



**SPORT**

# AEROBATICS

OFFICIAL MAGAZINE OF THE INTERNATIONAL AEROBATIC CLUB

MAY/JUNE 2022



► FROM THUNDERBIRD TO GAMEBIRD, PG. 6

► TALE OF TWO CHIPMUNKS, PG. 22

► G FORCES ON A PILOT, PG. 30

**GETTING STARTED IN**

# AEROBATICS

**Remember,  
things don't always go  
according to plan!**



Para-Phernalia Inc.  
Thank You!  
Kelly R. Neil

At Para-Phernalia we are very proud that Softie parachutes were instrumental in saving four lives in 1999.

**SOFTIE**  
**EMERGENCY PARACHUTES**  
THE PROFESSIONALS CHOICE  
from Para-Phernalia, Inc.



Toll Free: 800-877-9584  
Intl: 360-435-7220  
Fax: 360-435-7272  
[www.softieparachutes.com](http://www.softieparachutes.com)



# CONTENTS



## FEATURES

- 6 FROM THUNDERBIRD TO GAMEBIRD**

by Lorrie Penner, with Trevor Aldridge



- 16 GETTING STARTED IN AEROBATICS**

by Chris Dydzulis

- 22 TALE OF TWO CHIPMUNKS**

by Lorrie Penner, with Stan Humphrey and Ross Harwell

## DEPARTMENTS

- 2 PRESIDENT'S PAGE**  
by Rob Holland, Vice President, IAC 27724
- 4 EDITOR'S LOG**  
by Lorrie Penner, IAC 431036
- 5 LINES & ANGLES**  
2022 Scholarships  
2022 Annual Awards Deadline
- 30 HUMAN FACTORS G-FORCES ON A PILOT**  
by Jeff Granger
- 36 FLYING FIGURES—MENTORS**  
by Liz Birch
- 44 CONFESSIONS OF A G JUNKIE**  
by Tom Myers
- 46 FROM THE IAC ARCHIVES**  
by Mike Heuer
- 48 FLYMART**

## COVER

### ON THE COVER:

Glen Becker keeps pace in his Pitts S-1s with Mark Meredith and his passenger, Tim Williams, in Mark's de Havilland Chipmunk (Super Chippy). Photo ship: Bill Finagin with safety pilot Randy Williams. Photo by Brian Palmer.

### ABOVE:

Celebrating International Aerobatics Day? IAC Chapter 88 is!"  
Photo courtesy of Laura Buescher.

**Publisher:** Jim Bourke, president@iac.org

**Executive Director:** Stephen Kurtahn, execdir@iac.org, 920-426-6574

**Editor:** Lorrie Penner, editor@iac.org

**Contributing Authors:** Trevor Aldridge, Liz Birch, Chris Dydzulis, Jeff Granger, Rob Holland, Mike Heuer, Brittanie Lincoln, Joe McMurray, Tom Myers, Lorrie Penner, Doug Tracy

**Senior Copy Editor:** Colleen Walsh

**Copy Editors:** Jennifer Knaack, Bryant Shiu

**Proofreader:** Tara Bann

**Graphic Designer:** Cordell Walker

## IAC CORRESPONDENCE

International Aerobic Club, P.O. Box 3086

Oshkosh, WI 54903-3086

Tel: 920-426-6574 • Fax: 920-426-6579

Email: execdir@iac.org

## ADVERTISING

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

## MAILING

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

EAA-IAC Membership Services

Tel: 800-843-3612 • Fax: 920-426-6761

Email: membership@eaa.org

EAA® and SPORT AVIATION®, the EAA Logo® and Aeronautica™ are registered trademarks and service marks of the Experimental Aircraft Association, Inc. The use of these trademarks and service marks without the permission of the Experimental Aircraft Association, Inc. is strictly prohibited. Copyright © 2022 by the International Aerobatic Club, Inc. All rights reserved.

The International Aerobatic Club, Inc. is a division of EAA and of the NAA.

**A STATEMENT OF POLICY** The International Aerobatic Club, Inc. cannot assume responsibility for the accuracy of the material presented by the authors of the articles in the magazine. The pages of *Sport Aerobatics* are offered as a clearing house of information and a forum for the exchange of opinions and ideas. The individual reader must evaluate this material for himself and use it as he sees fit. Every effort is made to present materials of wide interest that will be of help to the majority. Likewise we cannot guarantee nor endorse any product offered through our advertising. We invite constructive criticism and welcome any report of inferior merchandise obtained through our advertising so that corrective measures can be taken. *Sport Aerobatics* (USPS 953-560) is owned by the International Aerobatic Club, Inc., and is published monthly at EAA Aviation Center, Editorial Department, P.O. Box 3086, 3000 Poberezny Rd., Oshkosh, WI 54903-3086. Periodical Postage is paid at Oshkosh Post Office, Oshkosh, Wisconsin 54901 and other post offices. Membership rate for the International Aerobatic Club, Inc., is \$45.00 per 12-month period of which \$18.00 is for the subscription to *Sport Aerobatics*. Manuscripts submitted for publication become the property of the International Aerobatic Club, Inc. Photographs will be returned upon request of the author. High-resolution images are requested to assure the best quality reproduction. POSTMASTER: Send address changes to Sport Aerobatics, P.O. Box 3086, Oshkosh, WI 54903-3086. CPC 40612608

## Spring Is Here – Back to Fundamentals

BY ROB HOLLAND, IAC 27724, IAC VICE PRESIDENT



**I CANNOT BEGIN THIS MONTH'S** column without mentioning the incredibly sad loss of Marianne Fox. She was a beloved member of our IAC family and IAC President Jim Bourke's fiancée. She will be missed by all. On behalf of the IAC membership, our condolences go out to her family and friends.

As I write this, spring is coming. It is time to dust off our beautiful aerobatic airplanes and get out there and start practicing for the 2022 season. I thought I would share my philosophy on how I get ready for each new season.

Every year my airplane goes down for winter maintenance. I fly hard during most of the year, so a thorough condition inspection is performed. I do not do much flying during the winter months. So by March, the airplane is reassembled and I'm ready to get flying again and try to knock off all the rust.

When I start training, I always start with just the fundamentals. What is that, you may ask? If you think about it, almost everything in aerobatics (with a few exceptions) is constructed of lines, radii, and rotations. These are the fundamentals.

It is easy to want to just jump in and start flying sequences and complex figures. After all, it is fun. However, if you don't have the fundamentals down to muscle memory, you will never get the complete figures to look good. I will spend days working on simple pulls to verticals. Pulls to 45 lines. Maintaining whatever line I'm on. Making every pull or push the same consistent radius. Working on simple rotations like full rolls. Making sure the roll rate is consistent and that I don't "bobble" any of the roll stops before moving on to more complex rotations like 1-3/4-rolls both left and right.

If you think about a relatively simple figure like a humpty bump, it has three radii and two lines. There is the first radius, the pull to the vertical. There is a vertical upline. There is a radius at the top. There is a vertical downline. And there is the radius for the pull back to level flight. These are all fundamental elements that construct a figure.

You should be thinking about and practicing the individual elements. The pull to the vertical should look just like the pull back to level. They should both be a consistent radius. The vertical lines should be perfectly vertical for the entire length of the line. There should be a consistent radius at the top that starts at the same altitude that it finishes. This figure is easier to accomplish if you have practiced and perfected the fundamental elements that construct the figure. The same approach can be applied to any figure.

Even during the season, I will take dedicated practice flights to just work on fundamentals to make sure I'm not starting to get sloppy.

It is also easy to overdo it physically at the start of the season. Start light. Your first few flights do not have to be to maximum g. Work your way up, especially with negative g's if your flying requires pushing. I start light, -2 to -3 max. Over time and being consistent, I will work my way up to the negative g's that are required for the flying I do.

A small hint for those who do push negative g's: Make sure during the push you *relax* your body as much as you can. The natural reaction is to tighten up, which is counterproductive. As you know, during positive g all the blood is trying to drain down to your feet. We tighten our abs and legs to try to keep that oxygenated blood in our head so we don't gray out. During negative g maneuvers, the blood is going to our head anyway. Tightening up just makes it worse. Forcing yourself to relax as much as possible during the push makes it a lot more tolerable. Just remember not to overdo it, and try work up slowly to your negative g-tolerance.

I would like to personally thank all of our 4,000-plus members for making IAC the fun, unique, and inspirational organization that it is. We are all a part of this great aerobatic family. I hope no matter what kind of aerobatics you fly, you have a very safe, productive, and fun season. Blue skies! **IAC!**



JUNE 25 2022

# INTERNATIONAL AEROBATICS DAY

Find a schedule of events at [www.iac.org](http://www.iac.org)

► **Fly in, Drive in, Bike in, or Walk in;  
Everyone is Welcome!**

This day will celebrate the skill, beauty, and excitement of aerobatics. Our IAC chapters are hosting a multitude of events to share their passion for the sport of aerobatics. Already on the event calendar at IAC.org are chapters One, 3, 26, 34, 35, 52, and 67. Join us on June 25th - we look forward to seeing you!

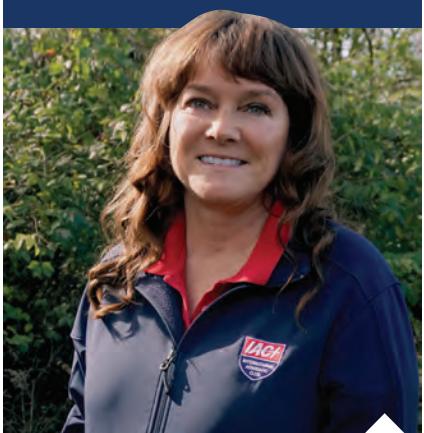
# International Aerobatics Day!

BY LORRIE PENNER, IAC 431036

**SOMETIMES THINGS DON'T HAPPEN** when you expect. Let's face it, life can be full of surprises and opportunities. In this month's issue, Ross Harwell gets an opportunity to fly the same de Havilland Chipmunk that flew over his parents' wedding before he was born. Another Chipmunk pilot, Stan Humphrey, finds his dream airplane at an estate auction, and Trevor Aldridge becomes an elite pilot with the U.S. Air Force Thunderbirds.

