIONAL AEROBATIC CHAMPIONSHIPS

SEPTEMBER 21-27

AT THE CENTER OF IT ALL!

INVERTED OVER THE ROCKIES

DJ Molny, IAC 25097



PHOTOGRAPHY BY **STEVE NELSON**

GILES G-200 IAC EXHIBITION 2019

25TH ANNIVERSARY

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THE DESIGN

By DJ Molny

By the early-to-mid 1990s, a few aerobatic planes such as the Rebel, Sukhoi, and Extra 300 had flown with relatively heavy fiberglass wings. Carbon fiber materials were just starting to reach the consumer market, and Richard Giles spotted an opportunity to design an all-carbon aerobatic plane. (The only exception is the vertical stabilizer, which is fiberglass to allow for internal antennas. Carbon blocks radio signals.)

Most builders incorporated two wing tanks that each carry 12 gallons of fuel. Combined with the 20-gallon main tank, the total capacity of 44 gallons provides a range of well over 600 nm including reserves.

1.1 August 1994 cover of *Sport Aerobatics* with N5296E.
1.2 Richard Giles shows how easy it is to move the G-200.
1.3 G-202 kits sit in front of the prototype G-200.
1.4 Building the wings in 1993.
1.5 Ted Backus' Emerald Aircrafters provided build assistance for the prototype in 1993.
1.6 Employees from AkroTech Aviation and Composites Unlimited.
1.7 Lennart Wahl, an aerobatic instructor from Germany, test flew the prototype before buying his kit.
1.8 Onlookers admired Dallas Marx's G-200.


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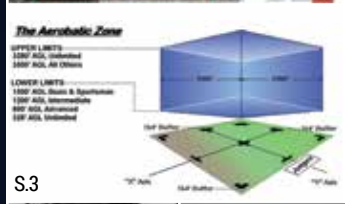
S.2



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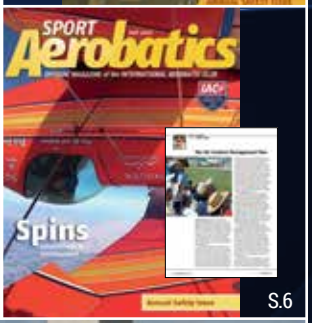

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ADVOCACY/SAFETY

By Bruce Ballew and Steve Johnson

Waivers for aerobatic contest boxes (ACB—short-term waiver) and aerobatic practice areas (APA—long-term waiver) are required any time we wish to deviate from published FAA regulations.

Short-term waivers are for a period less than 10 days in duration. These include practice areas associated with an aviation event or an aerobatic contest. Long-term waivers are for a period of 10 days to 24 months. These are used for aerobatic practices areas.

A safety committee was formed to encourage the highest standards of safety in aerobatics through the exchange of information, educational programs, and articles in IAC publications. The safety program has four elements: 1) aerobatic mishap review, 2) human factors, 3) technical safety, and 4) incident response plan.

S.1 Map of the IAC government relations regions.
S.2 Overhead aerobatic box placement of the 2018 U.S. Nationals aerobatic box in Oshkosh, Wisconsin.
S.3 The aerobatic box is a block of air 1,000 meters (3,281 feet) long by 1,000 meters wide.
S.4 Technical Safety: IAC member Gary DeBaun conducts a technical inspection.
S.5 The 2013 annual safety issue of *Sport Aerobatics*.
S.6 The 2016 annual safety issue of *Sport Aerobatics*.
S.7 The 2017 U.S. Nationals on a Sunday morning.

THE DESIGNER

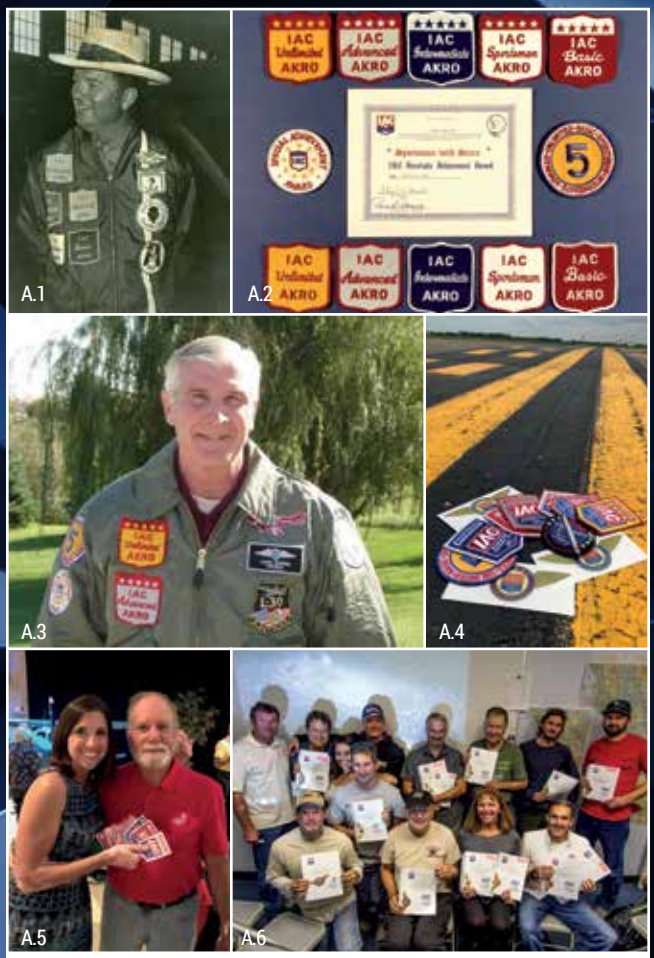
By DJ Molny and Richard Giles

Richard formed AkroTech Aviation Inc. to produce kits and sell finished airplanes. Ultimately about 20 G-200s and about 60 of the two-seat G-202s were produced.