The thing I've always admired about people in aviation is their sense of adventure and their passion for something bigger than themselves. In contrast to the aviation community that I normally hang out with, I had a jarring experience once while trying to spread my love of aviation and ran into a brick wall.

My kids were in the marching band during their high school years. In my daughter's junior year, the theme of each song they played involved flight in some form or other. During one of their after-school practices, I showed up and told the 70-member band about a Young Eagles event taking place during the coming weekend. They seemed a bit interested but quiet. So I added, "It's free!" I then asked them how many



would be interested. I was stunned when only three of the 70 kids lifted their hands. How do we encourage and inspire the next generation if we can't even give it away for free? I thought perhaps it was the wrong audience, and I caught them off-guard when they were tired from practice.

Last year we had a golden opportunity to reach out to communities across the nation, and it was a roaring success! National Aerobatics Day saw 11 of our IAC chapters planning special practice days, throwing a community barbecue, a contest, static displays, presentations, or an open house. Maybe this is what we need — to throw a party and simply expose people to aviation. Make airplanes available for people to see, talk to pilots, and watch them fly.

This year the IAC is building on the success and response we received from the inaugural National Aerobatics Day, not only from people in the United States but also from other countries. So, we are going global with **International Aerobatics Day** on June 25, 2022!

The IAC is supporting chapter involvement through social media and event listings on the website. Additionally, International Aerobatics Day stickers are being sent from IAC headquarters to all IAC chapters to hand out to their attendees.

We believe events held during International Aerobatics Day will inspire our fellow aviators and local communities to discover more about aerobatic flying and open their eyes to local airport activities. See you at the airport!

Find more information about events on June 25 on the IAC website: [IAC.org](http://IAC.org). **IAC**

**LAST YEAR WE HAD A GOLDEN OPPORTUNITY TO REACH OUT TO COMMUNITIES ACROSS THE NATION, AND IT WAS A ROARING SUCCESS! NATIONAL AEROBATICS DAY SAW 11 OF OUR IAC CHAPTERS PLANNING SPECIAL PRACTICE DAYS, THROWING A COMMUNITY BARBECUE, A CONTEST, STATIC DISPLAYS, PRESENTATIONS, OR AN OPEN HOUSE.**

# 2022 Scholarships

APPLICATION DEADLINE JUNE 30

**THE IAC HELPS FACILITATE** several scholarships annually to promote aviation safety through aerobatic training and education. Two of these scholarships have deadlines coming up on June 30. Visit the website to see all the details and submit your application: [IAC.org/Scholarships](http://IAC.org/Scholarships).



#### CP AVIATION EMERGENCY MANEUVER TRAINING IN MEMORY OF VICKI CRUSE

This scholarship aims to promote aviation safety through unusual attitude and aerobatic training. The applicant must be a member of the IAC and hold a private pilot certificate. The scholarship amount is \$3,100 (no cash value).

The scholarship includes three modules of the EMT course that includes Stall/Spin Awareness, In-flight Emergencies, and Basic Aerobatics. The course will be taught in a Citabria and Decathlon. The recipient must travel to CP Aviation in Santa Paula, California, for the training.



#### GREG KOONTZ AIRSHOWS AEROBATIC INSTRUCTOR SCHOLARSHIP IN MEMORY OF BOBBY YOUNKIN

The scholarship aims to promote and improve the aerobatic instruction field. It will be offered to any CFI as an aerobatic instructor course if they already have aerobatic experience, or it can be offered as a basic aerobatic course to a CFI with no aerobatic experience. A tailwheel endorsement and current flight instructor certificate are strictly required. The scholarship value is \$3,600 (no cash value).

The recipient receives a full two-day course at Greg Koontz Airshows aerobatic school and two nights lodging at Sky Country Lodge, all meals, four lessons in the Super Decathlon, and extensive ground instruction. **IAC**

## 2022 ANNUAL AWARDS DEADLINE

APPLICATION DEADLINE JUNE 1

**Each year, the membership** of the IAC nominates outstanding volunteers to be recognized for their contributions to the sport of aerobatics. This is an excellent opportunity to give recognition to those IAC members who spend their valuable time volunteering for the benefit of many. Let's recognize our many deserving volunteers for the 2021 flying season. Whether it is on the regional level or the national local, we all have seen the efforts of our chapter friends working to make the IAC experience more fun for their fellow members.

You can nominate your fellow IACers for one of the five nonflying awards listed:



- **Frank Price Cup**

Purpose of the award is to recognize the person who has contributed the most to the sport of aerobatics in the previous year.



- **Robert L. Heuer Award for Judging Excellence**

Member Sam Burgess of San Antonio, Texas, conceived the idea for presenting a trophy to the outstanding aerobatic judge each year.



- **Kathy Jaffe Volunteer Award**

This award recognizes an outstanding volunteer during the previous year.



- **Harold E. Neumann Award for Outstanding Contribution as a Chief Judge**

The family of Harold E. Neumann provided a permanent trophy in 1998 to recognize the outstanding chief judge.



- **Curtis Pitts Memorial Trophy**

The purpose of this award is to recognize an outstanding contribution to aerobatics through product design.

A detailed description of all the nonflying awards can be found on the IAC website [IAC.org/legacy/non-flying-awards](http://IAC.org/legacy/non-flying-awards).

The deadline for nominations is June 1, 2022, for the 2021 flying season.

# FROM THUNDERBIRD TO **GAMEBIRD**

---

A JOURNEY FROM MILITARY TO CIVILIAN AEROBATICS

BY LORRIE PENNER, IAC 431036

WITH INPUT FROM TREVOR "DOZEN" ALDRIDGE, IAC 441727



In 2020, the Thunderbirds and Blue Angels performed flyovers across the United States to salute those who keep America strong. The aim was to show support for the first responders — health care workers, police, fire-fighters, truck drivers, and everyone fighting on the front line to battle COVID-19 and keep America running during the many months of shutdowns.

Maj. Trevor Aldridge, flying the left wing as Thunderbird 2, took part in the America Strong effort. The teams were overwhelmed with the response they received from grateful U.S. citizens.

"The important thing that America Strong did was to let everyone know we are all in this together and no one was alone," Trevor said. "Our message was thank you to all those who have sacrificed their time and talent during this crisis. We understand the sacrifice, and we appreciate it."

Coming from a family that had lived frugally in a small Texas town, Trevor didn't expect he would end up as a member of the Thunderbirds.

After 250 hours in the F-15, energy management fundamental concepts were practiced.

"My parents were divorced, neither had stable jobs, and so we felt our lack of common things like air conditioning," Trevor said. "My sister had special needs, and I was the type of brother that picked fights in order to protect her from bullying. No one had ever been to college in my family. Aviation became a way to achieve something that was better than anything I could imagine. If it had not been for aviation, I don't know what I would have been doing now."

A 2009 graduate of the Air Force ROTC program at Texas A&M University, Trevor completed the Euro-NATO Joint Jet Pilot Training Program at Sheppard Air Force Base, Texas, in 2011. After pilot training, he was assigned to the McDonnell Douglas F-15 Eagle at Kadena Air Base, Japan, where his squadron won the Raytheon Trophy twice. The next assignment was at Sheppard AFB, Texas, as an instructor pilot teaching "Introduction to Fighter Fundamentals" (IFF). Prior to joining the Thunderbirds, he flew the F-15C in the 493rd Fighter Squadron, Royal Air Force Lakenheath, United Kingdom.

Trevor is currently in the Air Force Reserves and is back to teaching in the Northrop T-38 Talon with the 97th Flying Training Squadron, "Devil Cats," to the next generation of NATO fighter pilots, exposing them to the fundamentals of being a fighter pilot.

After he moved from active duty to the reserves, chance opened a door. "Once I left the Air Force, Arkansas happened," he said. "There are stereotypes of what is in Arkansas, so I was pretty blown away by what's happening there; it's the Land of Oz and backcountry flying! That's happening! Stick and rudder skills challenge you as a pilot. You don't get that if you go into airlines, and I didn't want to go to airlines. There are also world-class aerobatic performers in the area around Bentonville. And there is an incredible amount of warbirds at the Bentonville Municipal Airport (KVBT). Incredible airplanes I drooled about as a kid."

Once settled in the civilian side of life, Trevor began flying at Summit Aviation, the FBO at the airport.

"I flew the Falcon 7X for a private family and helped out with Summit Aviation when not flying," he said. "They have a pretty incredible FBO, a flight school, flying club which I am a member of. They also have a Pilatus single plane/single pilot 135 charter and will have the full 135 charter."

His job was just that, a job and a good one, but he was looking for something more.

"My wife is a saint," Trevor said. "Seriously. The fact that she puts up with me is amazing. She knows that I'll go crazy if I can't focus myself on a challenge."

His other hobbies are autocross, mountain biking, racing cars, and baking bread. For some, baking bread might not seem challenging, but Trevor said, "I like to cook if it is not easy."

He found his "challenge" first through books.

"It started when I read Mike Goulian's *Basic and Advanced Aerobatics* books," he said. "I was able to spend a brief amount of time with him when I was on the Thunderbirds, and it was exciting reading his books on aerobatics. I then got turned onto Alan Cassidy's *Better Aerobatics*, which was great as well."

**"I WANT TO SHOW KIDS THAT ...  
IT DOESN'T MATTER WHERE THEY  
COME FROM OR WHAT FAMILY OR  
HOW MUCH MONEY THEY HAVE,  
THEY CAN ACHIEVE WHATEVER  
THEY WANT TO DO."**

— MAJ. TREVOR ALDRIDGE



Trevor Thunderbird #2 in September of 2019.





And then Trevor made connections through social media.

"Rob Holland had a post on Instagram about the IAC, so I commented on it," he said. "His recommendation was to join and start from the beginning, which is what I did. I reached out to Rob, and he said to start at the beginning, learn the basics, and start humble."

Trevor said civilian aerobatics is a different world from what he experienced in the Air Force and fighter pilot training.

"In the Air Force, I learned basic and formation aerobatics like most pilots do," he said. "From the first day of training in the Air Force, I was learning aerobatic maneuvers within 15 hours in the North American T-6 Texan. I soloed the T-6 within 25 hours. After 30 hours, my instructor had me flying loops and rolls unassisted. Then the overall principles are applied to the T-38."

"After 250 hours in the F-15, energy management fundamental concepts were practiced," Trevor explained. "The training was basic up to that point, practicing the ability to manage in a certain profile, finding the right spots, and ingraining understanding about aircraft placement within the formation while in the aerobatic sequence. Altitude awareness was stressed. The goal was more about finessing positioning within the formation."

"Energy management and maximum performance in an aircraft was something that was continuously refined in F-15 and teaching IFF," he said. "Then with the Thunderbirds, formation and aerobatics were taken to another level."

PHOTOGRAPH COURTESY OF TREVOR ALDRIDGE

**"LUCK AND TIMING HAS A LITTLE BIT TO DO WITH IT ... WHEN THE AIR FORCE IS HIRING FIGHTER PILOTS, WHERE YOU ARE IN YOUR CAREER, WHEN THE NEXT ASSIGNMENT HAPPENS, AND ULTIMATELY WORKING HARD WILL OPEN DOORS. IT MAY NOT BE THE DOOR YOU EXPECTED. I CERTAINLY DIDN'T EXPECT TO BE PART OF THIS INCREDIBLE TEAM CALLED THE THUNDERBIRDS."**

— MAJ. TREVOR ALDRIDGE



## BIO

Maj. Trevor "Dozen" Aldridge is a former Thunderbird with the U.S. Air Force in the 2020-2021 air show season. He currently instructs for the Air Force Reserves in a T-38 with the 97th Flying Training Squadron, "Devil Cats." He's currently interviewing with major airlines and is married with two sons.

**Certificates held:** ATP, CFI/II/MEI

**Civilian aircraft flown:** RV-8, Citabria, V35, Extra 330LX, 7X, Super D, Carbon Cub, GB1, and Cessna series and Beechcraft Bonanza Debonair.

**Flight hours:** 300-plus

**Military aircraft flown:** T-6A, T-38C, F-15C, and F-16

**Flight hours:** 2,000-plus

**YouTube channel:** Dozen Duzit: [www.YouTube.com/channel/UC2i95zz3Urvml1lI94xog8A](https://www.YouTube.com/channel/UC2i95zz3Urvml1lI94xog8A)

**mt-propeller**



Available for almost every aerobatic and experimental aircraft.



Kirby Chambliss



Extra NG



GB1 Gamecomposites



Super Decathlon

**MT-Propeller USA, Inc., Florida**

Phone: (386) 736-7762

Fax: (386) 736-7696

e-mail: [info@mt-propellerusa.com](mailto:info@mt-propellerusa.com)

**MT-Propeller Headquarters Germany**

Phone: +49-9429-94090

Fax: +49-9429-8432

e-mail: [sales@mt-propeller.com](mailto:sales@mt-propeller.com)

**[www.mt-propeller.com](http://www.mt-propeller.com)**





Trevor is #2 lower left in the diamond formation.



Thunderbirds perform together during "America Strong," showing their support to first responders in 2020.

Trevor is excited to be joining the civilian aerobatic community. "In contrast to fighter training, my first aerobatic flight was in a Super Decathlon," he said. "I hadn't done any aerobatics since leaving the Air Force when I signed up for the contest (2021 Super D Tango, Sportsman category competition). People at work thought I was crazy. The week before the contest, I got one flight in the Super D and two in a GameBird GB1 at Bentonville.

"Kent Willer was my instructor for my one flight in the Super D before the competition started," Trevor said. "Kent had only been flying for a few years and loved aerobatics in the Super D, so he had started teaching Discovery Flights at Summit Aviation in the previous year. The Super D Tango was only his second competition. This contest was a valuable lesson for two competition novices. I was very pleased to see that everyone at the competition was willing to share and teach us more than we could have learned on our own."

"During the Super D Tango, I flew from the back seat. During the Humpty Bump upline, I got too slow, mostly because I couldn't see the airspeed indicator, and stalled," he explained. "As a result, the plane went 90 degrees off heading, and I completed the rest of the sequence 90 degrees off on all the remaining figures. In retrospect, I should have wagged my wings, taken a break, and returned to fly the correct direction.

"On the second flight, I was in the front seat," he said. "Fortunately, this gave me back a normal scan on the airspeed and sighting devices. With this extreme experience, having almost no practice and being very inexperienced, I was happy."

Since this was Trevor's first contest, he said he was just looking for the experience of learning about competition, but he was proud and happy to have placed fourth out of 23 pilots on his second flight. Kent also did extremely well and finished in second place overall.

"It was a great experience to be able to pick everyone's brain, be in a low-key environment, and have such incredible hosts," Trevor said. "Tony and Julia Wood (longtime IAC members) are amazing people. Not only is their location great, they just seem like great humans. The event was a lot of fun. Low stress, welcoming, and very educational. They had a way of making the competition the place we want to go — to be a part of.

"Aerobatics is the pinnacle of fun in aviation — there isn't much more fun that you can have in aviation," he said. "The sport is good for aviation as a whole; it is an aviation activity that anyone can get into! I look forward to attending another competition and hopefully showcasing the GameBird BGI."

Aviation challenges continue to intrigue Trevor, and he has started a YouTube channel called "Dozen Duzit," which will encompass all aspects of aviation. From general aviation flying to aerobatics and military and backcountry flying, he intends to capture his experiences to share with other aviators. When his busy life allows, he also will be documenting his participation at IAC competitions. **IAC**

PHOTOGRAPH COURTESY OF TREVOR ALDRIDGE



Game Composites LLC filled a new owner's request to have his GB1 paint scheme reflect that of the Thunderbirds. (This is not Trevor's airplane.)



Walter Extra is proud to inform the aerobatic world that the new Extra NG has just received FAA Certification. The NG (new generation) aircraft is the first totally composite/carbon fiber aerobatic aircraft from Extra. Extra Aircraft is also proud to inform that Southeast Aero Sales Inc. is the North American Distributor for Extra.

Contact Chad Graves at CGraves@southeastaero.com, 303-946-6020 or Doug Vayda at DVayda@southeastaero.com, 904-568-9410  
[www.extraaircraft.com](http://www.extraaircraft.com) or [www.southeastaro.com](http://www.southeastaro.com)

# GAMEBIRD GB1 PIREP

BY TREVOR "DOZEN"  
ALDRIDGE, IAC 441727



**AFTER A FULL CHECKOUT** in the GameBird GB1, I have taken the last 10 months to train in and fully explore this aircraft. Here are a few of my observations:

## FIRST THINGS FIRST: LANDING

Coming out of an F-16, I wasn't used to being so low to the ground. Inevitably, I flared too high. It is a very responsive airplane, easy to fly, and I feel directly connected to it.

While the GB1 is capable of incredible formation and aerobatic maneuvers, landing it well and consistently was the priority in the first few flights. It's a quick taildragger that has limited forward visibility, two things I had to get used to. I'd much rather spend all my time in the air throwing the plane around, but safe landing on our 3,300-foot runway was the top priority at this moment. Still, that pull-up to pattern altitude is a ton of fun for a non-afterburning airplane.

## TAKEOFF

The GB1 is different than the jets I'm used to. Lighter and with massive flight controls, its response to stick inputs are sensitive and immediate. Add in a healthy amount of torque and P-factor and you have an incredibly fun challenge.

## SNAPPING

This thing is fun! It snap-rolls insanely fast! It takes a concentrated effort to get the timing correct to stop where you want it, which I'm still learning.

Despite fighter and military aerobatic experience, I had exactly zero practice with snap-rolls.

Most planes struggle handling the forces imposed on them with this violent maneuver. This airplane, however, takes it, laughs, and asks for more!

## OUTSIDE LOOP

The outside loop is an aerobatic maneuver where you push your way through the loop instead of the traditional (and more comfortable way) of pulling positive g's. Instead of blood being pushed down to your legs and feet, it gets pressed into your head. Blood swells into your head, and there isn't a whole lot you can do about it. Negative g's aren't something we did in the military, so it's something new my body needs to get used to and comfortable with. Does it look like it hurts? Yes. Does it actually hurt? Yes.

## INVERTED SPINS

Knowing how to handle an aircraft during a spin is an extremely valuable skill set. We are taught early in pilot training flying the T-6 how to recover from an upright spin, but inverted spins are a prohibited maneuver in most aircraft, including military.

Fortunately, the GB1 is built for all kinds of crazy aerobatics. It's certified as a +/-10g airplane! Feeling comfortable with the plane in an inverted spin is essential before moving onto the crazier aerobatic stuff this aircraft can do.

## SEEING HOW THIS THING HANDLES AT HIGH AOA

I tried what we call in the F-15 "the clam." In the F-16, we call it a "tuck under jink." Essentially, it's a high angle-of-attack loaded roll designed to spoil plane of motion and create a closure problem for the offender.

Famed aviator and strategist John Boyd was nicknamed "40-second Boyd" for his ability to use this concept to go from defensive to offensive within 40 seconds. That was the 1950-60s, though, and now the technique is fairly commonplace in the fighter community.

Unlike in fighters, though, the rudder on the GameBird is proportionally so large that it tends to roll the plane much quicker, minimizing airspeed lost (not that you'll find yourself in a real dogfight in a GameBird anytime soon).

This maneuver is also not great for competition aerobatics because it bleeds a lot of energy. There are more efficient, cleaner ways to maneuver, such as a snap-roll. So what is the point of this maneuver? None, other than making me smile at what fun things you can make this airplane do.

Overall, aerobatics are fun in the GameBird GB1. However, the gyroscopic effects do take a bit of getting used to. At the moment, my favorite aerobatic maneuver revolves around outside maneuvers and snap-rolls. These are things we didn't do in the military, and they are a fun challenge. **IAC**

# GETTING STARTED IN AEROBATICS

GOOD ADVICE, GOOD RESULTS

BY CHRIS DYDZULIS, IAC 438154

**YOU OFTEN HEAR OF AEROBATIC** pilots moving up to higher categories or moving into a more capable airplane, but rarely do you hear about pilots at the beginning of their aerobatic careers. It's amazing that everyone — well, almost everyone — wants you to progress in the sport, but unless you have a good coach or close friends in the aerobatic community, it's difficult to find good advice or proper training, which are crucial to a safe and successful aerobatic career.

Everyone has their own opinion and way of doing things, and as a first-time competitor in the Primary category in 2018-19, it was almost impossible to know whose advice to take, whose to listen to and then quickly erase from memory, and how to avoid picking up bad habits that might hurt you throughout your hopefully long aerobatic career.