Richard Giles was born in Madison, Tennessee, in 1951 but grew up in Louisville, Kentucky. He made the acquaintance of Gene Soucy and his family at the time and was indoctrinated into aerobatics right from the start of his flying career.

Richard realized that his aspirations for contest flying could be better served with an aircraft of his own design. It took a while to move from the idea to the reality, but Richard's determination happily debuted in the spring of 1994 at Sun 'n Fun (APA—long-term waiver) in Lakeland, Florida, as the G-200.

2.1 Richard's prototype G-200 featured in *Sport Aerobatics*.
2.2 The G-200 was first introduced to the aerobatic community at the 1994 Sebring aerobatic contest.
2.3 The prototype of the G-202 on display in front of the IAC Pavilion in Oshkosh, Wisconsin, in 1995.
2.4 Richard and wife, Jeanie, with their 5-year-old son, Andy.
2.5 The G-300 designed for Norm Willis and later owned by Bob and Marta Meyer.
2.6 The Turbo Raven (G-750) flown in air shows by Wayne Handley.
2.7 The Falcon 2000 is one of the airplanes Richard flew for his employer.



IAC ACHIEVEMENT AWARDS PROGRAM

By Brittany Nielsen

The program was conceived in 1970 by Verne Jobst, the IAC president at that time. With many years as a glider pilot, Verne wanted an equivalent to the popular soaring badges.

Aerobatic competitors can earn achievement awards that signify the level of proficiency obtained in aerobatic flight. There are two types of achievement awards available: Smooth Awards, which can be earned during practice days flown with a current judge present, and Stars Awards, which are earned during a sanctioned aerobatic contest.

Nearly 7,000 awards have been given out to successful applicants from the United States and 18 countries.

A.1 Robert (Bob) Heuer. The IAC's first president shows off his achievement awards on his jacket at the U.S. National Aerobatic Championships in 1972.
A.2 A variety of Achievement Award patches are shown in 1991.
A.3 IAC member Larry Warren of Monee, Illinois, proudly shows off his Achievement Award patches.
A.4 The current-day Achievement Award patches and decals.
A.5 Achievement Award Chair Brittany Nielsen presents IAC member John Willkomm with patches for his achievements.
A.6 IAC Chapter 38 in California receives its Achievement Awards at a chapter practice day.

GILES G-200 IAC EXHIBITION 2019

25TH ANNIVERSARY

3.1

3.2


3.3


3.4


3.5


3.6


3.7

FLYING CHARACTERISTICS

By DJ Molny

The G-200 delivers great performance on just four cylinders. By way of comparison, it will out-fly the very capable Extra 300L in almost all regards: vertical penetration, roll rate, rudder authority, cruise speed, and range.

Spins are conventional, and the big rudder helps a lot when it comes time to recover. It's important to get the nose pretty high to get a crisp stall break, and the ball must be centered — or cheated slightly toward the spin direction — when the stall occurs.

The big rudder also makes snap rolls easier, as do the swept leading edges. When you hit it right, the snaps are really brisk but clearly look like snaps from the ground.

3.1 N621M on the cover of *Sport Aerobatics*, January 2000.
3.2 AkroTech Aviation Inc. brochure for the G-200.
3.3 N148BW was built for Brad Ward of Salem, Oregon.
3.4 N38HR was built for 82-year-old retired Col. Herbert E. "Bud" Ross. It was used for Wayne Handley's 1998 inverted flat spin record.
3.5 Sean D. Tucker, air show pilot, recorded performing 15 vertical rolls in a test flight in N5296E. The roll rate on the G-200 has been measured at 500 degrees per second.
3.6 *Sport Pilot* magazine photo.
3.7 Sean D. Tucker commented, "Nothing rolls faster than this airplane."

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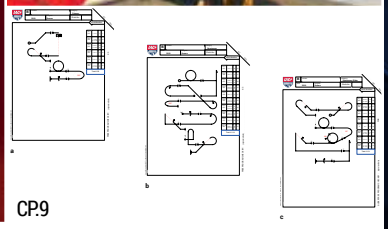
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EAGLE COLLEGIATE NATIONAL CHAMPIONSHIP AWARD PROGRAM

By Jordan Ashley

Origin: The IAC Collegiate program was conceived in 2001 and was designed to introduce college-age pilots to aerobatics with safety as the primary focus.
Sponsorship: Since 2015, Dagmar Kress and Dagmar Aerobatics have sponsored the IAC Collegiate program. An active competitor at regional, national, and world competition, she is the founder and coach for the Metropolitan State University of Denver.
Participants: Over the years, the colleges that are powerhouses in regular aviation training have dominated the IAC Collegiate series. These colleges include current competitors MSU-Denver, Embry-Riddle Aeronautical University in Daytona, United States Air Force Academy, and University of North Dakota.
Awards: Two awards exist for the Collegiate program series, the Eagle Trophy for the Collegiate National Championship Team Award and the Individual Collegiate National Champion Award.

CP:1 The IAC Collegiate logo and slogan.
CP:2 E. Allan Englehardt, creator of the IAC Collegiate program and its first chairman.
CP:3 Dagmar Kress, sponsor of the IAC Collegiate program.
CP:4 IAC Collegiate Team Eagle Team Trophy.
CP:5 University of North Dakota.
CP:6 Metropolitan State University of Denver.
CP:7 United States Air Force Academy.
CP:8 Embry-Riddle Aeronautical University.
CP:9 Typical lower category 2019 sequences flown by collegiate competitors: a) Primary Power, b) Sportsman Power, and c) Sportsman Glider.