**... AS A FIRST-TIME COMPETITOR ...  
IT WAS ALMOST IMPOSSIBLE TO KNOW WHOSE ADVICE TO TAKE, WHOSE TO LISTEN TO AND THEN QUICKLY ERASE FROM MEMORY...**

I have always been interested in aerobatics but, like most, I never knew how to get involved. I was fortunate enough to work for the Goulian family at the since-shuttered Executive Flyers Aviation (EFA) at Hanscom Field in Massachusetts. Finally, I could get some aerobatic training! Unfortunately, due to scheduling conflicts and a few unforeseen factors, I was able to take only a couple of flights in the EFA Super Decathlon.

After my time at EFA, I stayed in touch with the Goulans. They have always pointed me in the right direction, not just with respect to aerobatics, but in all aspects of aviation. The very generous Don G (my *Godfather* nickname for Mike Goulian) recommended I continue my tailwheel and aerobatic training at the Patty Wagstaff Aviation Safety school (PWAS) in St. Augustine, Florida.

Through Patty and instructor Allan Moore, I learned an incredible amount about tailwheel flying, basic aerobatics, and the many ways of approaching the sport. Between world-class instruction, great friendships, and Florida beach days, PWAS has become a yearly retreat for me, and I would highly recommend the flight school to anyone interested in tailwheel or aerobatic training.

After training at PWAS, I couldn't wait to start regular training back home and continue flying aerobatics! Of course, I ran into many of the same issues as most people who are starting out in this sport. Due to work and an abnormally high Super Decathlon rental rate at my local flight school, I found it difficult to fly as often as I needed to prepare for competition.

At my first Green Mountain Aerobatics Contest (GMAC) in Springfield, Vermont, in 2018, I competed in Primary. IAC Chapter 35 hosted the contest, and the whole weekend was amazing. I met a lot of great competitors and made some new lifelong friends. The weekend made me realize how much goes into being competitive — and that I still had a long way to go to compete at a high level.

In the months leading up to the 2019 competition season, I spent a lot more time training in the local flight school's Super Decathlon. The price was still outrageous, but it was the only available rental in the area. I would focus on walking through the Primary sequence knowing that I wouldn't be able to fly as frequently as everyone else would.

I can remember working on certain figures that I was having trouble with. First, I needed to practice my rolls. I was either stopping the rotation too early or too late, even in the Super Decathlon with its slow roll rate! Finally, with practice I was able to stop the roll. Then I moved on to fixing the “barreling” of my rolls. I was inconsistent with my rolls; half turned out very nice, and the other half would dish out. Finally, with the help of a few other competitors, I was able to fix it! Of all the maneuvers I have learned so far, the slow roll is one of the more rewarding to fly properly.

Finally the 2019 Green Mountain Aerobatics Contest had arrived! The Super Decathlon I was flying at the time was operated by my local flight school and was shared among five competitors, including me. Yikes! Needless to say, it was difficult to get as many practice flights as I wanted during the designated practice day.

By the end of the first contest day, I had shown some improvement. With this being the second contest I had flown, I wanted to be more involved and learn as much as I could about my new sport. So I volunteered and was placed on boundary lines for one of the days. I still don't know if they forgot about me or if no one wanted to take my place on the boundary line. Either way, I was out on the boundary line for a little more than four hours on a very hot, sunny July day, and as a result I got a nasty sunburn. This is a good reason to discontinue the use of boundary judges at competitions.

After three scored flights, I notched two second-place and one first-place finish, leaving me in second place overall at GMAC. Whoohoo! Finally some hardware to take home!

Next on the list was the 2019 Keene Fall Classic, a one-day Primary and Sportsman contest in October. I didn't get to fly as much as I would have liked leading up to this contest, but luckily I was the only one flying the plane this time. Upon arriving, I hoped to get one practice flight in, but I quickly learned I was first in the flight order and was expected to fly the low lines. A close friend told me to do as many walk-throughs as possible before the contest flight since I would have no time to practice in the plane.

After flying low lines and feeling very rushed, it was time to dive and wing-wag into the box. Reflecting on that first flight, I remember feeling like I flew some of my trouble figures very well and was happy about that. On the other hand, I had the gut-wrenching feeling that I'd hard-zeroed a few maneuvers, so I was not feeling confident about my score. Since I was the first to fly that day, I had a long time to sit and wait. Finally, the scores were posted and it was time to see how everyone had done.

Phil Joseph, the president of IAC Chapter 35, announced I was the first-place winner in the Primary category. I was very happy to be taking home a wooden contest plaque, and I felt relieved because I thought I'd flown poorly. After flying two 2019 Primary competitions, it was now time to look forward to flying Sportsman in 2020.





With the 2020 season approaching and the flight school Super Decathlon rental rate continuing to rise, I was beginning to sweat a little. Fearing I would not have access to an aerobatic airplane for the season, a new friend offered to let me fly his Super Decathlon. I was ecstatic. Luckily, the aerobatic community is very generous. With access to my friend's airplane, I was now able to fly whenever I had free time. Not wanting to dive too quickly into the Sportsman sequence, I took a slower approach to learning new maneuvers. I learned as much as I could and took full advantage of my new coach's experience. I was going to be as prepared as possible for the new season.

Unfortunately, COVID-19 broke out soon thereafter, disrupting the 2020 season and just about every other plan I or anyone else had made for the year. As it turned out, I did very little aerobatic flying and very little flying in general in 2020. I tried to do a few walk-throughs of the 2020 sequence and focused on a few of the more troubling maneuvers to stay sharp during the year off.

Fast-forward to 2021. With COVID's influence on our lives waning somewhat, I flew the Decathlon as much as possible and worked on hammerheads and inverted 45-degree lines. I felt I was making a lot of progress on these maneuvers, but, of course, you always make the most progress right before you are unable to fly for a while. The rest of the figures in the sequence were pretty straightforward, and I mostly worked on spacing and timing. I tried to fly frequently, even though I wasn't competing.

My yearly trip to St. Augustine was great as always, though I wasn't able to fly while I was there due to low ceilings. Expecting that there would not be much of a competition season in 2021, I took a trip to South Africa to visit friend and Red Bull Air Race pilot Patrick

Davison. In addition to exploring that incredible country, I had a great time flying with and learning from Patrick. I found that his take on aerobatics was similar to that of the *Fly Cool Stuff* podcast crew; if you want any kind of career in aerobatics outside of weekend loops and rolls, you really need to immerse yourself in it. After flying some of the airplanes in Patrick's large collection, it was time to return home. I felt a little more determined to get back into an aerobatic box after my two limited competition seasons.

Toward the end of 2021, I somehow ended up in Bentonville, Arkansas, at the Game Composites factory. I had a chance to tour the factory and meet the people working to build the GB1, an incredible airplane. I couldn't believe how hospitable everyone was. I had a close-up view of every aspect of the plane's production, from design to finished product. Finally, Game Composites co-founder Philipp Steinbach told me it was time to fly in the GB1 GameBird! I had the privilege of flying with Cristian Bolton, a former fighter pilot in the Chilean Air Force, team captain of the Air Force Halcones Aerobatic Team, and a Red Bull Air Racer. Most of my aerobatic experience is in a Super Decathlon, with a few hours here and there in a Christen Eagle. My only monowing time has come in an Extra 300L and a Giles.

So I may not be the best person to describe the new carbon fiber aircraft, but it was absolutely amazing to fly. The vertical penetration was unmatched by anything I have ever flown, as was the roll rate. On my first roll, I over-rolled by about 10 degrees. Cristian may say I over-rolled by more, though. After quickly getting used to the plane, I found it relatively easy to fly, and I hope I don't get too many eye rolls for that comment. I could definitely see how this would be a perfect plane for someone to fly from a lower level and, through proper training, work their way up to Unlimited. I could also see, given enough time in a GB1, how someone might move from an equivalent aircraft to a GameBird and be just as happy.

Now we are well into 2022 and I still haven't competed in the Sportsman category. I am very eager to attempt two or three contests. Hopefully, I'll score well enough to move into Intermediate for 2023. I am fortunate to have been welcomed into this new aerobatic community, and though this is a competition sport, I have been blown away by how helpful everyone is — including the owner of the Super

Decathlon, a few fellow competitors, and my coach, who not only has helped me immensely in aerobatic flying and knowledge, but also has become a sort of life coach.

I'd also like to thank Jim Bourke for the opportunity to introduce myself, and all of you for everything you've done for our sport. And thanks to Lift Aviation for being such a big help so far in 2022. I can't wait for the 2022 competitions to start and for me to keep moving up in the sport and getting involved in any way I can. **IAC**

**CHRIS IS A MEMBER OF IAC CHAPTER 35.** He has a total of 350 flight hours, with 70 of those being in aerobatic flight. He has flown a number of aerobatic and non-aerobatic aircraft, including the Super Decathlon, Extra 300L, Christen Eagle, Giles 202, GB1 GameBird, RV-7, Beechcraft Bonanza, and Beechcraft Baron, as well as the Piper Super Cub 140, 160, and 180 and the Apache Cessna 172, 177RG, 152, 206, 414, and 421C.

**BUTLER**  
HIGH SPEED - CUSTOM FIT

888-235-3280  
[sales@butlerparachutes.com](mailto:sales@butlerparachutes.com)  
[www.butlerparachutes.com](http://www.butlerparachutes.com)

# Tale of Two *de Havilland Chipmunks*

BY LORRIE PENNER, IAC 431036



Top airplane: Nathan Hammond  
Middle airplane: Mark Meredith  
Bottom airplane: Ross Harwell

PHOTOGRAPHY BY DAVID EKERT



## Ross Harwell

IAC 441756

When Ross Harwell's parents got married, they along with their excited guests watched as a beautiful 1951 de Havilland Chipmunk flew over the wedding site, commemorating the day. Who would have thought that years later Ross would have an opportunity to fly that same airplane?

The Gastonia Municipal Airport sits 4 miles south of the city of Gastonia in North Carolina. This place is where Ross ran into the pilot of that flyover Chipmunk. The two struck up a friendship reminiscing over that wedding day many years ago. Now 88 years old, the pilot asked Ross to be his warmup pilot, and Ross flies the plane regularly.