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GILES 200 IN COMPETITION

By Bob Freeman

In the 1990s some of the early pilots and builders were just getting into competition. Bob Freeman and Mike Jones were just finishing up their G-200s around the 1997 time frame. Although Mike inspired Bob to build a G-200, the person doing the heavy lifting on building Bob's plane was Phil Deturck. Phil worked on Bob's plane and five or six other G-200s, including DJ Molny's plane.

Bob and his plane flew in the U.S. Nationals in 2007 and 2009. He then joined his fellow Advanced team members and flew his own G-200 in the 2010 World Advanced Aerobatic Championships in Poland.

4.1 G-200s at the Beaver State Regional Championships, August 2011. Left to right: Charlie Teeuwsen, Lew Shattuck, Mac Engh, Phil Deturck, DJ Molny.
4.2 N220JW is owned by John Fellenzer. Photo by Paul Kanagie.
4.3 Greg Howard, former U.S. Aerobatic Team member, built his plane before kits were available.
4.4 Peter Gelinas with Phil Deturck (aircraft builder).
4.5 Left to right: Bob Freeman, DJ Molny, and Phil Deturck.
4.6 DJ Molny placed second in the South Central Regional series in 2009.
4.7 Bob Freeman at the 2006 U.S. Nationals.
4.8 Lew Shattuck with N354TF.
4.9 Mark Nowosielski flew N220PJ in Hungary at the World Advanced Aerobatic Championships in 2012.


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J.4


J.3


J.6


J.5a


J.5c


J.5b


J.5d

AEROBATIC JUDGES PROGRAM

By Wes Liu

Aerobatic competition: Aerobatics is one of the few aviation activities that is a competition between pilots. Competition aerobatics is a sport similar to Olympic ice-skating where each competitor owns the performance zone for a time where they attempt to fly a precision flight program before a panel of judges.

The IAC Official Contest Rules is the book that governs how aerobatic contests are organized and run. The book outlines how each aerobatic figure in a flight program is expected to be flown.

J.1 The 2009 judges at the Kathy Jaffe Challenge in Cape May, New Jersey, hosted by IAC Chapter 58.
J.2 A 2011 Aresti figure notation and judge exam.
J.3 The 2019 "Introduction to Aerobatic Judging" course in Waterford, Michigan, hosted by IAC Chapter 88.
J.4 How to become a regional judge: 1) Attend a two-day "Introduction to Aerobatic Judging" course, 2) pass a written test, 3) gain experience assisting at regional contests, and 4) pass an oral review and evaluation.
J.5a Judges at the Paso Robles Regional Contest hosted by IAC Chapter 38.
J.5b The 2011 judges group (left to right): Larry Bashore, Bill Gordon, Priscilla Bashore.
J.5c The 2013 chief judges at Cape May, New Jersey. Hosted by IAC Chapter 58.
J.6 The Robert L. Heuer Award for Judging Excellence.

GILES G-200 IAC EXHIBITION 2019

25TH ANNIVERSARY


5.1


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GILES 202

By Richard Giles

The G-202 concept was born and most of the design work was completed prior to the first flight of the G-200. In the summer of 1994, Al Slader approached Richard and asked if he would build one for him, so the design was completed and construction was started in early '95. It debuted at Oshkosh later that year.

The G-202 received many good reviews, including this one from Lloyd Beaule, a former Canadian Nationals champion, "I had to look under the cowl and make sure there were four cylinders under there! The performance of the airplane is absolutely amazing."

5.1 Wayne Handley won three California state aerobatic championships in the 1980s.
5.2 Mel Callen, tail number N867TC, at the 2013 Copperstate Fly-In.
5.3 Alain Aguayo has been competing in his G-202 since 2015.
5.4 Scott Francis has multiple wins in the Northeast Regional series from 2007 through 2013 in the Advanced category.
5.5 Gary Ward flew air shows in the Giles 202 from 1999 through 2005.
5.6 Steve Bergevin completed serial No. 8 after seven years in 2003.
5.7 Jim Wells' G-202, tail number 101PZ, serial No. 4.
5.8 Mitch Velickovich with N202MK.


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V.10

VOLUNTEERISM

By Lynn Bowes

Every program and committee is served by volunteer chairmen and members. Whether judging a contest, attending a regional contest, or greeting visitors at AirVenture, all work is done by volunteers. All of us are aerobatic enthusiasts whether we fly or not, but the real benefit comes from volunteering.

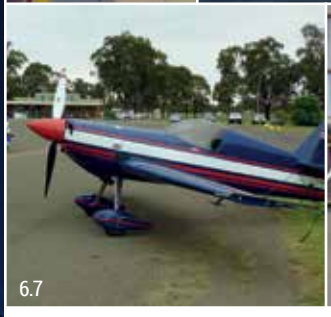
Our volunteers do more than simply stand in the gaps of the organization; they also provide services beyond the scope of any services IAC could afford. We thank our IAC volunteers, who have the heart to keep our aerobatic community vibrant and alive.

V.1 IAC board of directors in 1992.
V.2 The Kathy Jaffe Volunteer Award recognizes an outstanding volunteer.
V.3 The 2017 IAC board of directors at the EAA Aviation Museum in Oshkosh, Wisconsin.
V.4 Photo of the 2018 U.S. National Aerobatic Championships volunteer workforce.
V.5 Gary DeBaun, contest director for the U.S. Nationals from 2015 to 2017.
V.6 Jim and Jean Taylor, volunteers in various capacities for over 27 years.
V.7 Margo Chase, member of the board of directors from 2015 to 2017.
V.8 Mark Fullerton, president and contest director for IAC Chapter 3.
V.9 Alice Johnson, volunteer coordinator at the U.S. National Aerobatic Championships.
V.10 Kathleen Moore, registrar for the U.S. National Aerobatic Championships in Texas.










6.1 6.2 6.3 6.4 6.5 6.6 6.7 6.8

GILES GOES INTERNATIONAL

By Grant Piper and Mike Tryggvason

The original 1994 Giles 200 that appeared in Oshkosh in 1994 migrated to Australia, and its current owner is Grant Piper. Grant imported the airframe in 2006, with the help of Chris Meyer (MX Aircraft), after it had sat for 10 years disassembled in Oregon. Grant's best Unlimited category result was second place at the Australian National Aerobatic Championships in 2016.

Mike Tryggvason began training to fly the Pitts Special S-2A with past Canadian aerobatic champion Gerry Younger and legendary coach Sergei Boriak. In 2013, Mike transitioned to his Giles 202.

6.1 The G-202 1995 prototype, now owned by Robert du Plooy of South Africa.
6.2 Grant Piper at the Australian Aerobatic Club in 2012.
6.3 Mike Tryggvason with his Giles 202.
6.4 G-202 N202CU was bought by Matt Hall and shipped to Australia in 2005. Now tail number VH-YLF, it's owned by Stewart Graham.
6.5 Michael Zacherl, of Germany, found a G-202 damaged in an accident and completed it with new, used, and rebuilt parts.
6.6. White G-202 owned by Scott Robinson of New South Wales, Australia. Photo by Scott Robinson.
6.7 G-200 serial No. 1 VH-OVR (previously N5296E).
6.8. Lennart Wahl built tail number OY-IIL in Denmark. Now ZK-LGT in New Zealand.








C.1 C.2 C.3 C.4 C.5 C.6 C.7 C.8

IAC COMPETITION: REGIONAL AND NATIONAL

By Lorrie Penner

Regional contests: The IAC has 38 chapters throughout the United States. The majority of the chapters organize at least one contest annually. An IAC-sanctioned regional contest depends on volunteers who devote many hours to ensure safe and well-run contests.

U.S. National Aerobatic Championships: The championships were held for over 40 years in Sherman-Denison, Texas. In 2017, the Nationals was relocated to Oshkosh, Wisconsin. In 2019, after an exhaustive search for a centralized location, the championships moved to Salina, Kansas.

C.1 Leo Loudenslager, seven-time U.S. National Aerobatic Champion and FAI World Aerobatic Champion, in 1972.
C.2 Patty Wagstaff, first woman to become the U.S. National Aerobatic Champion, in 1991.
C.3 Debby Rihn-Harvey, three-time U.S. National Aerobatic Champion in 2006, 2008, and 2009.
C.4 Rob Holland, eight-time U.S. National Aerobatic Champion from 2011 to 2018.
C.5 Ohio Aerobatic Open in Bellefontaine, Ohio, hosted by IAC Chapter 34.
C.6 Akrofest in Borrego Springs, California, hosted by IAC Chapter 36.
C.7 IAC Championships in Fond du Lac, Wisconsin, 1973.
C.8 2016 U.S. National Aerobatic Championships in Sherman-Denison, Texas.

Super Decathlon Radio Fix

How to troubleshoot a difficult-to-diagnose problem

BY TOM MYERS, IAC 16830

WHILE THIS ARTICLE IS not strictly about aerobatics, we have so many members who fly Citabrias and Decathlons that I have every confidence that it will ultimately save many people a lot of time troubleshooting a difficult-to-diagnose problem. An aircraft radio is a bit like an octopus in that it is connected to a whole lot of things that are spread out in many different directions throughout the plane, and all have to work properly for the radio to work properly. Phrased another way, when an aircraft radio is malfunctioning, it can be a daunting challenge to troubleshoot it.

In this particular case, our flying club's 1994 8KCAB Super Decathlon was getting reports of garbled transmissions. I was asked to have a look when a cause could not be located. I will spare you all the myriad of details, but the radio itself, the mounting, the grounding, the power wiring, the antenna and ground plane, the audio connections, and the intercom were all one by one exonerated. That left the push-to-talk switches (PTTs).

The PTT scheme is the same in Citabrias and Decathlons. The switches are mounted on the tops of the control sticks. The wiring for each switch consists of a shielded twisted-pair cable. Each control stick has a cable running down its hollow core. At the base of each control stick is a knuckle joint that attaches the control sticks to a common torque tube. The knuckle joints are also hollow, which allows the PTT cables to exit the control sticks and pass under the floor toward the instrument panel. The first photo shows this assembly. The area may be easily viewed with a flashlight by unsnapping the protective boot at the base of the front control stick.

Where the cables pass through the knuckle joints, they are protected by a length of clear flexible tubing. Cloth tape is used to secure the tubing and cables to the torque tube so as to keep the position of the tubing and cables centered within the knuckle joint. Note the centered position of the tubing and cable in the first photo.

It is important that the tubing and cable remain centered within the knuckle joint. If they are allowed to slip to either side, they can become pinched between the knuckle joint and the torque tube and damaged by stick movements. This is how the front PTT cable was damaged in our Super Decathlon. Over time, the tubing and cable worked their way into the pinch point, and the resulting mechanical damage to the cable made it electrically intermittent. Any small stick movement made the PTT switch look like it was being pressed and released very rapidly, and as a result, the transmitted speech was being chopped up. The damaged cable and tubing are shown in the second photo. The third photo shows the cable damage as seen through a microscope.

The problem was repaired by replacing the PTT cables, tubing, and cloth tape, and assuring that the cables and tubing were properly centered during installation. Our maintenance department has added these areas to the regular inspection list for the plane. If you own and/or fly a Citabria or Decathlon, you may also want to add these areas to your regular inspection list. IAC

8KCAB front stick base.

8KCAB front PTT cable and tubing damage.

8KCAB front PTT cable damage close-up.