Although he hasn't had any formal training in aerobatics, Ross did take an upset recovery course and earned a tailwheel conversion endorsement through Aero Dynamics, which was run by Mikey Matthews out of Statesville, North Carolina. (The flight school has since been sold.)

The de Havilland Canada DHC-1B-2-S3 C/N 156-194 was built in the de Havilland factory in Downsview, Toronto, Canada. At the conclusion of the World War II, de Havilland Aircraft of Canada Ltd. was interested in developing its own aircraft designs and taking advantage of an expanded aircraft manufacturing boom in Canada at that time. The Chipmunk was intended as a successor to the de Havilland Tiger Moth biplane trainer.

This DHC-1B-2-S3 (Chipmunk T.2) was built for Royal Canadian Air Force refresher training and was operated by Royal Canadian Flying Clubs, and it was fitted with a four-cylinder, air-cooled, inverted inline engine, the de Havilland Gipsy Major or Gipsy IIIA. Sometime in the 1980s, the aircraft was converted to a Super Chipmunk, upgrading the engine to a Lycoming IO-540 SER.

On flying the Chipmunk, Ross noted that, "The Chipmunk is easier to fly than a Decathlon. It's the poor man's Extra." He would love to participate in IAC contests somewhere down the line. He wants to buy an Eagle for competition, though. "I will not be doing competition in the Chipmunk," said Ross, an IAC member since June 2021.

At EAA AirVenture Oshkosh 2021, Ross along with Stan Humphrey, Mark Meredith, and Nathan Hammond were tapped to display their Chipmunks at the Warbirds in Review area to help celebrate the 75th anniversary of the de Havilland Chipmunk. The weather turned a bit soggy, but along with Nathan and Mark, they were able to participate in an air-to-air photoshoot.



# Stan Humphrey

IAC 430355

At 18 years old, Stan Humphrey was hooked on aerobatics and Chipmunks. "I saw Art Scholl at an air show," he said. "His rolling turn hooked me, and I began to dream of becoming another Art Scholl."

Many years later, Stan would finally find the airplane of his dreams at an estate sale. The previous owner of his 1951 de Havilland DHC-1 TMk 10 was Roger Buyers, who started modifying the plane in 1999. He had rebuilt the wing by making it thicker and increasing the wingspan. His other modification was to modify the throttle by moving it to the right side of the cockpit.

Although thrilled with his purchase, Stan, already a homebuilder of a Lancair IV and a Velocity – both Lindy winners with pal and fellow builder Richard Cado – knew he would have to replace the engine. The Chipmunk is now powered by a 300-hp Lycoming IO-540 SER.

Prior to AirVenture 2021, Stan had been working on his plane to get it ready to fly from Texas to Wisconsin. "Two weeks before AirVenture, I found the controls were more well balanced than expected," Stan said. "The handling in trim and pitch were great. The roll rate of the Chipmunk is fantastic, even though I have never done any modifications to the ailerons. So far, my favorite maneuver is rolls on a 45-degree line. My next task is to get the prop balanced."

Although he loves aerobatics and did fly an IAC contest in the past in a Starduster he owned, he prefers taking the Chipmunk to fly-ins with grass fields. Stan enjoys sharing his enthusiasm for flight and put that joy to work with an organization called "Props for Cops," where he could give rides to first responders and to support law enforcement. "The Chipmunk is very roomy, unlike some other aerobatic-capable airplanes, so it gives me the opportunity to take larger, taller, or heavy-built individuals for rides."

Stan has dipped his toes into many aviation-related businesses, including four years in the U.S. Air Force as an air traffic controller, flight instructing, flying canceled checks to Federal Reserve locations (before everything

was computerized), flying film for photo mats to photo labs (again before modern technology), flying freight, and aerial sky casting.

Before his one IAC contest, he did take spin training at Harvey-Rihn Flight School in its Pitts Special. He also enjoyed a couple of good books on aerobatics, specifically Geza Szurovy and Mike Goulian's book *Basic Aerobatics*, as well as Duane Cole's books, *Roll Around a Point* and *Conquest of Lines and Symmetry*. "I favored Duane's books because they were all about energy management and hitting your altitude for each maneuver," Stan said.

A member since 2002, Stan said that he got a lot of tools he needed for aerobatic flight from being a part of IAC. "Every season, I would download the Sportsman sequence," he said. In his retired life, he is still searching for the next aviation opportunity. He has a Christen Eagle, which is fitted with a smoke system. He's thinking about an idea to do some skywriting. Stan said, "Think hearts for beach weddings." **IAC**

**WHY FLY THE REST  
COME FLY THE BEST, MX.**



**MX**  
**Aircraft Co.**

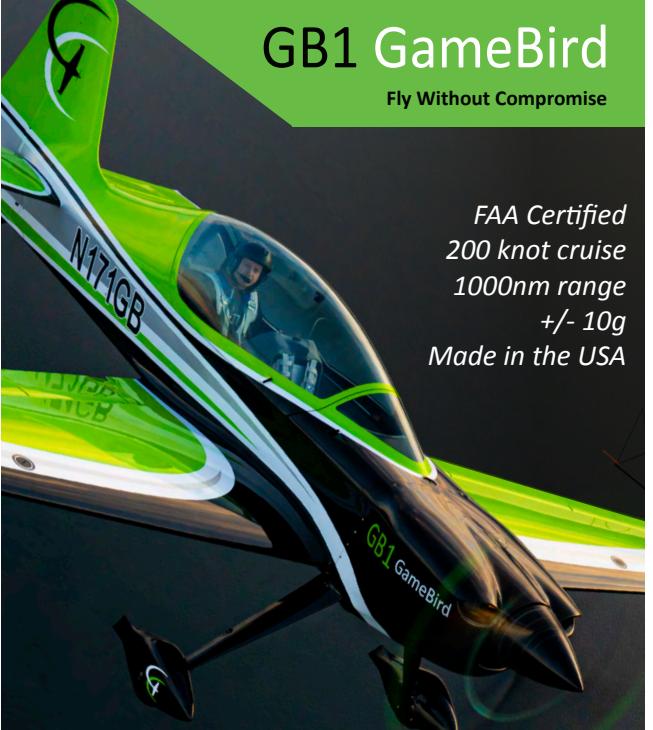


MX is a multiple aerobatic competition winner and an unbelievable air show performer with an all carbon fibre aerobatic design. Setting the benchmark in unlimited performance aircraft MX has a range of features including:

- Well-mannered aircraft
- Unmatched manoeuvrability at +/- 14G's
- Roll rate in excess of 420degrees/second
- Thousands of hours of flight testing
- A fast-cross country sports plane with a cruising speed of 200 knots and up to 900 miles of range!

[www.mxaircraft.com](http://www.mxaircraft.com)  
+1 (704) 607 6609 info@mxaircraft.com

**GB1 GameBird**  
Fly Without Compromise



**FAA Certified**  
200 knot cruise  
1000nm range  
+/ - 10g  
Made in the USA

**GameComposites.com**  
[Info@GameComposites.com](mailto:Info@GameComposites.com)



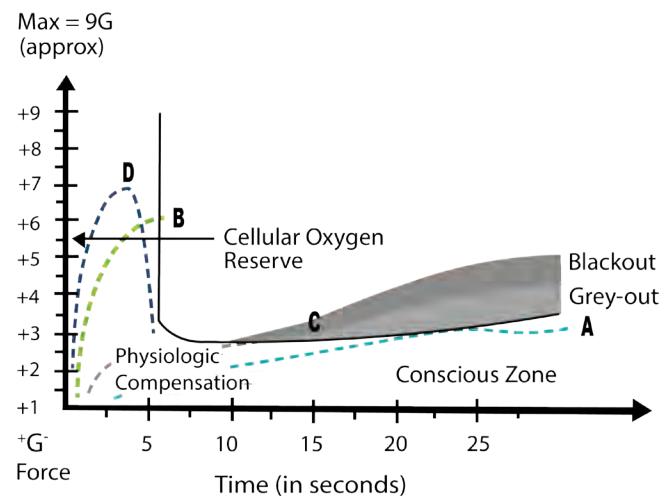
# G-Force Training and the Aerobatic Pilot, Part 1

BY JEFF GRANGER, IAC 19907

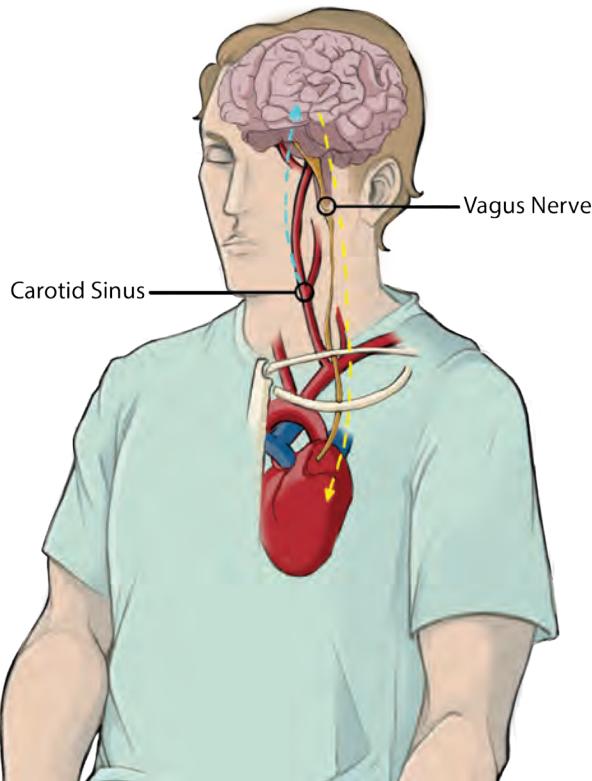
**IN JUNE 2003 I ALMOST BLACKED OUT** while flying the Rice Lake, Wisconsin, contest in my Extra 200. The Unknown had a figure that finished inverted followed by a pull to a downline and a P-loop. Pulling at the bottom of the loop I felt the “grayout”: the loss of color perception and tunneling of vision as blood flow to the retina diminishes. Despite doing my well-practiced anti-g-straining maneuver, as the plane started up from the bottom of the loop I more or less lost all awareness. Fortunately, I was on the way up again and there was plenty of altitude. But it was startling and unnerving enough that I broke off, landed, and did not complete the Unknown flight.