PHOTOGRAPHY COURTESY OF **TOM MYERS**

2019 IAC Contest Season Calendar

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
April 12, 2019	36	Hammerhead Round Up	Southwest	California	L08
April 19, 2019	19	Mason-Dixon Clash	Northeast	Virginia	KFVX
May 3, 2019	23	Sebring 79	Southeast	Florida	KSEF
May 3, 2019	49	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
June 1, 2019	12	Ben Lowell Aerial Confrontation	South Central	Colorado	KAFF
June 6, 2019	3	Mark Fullerton Memorial 2019 Bear Creek Bash	Southeast	Georgia	KRMG
June 8, 2019	AC7	Killam Aerobatic Contest	Northwest	Alberta, Canada	CEK6
June 14, 2019	67	Apple Cup	Northwest	Washington	KEPH
June 14, 2019	58	Wildwoods Acroblast!	Northeast	New Jersey	KWWD
June 22, 2019	80	Midwest Aerobatic Championships	South Central	Nebraska	KSWT
July 12, 2019	35	Green Mountain Aerobatic Contest	Northeast	Vermont	KVSF
July 12, 2019	77	The Corvallis Corkscrew	Northwest	Oregon	KCVO
July 13, 2019	12	High Planes HotPoxia Fest	South Central	Colorado	KFMM
July 13, 2019	88	Michigan Aerobatic Open	Mid America	Michigan	3CM
Aug. 3, 2019	78	Doug Yost Challenge	Mid America	Iowa	KSPW
Aug. 9, 2019	67	Can-Am Championship	Northwest	Montana	KCTB
Aug. 16, 2019	52	Kathy Jaffe Challenge	Northeast	New Jersey	KVAY
Aug. 16, 2019	AC3	Canadian National Aerobatic Championships	Mid America	Ontario	CNY3
Aug. 31, 2019	AC7	Rocky Mountain House Contest	Northwest	Alberta, Canada	CYRM
Sep. 6, 2019	67	Apple Turnover	Northwest	Washington	KEPH
Sep. 7, 2019	11	James K. Polk Open Invitational	Northeast	Virginia	KHWY
Sep. 21, 2019	-	U.S. National Aerobatic Championships	National	Kansas	KSLN
Oct. 5, 2019	5	The Clyde Cable Rocky Mountain Aerobatic Contest	South Central	Colorado	KLAA
Oct. 11, 2019	36	Akrofest	Southwest	California	L08
Oct. 11, 2019	19	Mason-Dixon Shoot Out	Northeast	Virginia	KFVX
Oct. 18, 2019	107	Texas Hill Country Hammerfest	South Central	Texas	KAQO
Oct. 18, 2019	3	Mark Fullerton Memorial 2019 Bear Creek Bash 2.0	Southeast	Georgia	KRMG
Oct. 19, 2019	12	Las Vegas IAC West Open Championship	South Central	Nevada	0L7
Nov. 1, 2019	23	Sebring 80	Southeast	Florida	KSEF
Nov. 1, 2019	26	Foxy Figures	Southwest	California	KWJF
Nov. 15, 2019	62	Tequila Cup	Southwest	Arizona	KAVQ

PHOTOGRAPHY BY **EVAN PEERS, MATTHEW SPARKS**

A Pitts Does Glide Well ...

Without its propeller

BY SPENCER SUDERMAN

ALL PLANES CAN GLIDE, some have a better glide ratio than others do, and no one believes a Pitts is on the "better" end of the glide ratio continuum. Is there a Pitts pilot among us who isn't guilty of telling that joke about the window in the floor being there so if the engine quits, you can see your landing spot? Or the one about dropping your keys out of the air vent to know where the landing will occur? I'm here to tell you that a Pitts does glide better than a brick ... if you ditch the propeller. I'm not talking about the engine quitting so the prop becomes an air brake; I mean literally removing the prop from the plane.

I expect to have interesting experiences related to my aviation pursuits: taking my Pitts into the flight levels, breaking world records, copious amounts of partying with fellow pilots after contests and air shows. But losing a prop in-flight was never on my commotion list. I also like to shoot video of my flying to share with the world; however, rarely do I film cross-country flights, because they are usually boring.

On April 27, 2019, I departed Santa Paula Airport, California, in my Pitts S-1C, heading to Yuma, Arizona, for another attempt at breaking the inverted flat spin world record. About 10 minutes into the flight, I was cruising at 7,500 feet over the San Fernando Valley when I felt a vibration. There is no video of what was about to unfold; however, there is audio online of me calling the emergency I had into ATC. You can hear the edited LiveATC.net archive recording — shortened for time and to remove extraneous traffic — here: https://bit.ly/2XQVve1.

At first, I thought my left foot was getting lazy and yaw was creating a buffet, so I danced on the rudder pedals a bit to no avail. Then I pulled the throttle back from its cruise setting at 2600 rpm, and the vibration subsided. At this point, 2200 rpm was working until seconds later when the vibration returned. I was near three airports: Whiteman, Van Nuys, and Burbank. At the moment that I decided to key the mic and let SoCal Approach know I was going to land at Van Nuys Airport, the prop departed the plane.

Without saying or even thinking, Oh s**t, I instinctively shoved the nose down and turned toward Whiteman Airport, which was the closest. Then I keyed the mic and let SoCal Approach know that I had an emergency, the prop departed the plane, and I intended to land at Whiteman Airport. I checked all the boxes in order: aviate,

PHOTOGRAPHY COURTESY OF **SPENCER SUDERMAN**

navigate, communicate. People do not rise to an occasion; they default to their training, and in retrospect, I did all of these things without even thinking. Given my altitude and the parachute on my back, I did think for a microsecond about bailing out and then dismissed the idea; I was over a populated area, and I felt confident I could make the 4,100-foot runway.

I had just lost an 18-pound, carbon fiber propeller from the nose of a short plane with a tiny CG envelope, so trying to maintain best glide based upon the known speeds of an intact plane seemed like a fool's errand at the moment. Keeping my speed up in the 150-mph range to maintain elevator control felt like the right thing to do. And, I started to smell burning oil, so I was hoping there was no fire. But if there was one, the speed might extinguish it. As it turned out, the smell was due to oil dripping from the damaged oil cooler onto the exhaust.

Looking at the flight path from my onboard GPS, you can see that I aimed for a spot off the approach end of the runway, knowing that I had altitude and speed to burn off

before attempting to land. After circling down and then slipping on final, I got the crippled Pitts on the ground and almost rolled off the middle of the runway at the intersection by transient parking. I had to get out and push it the rest of the way — an indication that my energy management needs improvement.

I was on the ground about two minutes after the prop came off, having glided several miles in total from 7,500 feet down to the 1,003-foot field elevation. Try that in a Pitts with the prop still attached.

The plane was taken apart and transported back to Santa Paula Airport two days later by my A&P mechanic in his covered trailer. Repairs are underway in preparation for another attempt at the inverted flat spin world record. *IAC*

Prop departures are rare, and in this case, the leading theory is harmonic vibration resulting from the combustion impulse created by the 12.5-to-1 compression pistons. All six prop bolts broke in the crankshaft flange with evidence of fretting on it where the aluminum propeller hub was in contact. There were only 18.3 hours on the engine/propeller, and the bolts were torqued and safetied three times since installation. This aircraft is an experimental plane; no injuries occurred, so the NTSB is not paying attention to this incident.

About Scottsdale's Pittsburger

BY BUDD DAVISSON

I HAVE THIS GAME I play with virtually all of my Pitts students who decide to come frolic with me in Scottsdale. It's just a fun thing that's designed to introduce them to one of the least-expected aviation things they're likely to experience. It goes like this:

We've flown one hop and it's time to take a lunch break. This'll be about an hour and a half and is there to give the students' neurons time to cool off. Also, it'll give them some time to organize their thoughts about what they experienced in the last hour, so our debrief over a burger will be more meaningful. To that end, we drive over to a local Burger King adjacent to the airpark.

As we enter and order, I purposely keep them heavily engaged in conversation about the flight. This isn't hard to do. They've only had an hour or two crammed into my exuberant little bird, so they're generally overflowing with questions and observations. They've just experienced serious sensory overload, so they're anxious to share what's rattling around in their slightly befuddled brain. First Pitts flights often have that effect on people.

Food in hand, I'm keeping their attention focused on me as I guide them to a table and assume the seat that puts their back to the center of the room. We'll start to eat, and a few minutes into the conversation I ask them, "Do you consider yourself an observant human being? One who is usually observant of their surroundings?"

Invariably, the answer is a resounding "yes." I say resounding because the Pitts tends to attract Type A, positive types of pilots. So, of course, they're observant.

Then, without saying a word, but with a certain degree of drama, while looking them in the eyes, I casually point up and behind them. Then I follow the finger with my eyes, which causes them to turn and also look up. Their response is always a quiet outburst, which often can't be shared in mixed company but is in the vein of, "Holy crap!"

They are looking up at the belly of an actual S-1C Pitts, in a hard, diving turn with a parachute-clad pilot scrambling out the other side. This is not a replica of any kind. It's the real deal and is the last thing you'd expect to find hanging over your head in a Burger King. The very last thing. So, a "holy crap" is definitely a fitting statement.

Usually, the students' first comment is, "Why?" To which I have to answer that I don't have a clue. In preparing to tell this tale to the IAC masses, I contacted the Burger King franchisee, seeking an explanation, but the owner hasn't returned my call. If anyone ever gets back to me, you'll be the first to know.

They hung it when they built the Burger King, which was obviously modified specifically to accommodate the airplane. That was around 1994. I don't know which came first, the airplane or the building, but they contacted me to ferry the little bird across town to Scottsdale Airport, which is literally right next door to the Burger King. However, I found it was a homebuilt that had been sitting for some

IT WOULD BE EASY TO DECLARE THIS A WASTE OF AN AIRPLANE. HOWEVER, IT CERTAINLY DOES EXPOSE AN UNEXPECTED AUDIENCE TO THE WORLD OF AEROBATICS. SO, IT'S NOT A TOTAL WASTE. THEY'RE FORGIVEN.

PHOTOGRAPHY COURTESY OF **BUDD DAVISSON**

time — a year or two. And I wasn't anxious to invest the time to get it ready for the 15-minute flight. I told them it would be much easier and safer to get a rigging company to put it on an angled platform on a flatbed. It could be driven down the road in that configuration.

The airplane itself is a nicely done, but not overly done, S-1C flatwing with the longer fuselage and a 160-hp Lycoming dragging it through the sky. I've always thought that to be the perfect combination for a sport plane, although the 180 makes it into a real tiger. Round wings aren't necessary unless you're serious about working your way into Advanced and beyond. From our vantage point under the airplane, it's easy to see it has Grove brakes and a Haigh tail wheel. Its paint scheme features long straight lines, wingtip to wingtip, which visually straightens out the wings, making it easier to judge. The same goes for the broad straight line going up the fuselage. The airplane was destined to compete. How it wound up hanging in a burger joint is anyone's guess.

It would be easy to declare this a waste of an airplane. However, it certainly does expose an unexpected audience to the world of aerobatics. So, it's not a total waste. They're forgiven. ***IAC+***

It's Complicated? Or a Piece of Cake?