So, what happened? I had competed at a Sportsman level in my Skybolt for five years and purchased the Extra to move up to Intermediate. This was one of my earlier contests at the new level. Moving up to Intermediate is a big step, not just because of more difficult figures and the need to have a Free program but also because of the possibility of encountering figures or combinations of figures one has not flown before in the Unknown.

## G Tolerance, shown as $g_z$ versus time



**FIGURE 1:** G Tolerance, Shown as  $g_z$  Versus Time.  
In "A" the pilot has visual clues that warn of impending G-LOC. In "B" the pilot could lose consciousness without preliminary symptoms. In "C" moderate but sustained g-load can induce G-LOC in 10 seconds or less. In "D" the g-load is high but short enough duration the brain can continue to function on cellular oxygen reserve.



**FIGURE 2:** Cerebral Blood Flow Feedback Loop  
A fall in blood pressure, as in pulling positive  $g$ , sensed at the carotid sinus stimulates the heart to pump harder and faster. Excessive blood pressure, as in pushing negative  $g$ , slows heart rate and force of contraction.

An official government source is FAA Advisory Circular 91-61 from 1984, “A Hazard in Aerobatics: Effects of G-Forces on Pilots.” This is absolutely required reading for all of us doing aerobatics. The circular covers the history of g-force and outlines the physiological effects. It defines the three-axis notation system for g-force on the human body. Of course, the one that we’re concerned with is from the head to the foot, the  $g_z$ -axis. It covers the symptoms of positive and negative  $g_z$ .

First developed during World War II, an AGSM increases blood returning to the heart, thus maintaining blood flow to the brain and pilot consciousness. An effective AGSM can increase g-tolerance by approximately 3g’s.

An AGSM consists of two components. First, rapid cycles of exhalation and inspiration every three to four seconds. This maintains oxygen content and decreases carbon dioxide in blood, while also relieving increased chest pressure and allowing the heart to refill with blood. Second, the isometric contraction of the muscles of the legs and abdomen speeds return of blood to the chest. The entire lower body becomes a reciprocating pump returning blood to the heart.

More recently, in the July 2020 issue of *Sport Aerobatics* was a personal account by Dave Farley titled “My Experience With G-LOC.” What he described might be considered the perfect setup for a problem with g-tolerance. A flight early in the season. And a roll to inverted followed by a 5/8 loop down. This is the “push-pull” effect well known to prime the cardiovascular system to slow down the heart rate and blood pressure as the blood is forced into the head during negative  $g$ . During the following high- $g$  figure, the heart does not have time to respond. Fortunately, his loss of consciousness was brief and occurred on the upline. In another situation it could have been deadly.

It’s important to note that our mammalian brains are always dependent upon a continuous supply of oxygenated blood. Even a five- or 10-second deprivation of blood flow results in impairment or outright loss of consciousness. Our cardiovascular system is well adapted to the 1g environment of Earth’s gravitational field with only minor plus/minus differences. The feedback mechanism between pressure sensors in the carotid arteries at the base of the skull and the heart itself are not well adapted to the high  $g$ -loads that we are pulling in aerobatic flight. Being able to complete the desired figures requires a fundamental knowledge of our anatomy and physiology as well as learning various straining techniques. One needs to be constantly vigilant of one’s overall level of training and experience as well as hydration lest there be a bad outcome.

I’m concerned that we are pulling a high level of g-force in our little airplanes. There’s the risk that somebody new to this sport or moving up a category could get blindsided.

To learn more, I thought it would be instructive to do an interview with a former military pilot as well as an experienced competitor in each of the five IAC competition categories. I asked a variety of questions, such as “What was your first encounter with g-force effects in aerobatics?” and “What readings or study did you do on the physiology of g-force?”

On the following pages, we will present interviews of a former military pilot, a Primary category competitor, and an Intermediate category competitor — Doug Tracy, Joe McMurray, and Brittanie Lincoln, respectively.

As you will see in the following pages, these interviews confirmed what I had expected: Our civilian aerobatic pilots and competitors are learning to compensate for the g-loads with a variety of different educational materials and inconsistent instruction.

In Part 2 of this article we will read about three other pilots’ experiences with g-forces from Sportsman, Advanced, and Unlimited level pilots — Pawel Miko, Matt Dunfee, and A.J. Wilder, respectively. We will also discuss how adding the correct anti-g straining maneuver, maintaining physical fitness, educating ourselves on g-forces, preparing early and rigorously for the contest season, increasing awareness of warning signs, and staying hydrated will prepare us to handle g-forces. **IAC**



**JEFF GRANGER** has been a member of the IAC since 1993, and served as the president of IAC Chapter 34 in Ohio while competing in the Mid-America region through 2017. Before owning the Extra 300L, he had an Extra 200 and started out his aerobatic flying in a Skybolt.

# G-Force Training – Experiences

BY DOUG TRACY, IAC 432797; JOE McMURRAY, IAC 441329; AND BRITTANEE LINCOLN, IAC 440740



## FORMER MILITARY – DOUG TRACY, IAC 432797

Doug Tracy is an IT executive from Dallas, Texas. He graduated from the U.S. Naval Academy in 1982 and served in the U.S. Air Force from 1982 to 1996, flying the O-2A, RF-4C, and F-15E. He has owned and flown in competition an Extra 200, an Extra 300L, and a Super Decathlon. He currently competes in a GameBird GBI in Sportsman.

I had no significant exposure to g's during civilian flying before starting Air Force flight training at Laughlin Air Force Base in 1982-83. Centrifuge training was not routine then, but a physiologist from the aeromedical department came to discuss the basics of g-force and how to do g-straining maneuvers. We were flying the T-37 then as a primary trainer and the T-38 as an advanced trainer and wore g-suits in both. We learned how the suit worked and how to supplement with the straining maneuver. So, my first significant g-force experience was in jet aircraft fitted with g-suits.

After USAF pilot training, my initial Air Force operational flying was in the O-2, which is the military version of the Cessna 337. We did not pull significant g-force in that. When I later transitioned to the F-4, I went through centrifuge training at Brooks AFB. G-LOC was becoming a big issue across the USAF mainly due to the introduction of the F-16. You can pull 7-9g's in the F-16 all day long, which led to more episodes of G-LOC. Therefore, the USAF mandated centrifuge training and more extensive ground instruction for all fighter pilots, regardless of whether they were flying the F-16 or not.

I read various Air Force manuals and publications on g-straining maneuvers. However, most of the g-force training was via lectures and hands-on demonstrations.

The USAF spent time in basic flight training discussing g-forces and the proper use of the anti-g suit. Over time, recommended straining techniques in the Air Force changed, with the main improvements being in breathing techniques. Also, later it introduced strength training as an important component. Weightlifting focused on the lower body and core.

It's vital that your legs and core are strong. These are the muscles that are going to push blood up into the chest and head. My USAF training cautioned against excessive aerobic work that will lower your resting heart rate and blood pressure as this was believed to lower g-tolerance. So, maintain good overall fitness throughout the year with some strength training. Before any flight make sure you are not dehydrated and don't skip meals.

There is, however, a limit to ground preparation. You must get in the plane and pull g's regularly. Every one of my practice flights starts with some g warmup turns. This helps build up my tolerance and see how I feel that day. It is a chance to practice the straining maneuver (and make sure there is nothing funny with the airplane).

In the military, grayout was common due to frequent rapid maneuvers in air-to-air or air-to-ground missions with most missions requiring multiple maneuvers from 5g to 9g, often sustained for up to 30 seconds. Therefore, we became very attuned to the tunneling of vision and learned to quickly compensate with a harder straining maneuver or easing off on the g. I have never had g-induced loss of consciousness (G-LOC).



I found another degree of difficulty when I began instructing in the Air Force, as the student usually has the stick and it was harder to anticipate the onset of g-load. It was easy to get behind the maneuver in terms of the anti-g straining maneuver.

For new IAC competitors, I would tell them to understand what is going on with the aircraft first. Get good core aerobatic instruction, especially upset recovery and spins. Read up on the physiology of g-forces and the rationale of the straining maneuver. Know what happens to your body and why. There is no substitute for frequent and regular flying – it just can't be substituted except in a centrifuge.

My Air Force training was comprehensive but did not prepare me for all aspects of civilian aerobatics. We almost never did spins. In air combat maneuvering there is rarely the need to do negative g or even zero g. (The jet engine is easily starved for oil after 20-30 seconds.) Civilian aerobatics doesn't have the high sustained g's like the military, but it does have the special risk of short duration high-g and push-pull maneuvers going from negative to positive g.

## PRIMARY – JOE McMURRAY, IAC 441329

Joe McMurray is an oral and maxillofacial surgeon from Gilroy, California. He holds ATP, Commercial, CFI, IFR, and SES ratings and is based at San Martin Airport (E16). He's been flying for 22 years but is new to aerobatics since 2020. He owns and flies a 2020 Super Decathlon, 1999 Bonanza A36, and 2012 Carbon Cub (amphibian). In 2021 he flew his first competition in Primary at the Southern California Classic (and won first place) and will be competing in Sportsman this year.

My first g-force encounter was during my initial aerobatic discovery flight in 2005 with Bill Stein. I was again exposed to it with Mike Kloch in 2020. Again, later with Patty Wagstaff. The g-force experience was not a complete shock, and I knew what was going on. It was the rapidity of onset of g-load that was most surprising.

I reviewed literature from the military and anything I could find on the internet. I had personal discussions with Bob "Hurricane" Hannah, the former Unlimited pilot of Voodoo at the Reno races, and warbird instructors Michaela "Mac" Satter and Thom Richard.



2021 Southern California Classic. Overall Primary winner: Joe! With Geraldo Ortiz and Ly Tran.



I've also reviewed literature published in *Sport Aerobatics*, including Dr. Poehlmann's 2002 series on g-tolerance as well as the article written by Drs. Beyer and Pond. I suggest to anyone interested in obtaining a deeper knowledge of the physiology involved to review these authors' contributions.

I took an upset prevention and recovery training/introduction to aerobatic course with Mike "Cuckoo" Kloch, a former F/A-18 pilot and instructor in Bend, Oregon. He went through the physical techniques such as the "hook" maneuver. He was the first to teach me an AGSM (anti-g straining maneuver).