2019 Ben Lowell Aerial Confrontation

BY DUNCAN KOERBEL, IAC 437649

I AM REMINDED OF the 2009 movie with Alex Baldwin and Meryl Streep, *It's Complicated*. The first weekend in June, the United States Air Force Academy in Colorado hosted 41 pilots, 14 glider and 27 powered, for the 2019 Ben Lowell Aerial Confrontation, perhaps the most complex contest in the United States after Nationals. Forty-one pilots, two days. Gliders in Primary, Sportsman, and Intermediate with a full slate of powered to go with them, sans the Unlimited immortals. One hundred twenty-three flights to pull off. Oh, it was also the day after the 2019 academy graduation and the arrival of a big blue 747, aka Air Force One with the POTUS. Yeah, it was complicated. But it was safe and a blast.

We are always in capable hands once at the Air Force Academy. It is inspiring to meet and hang out with the future pilots of our Air Force missions around the world and the MSU Denver collegiate team. These Air Force Academy and MSU aviators will migrate to other flying careers, including the airlines, and will most likely fly my yet-to-be-born grandkids somewhere someday. Lt. Col. Mark "Matty" Matticola, Air Force Academy Class of 1992, was the chief judge and air boss, assisted by Contest Director Capt. Kari Wise and IAC Chapter 12 Liaison Mike Arensmeyer, Air Force Academy Class of 1981.

On Friday night, the weather forecast and sortie math added up to predict that pulling off 123 flights in two days was going to be heroic, requiring perfect weather in the Rockies and the academy tower to stay open until dark. We decided to have the Primary pilots fly their first two sequences back-to-back in the same flight Saturday to save time by minimizing launch and recovery. Plus, many of the Primary pilots use a common aircraft. This is a simple decision, but you need to build the clipboard ahead of time to include two A forms from the outset — you can't throw it together on the judging line. We launched at 8 a.m.

Air Boss and Chief Judge Mark "Matty" Matticola gets after it with one of many radios: "The box is hot. The box is yours. Have a good flight."

Saturday with four hold areas, one box, the tower, two corner judges, the glider runway with three towplanes, and the powered runway, with Colorado Springs Class C just to the east. It's complicated, but just another day at work for the air boss; he makes it seem like a piece of cake.

I learned during the contest that the Primary category has the same sequence for gliders and powered and they compete together. Who knew? Chapter 12 is lucky to have a robust and successful collegiate flight program, flying out of MSU Denver with coaching from Dagmar Kress and Mike Forney. It goes without saying, we are also in the heart of glider country with the U.S. Air Force Academy. It is fun to watch these groups of young civilian and military pilots interact and root for each other. Kudos go to U.S. Air Force Academy cadet glider pilot Alex Presley as he took first place in Flight 1. Alas, the weather did not allow for two flights for the gliders, which put him on the podium in first overall with his powered pilot friends Landon Diedrich (second) and Daniel Wilmoth (third).

Knowing we would most likely be limited to two complete flights, we were prepared to move up the Unknown flights to the second sortie in lieu of the Frees. The Unknowns often get punted since they are last, but they also give the pilots the biggest challenge — and that's we fly, right? To get better. The Unknowns were distributed well ahead of time, and it is completely in the rules to allow this order of flight once the compulsory round is complete. More clipboards, more copies, more paperwork.

Did I mention that the Air Force likes having its briefings at 6 a.m.? So for the second day in a row, the Sunday order of flight was called at dawn under cloudless skies to finish Round 1 and begin Round 2. The race was on to get in all of Flight 2. It was close, but Mother Nature won. We missed second flights for 14 pilots, because by the time we could have shoehorned that in, the weather was building, and if you couldn't leave Sunday, you were stuck as the field was closed Monday. Matty made the right call, and we scrubbed the second glider flights for Primary and Sportsman; the Intermediate pilots had to take their untested Unknowns with them to fly some other day for what, of course, would be a better score without the judges watching.

It is great to get down to the Springs and hold for your turn in the box right next to Pikes Peak. It is great to have the future of the Air Force front and center and provide the Air Force alumni a chance to return home. Lt. Col. Pat "Balls" Coggin, U.S. Air Force Academy Class of 1999, came over from Arkansas with his crew chief, aka 12-year-old son DJ. I got to watch Pat fly with DJ, who seemed pretty cool about it all. DJ didn't really need the B form I had with us to follow what was going on; I learned as his dad progressed that DJ has already flown most of the sequence with his dad! I almost thought I heard DJ mutter at one point, "There he goes again, too late on the rudder. Jeez, he always torques those hammerheads!" I hope we see DJ again, maybe someday as a cadet in a glider. His dad took first, by the way. Obviously the result of having a great crew chief.

PHOTOGRAPHY BY **TREVOR COKLEY**

Sam Robinson gets ready to fly safety pilot for first-time Primary contestant Kiley Lynch, who went on to finish fifth. Sam took first in Intermediate.

I also got to hang out with the contest director, Kari, for a little bit. She just got off a C-17 assignment in Charleston, South Carolina. Fifteen hundred hours of flying in 36 months, 70 countries. Makes me think, wow, why would you not consider going to the academy? What an opportunity. Hope she hangs around for a long time too!

On a personal note, I got my pilot certificate in 1981 while at Penn State and added about 300 hours and a few ratings while at Beech Aircraft shortly after. Life, kids, and college tuition caused a 30-year flying hiatus while I designed and built corporate aircraft. I started flying again in 2015 with the sole goal to fly aerobatics. I had to get a taildragger endorsement first from Chapter 12's Dick Bevington. I had never heard of self-serve fuel pumps and AWOS, or hundreds of Dick's stories I would come to enjoy.

For me, it is a privilege to hang out with people at contests who have been active pilots their whole lives so I can watch, listen, and learn. It's a joy to watch glider pilots podium after being towed to 12,000 feet in front of the Rockies. It's a blast to see the confidence of the contest director, younger than my oldest daughter, and learn she flew to 70 different countries. It's cool to watch the MSU kids bring their A game in addition to already being CFIs at 21 or 22 years old and now acting as safety pilots at competitions.