There is no off-season for me! I train three days per week. I do high-volume weightlifting: high-rep counts, drop sets, and combination super sets with no more than two minutes' rest between sets. A short rest keeps the heart rate up. Be careful not to lock your elbows and knees (it's bad for joints) and keep stress on the muscle belly. Since the load is heavy, this is a good time to practice AGSM techniques. I personally believe that there is literature support for weight training making a major difference in increasing one's g-tolerance.

In addition, I practice aerobatics three to four times per week. I focus mainly on lines, radius, and rotations as well as maintaining my g-tolerances.

My close call was while training in the T-6 Texan with Thom. He asked me to perform a split-S. The push-pull scenario. Going from a brief zero g followed by the positive g was a surprise! I wasn't ready and did not initiate the AGSM, and for the first time I experienced a grayout.

Since then, I have been very aware of such situations that could induce G-LOC. In fact, if you look at the 2022 Sportsman Known, figures 7 and 8 have a high potential to induce G-LOC.

Look carefully through your sequence and identify potential high-g maneuvers. Pay particular attention to the push-pull maneuvers. Practice doing the AGSM just before the onset of the positive g figure. Don't hold your breath. That's a common error starting out. It is called the Valsalva maneuver: bearing down on a closed glottis prevents blood from returning to the heart from the lower body and diminishes g-tolerance. Stay physically fit, for all the reasons beyond aerobatics.



#### INTERMEDIATE – BRITTANEE LINCOLN, IAC 440740

*Brittanie Lincoln is a corporate pilot flying a King Air 200. She has competed since 2019 and is currently flying an MX2 in Intermediate.*

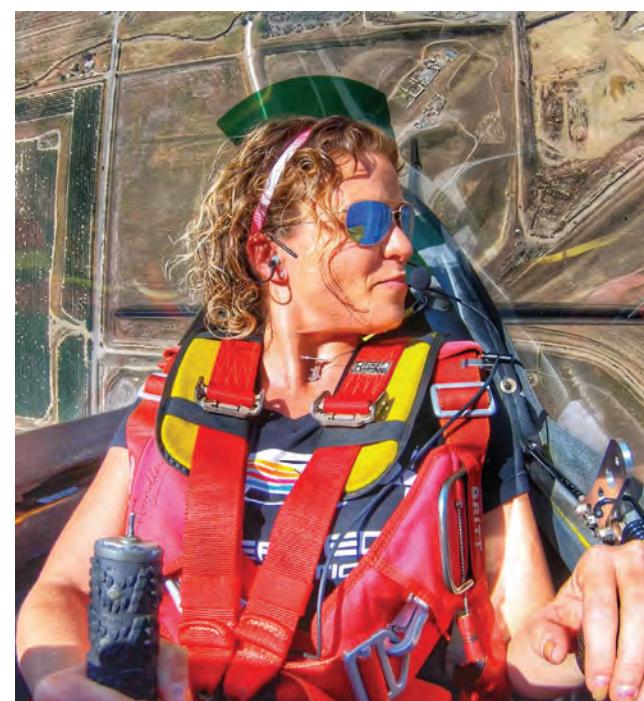
I grew up with aviation; my father is a pilot (although not aerobatic). I was exposed to very light g-forces from an early age. I have very fond memories of flying with my father in our Cessna 180 and begging him during every flight to do more "dips." He would enter a shallow dive to pick up airspeed, gently pull back on the yoke (where we would of course experience a low positive g), enter a climb, and then push over on the top, which of course resulted in a negative g-force. Although not aerobatics, these flights were my first introduction to intentional g-force.

My first encounter with g-force in aerobatics was during my first introduction to aerobatics flight. Dave Watson, who has since become my aerobatic coach, took me in his Pitts S-2B. Prior to the flight he briefed me on breathing and muscle straining techniques. During the flight, he explained what maneuver we would next be flying and prompted me again on anti-g straining techniques. I cannot recall the specific g-force intensity I experienced on this flight, but the flight consisted of several maneuvers with both positive and negative g's. I have done some reading on physiology but, admittedly, not an extensive amount. Most of my reading has been articles that I have found through an online search. In addition to that I gained a lot of knowledge through aerobatic coaching and learning about the effects of g-force and anti-g straining techniques from my coaches and mentors.



2021 Hammerhead Roundup  
Mike Eggen, Susan Bell, Howard Kirker and Brittanie

I was taught to tighten and strain my leg and abdominal muscles during positive g pulls — and don't forget to breathe! Maybe even more importantly, I have been coached to be sure I am looking forward, not to the side at my sighting device, at the onset of a positive g pull to protect my inner ear and reduce the risk of getting the "wobbles."



I exercise and make efforts to stay healthy throughout the season. I am fortunate enough to live in an area where I can fly almost every week of the year, which obviously helps to maintain a certain level of g-tolerance. I do, however, take some breaks in the off-season. I am cognizant of this time away from aerobatics and will ease my way back into my training regimen, specifically as it relates to hard g maneuvers.

I have not had what I would call any close calls. There have been instances, especially in aircraft with a less recumbent seat, where I have begun to feel my peripheral vision narrowing. I make myself aware of maneuvers that have a higher grayout potential and pay close attention to what my body is telling me. There have been instances where I have felt the onset of grayout, and I have knocked off the maneuver to release the g-force.

For the new competitor my first piece of advice is to get coaching from an experienced aerobatic instructor. As it relates to g-force and its effects, ask questions and have conversations with a coach or mentor in addition to reading. Second, take time to build up a tolerance and ease into it. Third, begin your season and practice with plenty of excess altitude (not at competition altitudes) and always have an "out!"

Lastly, I always study sequences and review maneuvers before each flight with particular attention to the potential for a high-g maneuver and/or sustained g. I typically make a mental note as well as a note on my sequence card as a reminder, and I always make note of a minimum break-off altitude for that specific maneuver. Also, be aware of your physical condition (i.e., are you hydrated, are you tired, are you hungry) as well as your surrounding conditions (e.g., heat and humidity). **IAC**

# An Aviation Journey

**A thank-you to my mentors**

BY LIZ BIRCH, IAC 439640

Statistics show that only about 2 percent of Americans have some sort of pilot certificate, and only around 10 percent of pilots are female. In the International Aerobatic Club (IAC), around 500 active members compete, and a similar percentage are women. Being a female airline and aerobatic pilot, I am often asked, "How did you get into aviation?" or "Are you crazy?" Although aerobatics isn't for everyone, I always encourage people to fly straight and level first to see how they feel.

My journey into aviation started when I was 12 years old, watching my brother play in a baseball tournament in Appleton, Wisconsin. On our way back to central Illinois after the tournament, we stopped by the EAA Aviation Museum in Oshkosh. After walking through the museum, we were offered a Young Eagles flight at Pioneer Airport behind the museum. While I waited for my brother to finish his flight, my mom

kept reminding me not to touch anything once I got in the plane — that I was simply there to observe. When it was my turn, we took off and I couldn't stop smiling. Michael Stromberg, my pilot, then told me to take the controls. I looked at him and said, "Mom said I'm not supposed to touch anything." He laughed a little and said it was okay. So I took the controls and fell in love with flying even more.

I think my parents thought my desire to become a pilot was only a phase that 12-year-old me was going through, but they quickly found out that I was not going to let it go, so we did some research together on the military, aviation schools, and different scholarships. Soon after, we joined our local EAA chapter and got pretty involved in that. At the end of my sophomore year of high school, I was awarded an EAA scholarship that helped get me through my initial solo. Despite several setbacks, I was able to finally earn my pilot certificate in the fall of my senior year.



Liz with Mark Fullerton and Beth McCartan.

PHOTOGRAPH COURTESY OF LIZ BIRCH



Liz's dad drops in at work.



Another day training students in the flight school in Charleston, S.C.

After touring a few schools, I decided to attend the University of North Dakota in Grand Forks (UND), where I earned a Bachelor of Science in aeronautics with a major in commercial aviation in just two and a half years. During the three years that I lived in North Dakota, I met some amazing people, including Michael Lents. He's a UND professor; the coach of the university's aerobatic team, which won fourth place overall at the world aerobatic contest a few years ago; and one of the best Decathlon pilots I know. With Mike as my mentor, professor, flight instructor, and coach, I was able to compete for the UND collegiate team for two years and then act as a safety pilot in my third year.

My first year competing was a little rough. I started my first competition with a great 45 up, then followed it with a 2-1/4 spin ... wait, that was supposed to be a 1-1/2 spin ... oops, maybe we should have listened to Lents' advice about not changing anything right before a contest flight, but we'd decided I would fly with a safety pilot who was probably 50 pounds heavier than I was used to having in the back seat of the Decathlon, and the spin accelerated quicker than I was expecting. I learned my lesson on this one.

Once my summer classes were over, I went home for a few weeks to central Illinois, where I met Giles Henderson. After hand-propping his clipped wing Cub, he taught me how to fly the primary sequence, greatly improving my loops by having me use both hands to pull back in order to ensure that I pulled straight. It was so much fun seeing him at my next contest later that month, when he flew in his little yellow Cassutt. During this contest, I managed to omit a maneuver, causing me to zero four out of the six maneuvers, another big oopsie. I only partially learned my lesson this time, because at the U.S. National Aerobatic Championships that same year, I left out the same maneuver again but managed to catch it before it was too late.

Following the U.S. Nationals, my teammate Elise Wheelock and I headed up to Canada to fly with Luke

Penner in his Pitts S-2B. Up to this point, we had really only flown the Super Decathlon, so we were excited about the opportunity to get a lesson in a more advanced aircraft. Once we were in the air, Luke asked me what I wanted to do first. You'll never guess my answer. I bet you would say, "Let's snap it, torque roll" or something along those lines. Nope. Luke laughed a little when I told him I wanted to start with point rolls. How better to get used to the roll rate and responsiveness of a more advanced aircraft than starting with some point rolls? After doing several of those, I told him I wanted to learn how to do a snap-roll. We then proceeded to do snap-rolls for the next 20 minutes, with a few other maneuvers thrown in there occasionally. Once back in Grand Forks, I went up in the Super Decathlon with Lents, and he taught me how to properly do a snap safely in our airplane.