But what I like best about this flying stuff is that it is like no other sport. In flying, as compared to the football fields and basketball courts I competed on growing up, your pilot competitors are your friends. We have all made the same mistakes, flown the wrong way, laughed about it, shook our heads at mechanical issues, pushed the weather to get to a contest or home. We share and help each other like no other group. I feel fellow pilots are not competitors, but instead teammates, as I believe we want to have fun, get better, but most of all help keep everyone safe. That's a team I like being part of — one always ready to help. One that's got my back.

The weather was really closing in Sunday afternoon. Awards were quickly presented, contest trailers packed and parked, time to go! With only four of us left on the airfield, it was tight enough that I asked fellow Chapter 12 pilot Mike Arensmeyer, now with United and previously F-4s, if I could go out with him in a flight of two toward Denver. "No sweat," he replied. We buckled into our birds and back-taxied down Runway 28 as the winds were now coming over the Rockies out of the west gusting to 30, with big dark clouds overhead and lightning in the distance.

Mike called the tower, who had our flight plans on file: "Academy tower, flight of two ready for departure Runway 28, 10-second interval." I knew the "10-second interval" part was for me versus the tower, as Mike knows I have minimal formation time. Keep everyone safe. Mike's rolling. I count to 10 and follow. Quick turn south with the towplane runway and the academy cathedral fading off our right wings and we roll out on a northeast heading toward Denver to dissect the weather and the Class B. I stay as tight as I can on Mike's wing; more fun than flying my Unknown. Thirty minutes later, we break formation as Mike heads home to Fort Collins and I turn toward Boulder in calmer VFR.

I get help all the time and the chance to learn from some of the best just by being at contests. What a blast. I encourage you all to go to your chapter contests and compete. Forget about your score. You never know what's going to happen, who you'll meet, and what you will learn that helps you leave a better pilot than when you arrived. Isn't that what it's all about? IAC

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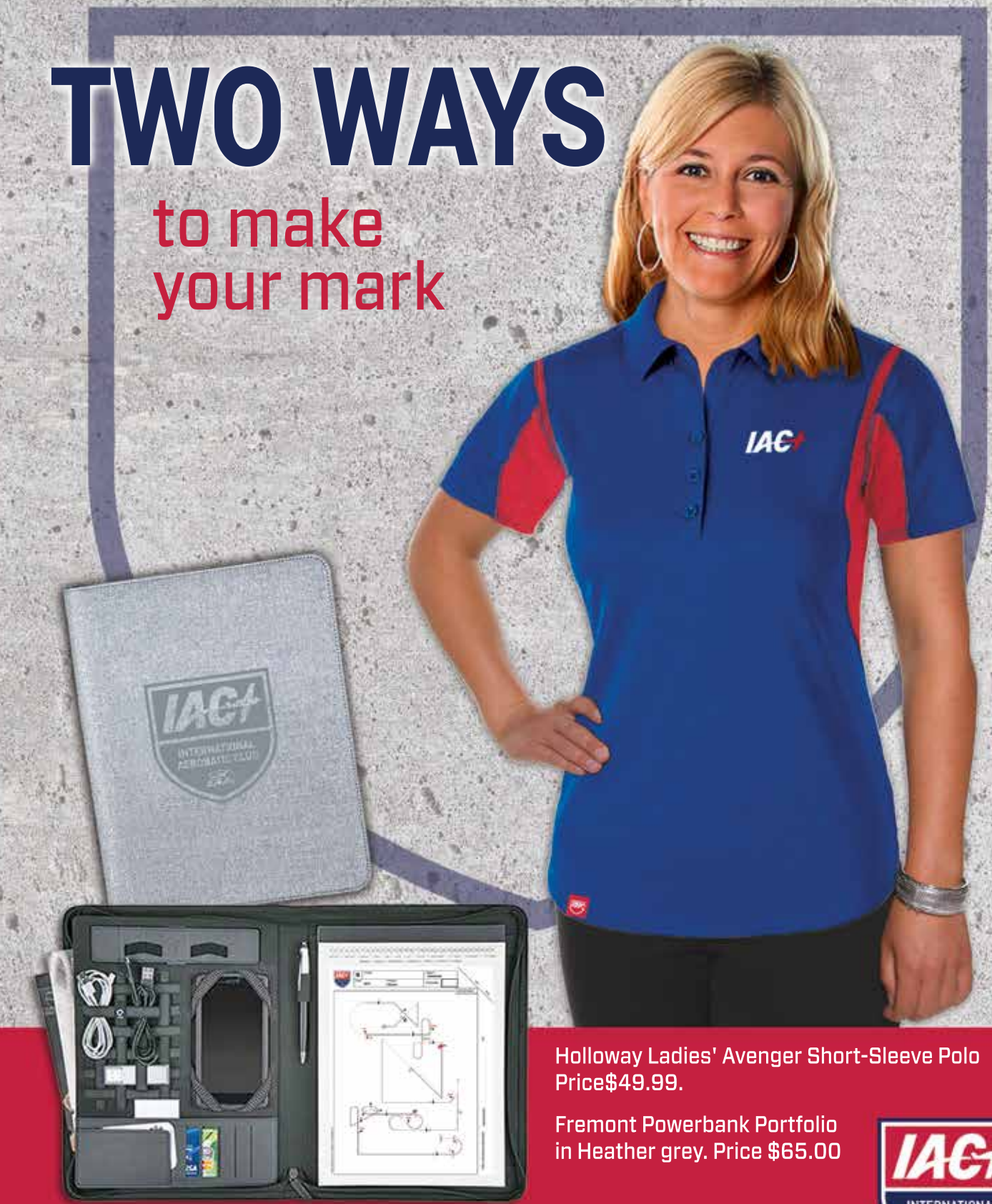

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