Despite my many mistakes during my first contest year, I was encouraged to move up to the Sportsman category. I was so pumped to build a Freestyle that my teammate Elise and I were designing new Sportsman Freestyles the week after the U.S. Nationals. With guidance from many of the IAC Chapter 78 pilots — such as Justin Hickson, Aaron McCartan, Craig Gifford, Dan Towey, Luke Penner, John Ostmeyer, and of course Mike Lents — we were able to come up with some good Freestyles to try out.

Salem, Illinois, was the site of my first Sportsman contest, which they had just redubbed the Giles Henderson Memorial Challenge. This contest meant a lot to me because Giles and I had flown together. My favorite moment of this contest came at the very end. We were packing up the planes to head back to North Dakota as we waited for the final results to come out. Giles' widow came out to the ramp and gave me a big hug, congratulating me. I had jumped from sixth place overall after two flights to first place overall after three, winning the contest and earning the highest-scoring First-Time Sportsman Award, as well as the Grass Roots Flight Medal.



Liz's dad along for the ride in Michael Hare's Xtreme Decathlon.

Later that season, I was volunteering at the IAC pavilion during AirVenture when I met Mark Fullerton. After reviewing the Freestyle I had developed, he helped me further develop it into the final design that I would use for the rest of the season. With the Spencer, Iowa, contest coming up the following weekend, we were both excited for my first contest flight using a Freestyle. Sadly, I never got the chance to show him my flying. I think I placed something like sixth at this contest, but I was so proud of the Freestyle that Mark and I had designed together. Like Giles, Mark succumbed to injuries sustained during an accident. He was another generous, amazing aerobatic mentor who left us much too soon.

At the U.S. Nationals the same year, the Oshkosh weather was cold and cloudy — not great for contest flying. I didn't get to fly very much, but the connections you make and people you interact with during the long downtimes are among my favorite things about these contests. One really cool thing that happened at this contest: The Unlimited pilots rallied together to ensure our category got two contest flights in, despite the poor weather conditions.

A few months later, I graduated from UND with my bachelor's degree and continued my full-time flight-instruction job into the following year, acting as a safety pilot for the UND collegiate team for the 2019 season. During my final contest with the university as a safety pilot, Tom Kerns was generous enough to allow me to fly *Pterodactyl-Rex*, his custom-built, highly modified Pitts S-2B, in Spencer, Iowa, at the beginning of August.

I hadn't flown aerobatics much outside of the Decathlon, other than that one lesson with Luke in his Pitts S-2B the year before, so there was a steep learning curve. After training for about two hours with Tom, I flew Sportsman at the contest the following day.

I thought this whole situation was hilarious because Tom built his plane for tall people, and I have short legs. Because of the aircraft's configuration, I was unable to use full power during takeoff and some maneuvers, because I couldn't reach full rudder deflection. When performing a hammerhead, I had to reduce power over the top to reduce the torque. During one of my flights, this caused an issue where I didn't have the timing right and ended up running out of energy, doing a tailslide instead of a hammerhead. The most amazing part about Tom and his *P-Rex* is that he makes it a habit to mentor new pilots at most contests he attends. How amazing is that!?

U.S. Nationals was just a few months later, in Salina, Kansas. By that time I had accepted a job at a regional airline and had no access to the university's Decathlon. A real dilemma, since I needed a suitable aircraft to practice and compete in. But once again I was amazed by the generosity of the aerobatics community, as John Ostmeyer introduced me to Paul Thomson, an amazing Super Decathlon pilot in the Kansas City area. We were able to meet up a few days before the U.S. Nationals at a small training camp that John hosted. While Paul flew as my safety pilot during training, John critiqued from the ground. During the actual contest, John agreed to act as my human ballast (i.e., my safety pilot).

After the U.S. Nationals, I went to start my initial airline training and managed to sneak away one weekend to Minneapolis to fly with Dan Towey in his Christen Eagle. He showed me what the Eagle was capable of by giving me a ride-along on the air show sequence he had developed. After training for a bit and reviewing snaps for the first time since my initial lessons, I attempted the Intermediate sequence. Sadly, this would be my last time flying inverted for a while.



With Giles Henderson's widow, Lyn Henderson, at the Salem contest.



Hanging out at the U.S. Nationals with IAC chapter 78.



With Luke Penner, his Pitts S-2B and Elise.



The traditional photo with cut shirt after first solo.

## FACTS, FIXES & TIPS

FROM THE PROS

### COST OF FUEL HAVE YOU RETHINKING THE NEXT FLIGHT?



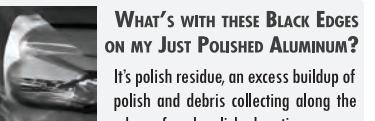
With fuel as one of the highest operational costs, distance, cargo, and environmental conditions are major considerations for flight. As costs continue to rise, each refuel has a little price-shock, so knowing you're getting the best mileage is worth investigating.

<b>Full Service</b>	<b>\$5.20</b>
Average JetA	
<b>\$5.72</b>	Average 100LL
<b>\$6.93</b>	Average SAF

Source: Survey of 100 airports

A good place to start is with your aircraft's exterior. Paint, age, and condition weigh heavily on aerodynamic efficiencies. In flight, air surrounding an aircraft resists its motion, creating a force known as drag. Over a smooth, polished surface the air will glide, streamlining in uniform, uninterrupted parallels. This laminar flow does not require additional energy to maintain flight, so speed can increase.

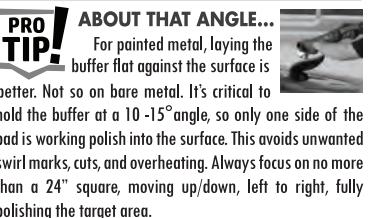
Conversely, any disturbance along the surface including erosion, oxidation, abrasion, parasitic deposits, no matter how microscopic, causes skin-friction that disrupts air flow. Here molecules "stick", collide, and slow down so that the surface is a thickening layer of swirling turbulent air. Think peaks and valleys. As irregular terrain obstructs, air flow becomes random and unsteady, impeding velocity and requiring greater fuel consumption to maintain flight. Products specifically engineered to level irregular surfaces, like NuPower II, NuPol, and Citricut Extra for painted surfaces, and NuShine II, a graded system of metal polish, actively lift dirt, remove debris, deoxidize, and fill and coat with protective sealants to restore to a smooth polished surface. Polishing formulations like these will maintain the right surface conditions for improved fuel efficiency.



### WHAT'S WITH THESE BLACK EDGES ON MY JUST POLISHED ALUMINUM?

It's polish residue, an excess buildup of polish and debris collecting along the edges of each polished section.

It can be easily eliminated with a metal cleaner like Nulmäge and a gentle wipe on/rub off with a flannel cloth.



### PRO TIP! ABOUT THAT ANGLE...

For painted metal, laying the buffer flat against the surface is better. Not so on bare metal. It's critical to hold the buffer at a 10–15° angle, so only one side of the pad is working polish into the surface. This avoids unwanted swirl marks, cuts, and overheating. Always focus on no more than a 24" square, moving up/down, left to right, fully polishing the target area.

Full NUVITE Product Line Available at:



To Order: 877.477.7823 [aircraftspruce.com](http://aircraftspruce.com)

Questions? Contact our technical specialists with unique requirements or for product and equipment recommendations.  
A DIVISION OF UNIVERSAL PHOTONICS®  
**Nuvite**  
CHEMICAL COMPOUNDS  
516.935.4000  
[nuvitechchemical.com](http://nuvitechchemical.com)



Liz with Michael Stromberg in 2018 at the U.S. Nationals. He was the Young Eagles pilot who gave Liz her first Young Eagles ride in 2009.



Liz with Rob Holland and Elise Wheelock.



With Aaron McCartan and his Panzl.

I think we all know what happened next — we experienced a horrible year full of fear and unknowns. After working for the airline for just a year and having flown only 117 hours, I ended up furloughed for six months. I returned to flight instruction, teaching landings nonstop in South Carolina. Just prior to getting furloughed, I did manage to sneak back up to Minneapolis again, this time to do landing lessons with Justin “Batman” Hickson in his Pitts S-2B. Also during this time, I was able to meet and connect with two local pilots in South Carolina who have a Skybolt and Pitts S-2B at one of our local airports. Since then I have started to work with Jim Krakeel, my new student, in his Skybolt on basic aerobatic maneuvers.

After taking a year and a half off from aerobatics during the COVID-19 pandemic, moving to South Carolina, and getting established in my regional airline job, I attended my first contest since the 2019 National Championships. I went to the Snowbird Classic in Florida intending only to volunteer, but then I met Michael Hare, a new Sportsman competitor who was flying his first contest in his Xtreme Decathlon. After talking with him and thinking about it overnight, I decided I would compete. With no practice, and having never flown an Xtreme Decathlon — or any aerobatics for about a year and a half — I dove into the box with Mike, who acted as safety pilot, and I had a blast. I improved with each flight and even managed to place second overall in Sportsman. This contest was also really cool, since it was my first competition in the Southeast region, and I connected with a lot of new people.

While at EAA AirVenture 2021, I was able to reconnect with many people I hadn’t seen in at least a year or two. I spoke with several people about competition flying, aerobatic instructing, and air show flying. Huge shoutout to Jordan Ashley for helping connect me to everyone and offering such great advice and wisdom while volunteering at the IAC Aerobatic Center.

A month after AirVenture, it was time for the Giles Henderson Memorial Challenge in Salem, Illinois. I had been in contact with several people while trying to line up an airplane to fly for the contest. Up until a few days before the contest, I was supposed to fly with Dan Towey in his Christen Eagle. Unfortunately, he had a family thing come up and I was without an airplane again. I continued reaching out to the contest director to see if he knew of anyone with a two-seat airplane who would let me fly with them. I showed up to the contest on Friday, fully expecting to participate only as a volunteer, since I still hadn’t found anyone to fly with. That evening, about an hour or so before the practice box was scheduled to close, Dave Butler agreed to fly with me in his beautiful Super Decathlon. Sadly, we were only able to get one contest flight in on Sunday afternoon — but thanks to the amazing volunteers who agreed to stay, we all got at least one contest flight in, and we all had a blast hanging out and sharing stories.

The 2021 U.S. Nationals were interesting. Despite the long van rides out to the judges’ line, I made even more incredible connections. Michael Hare had added me to the insurance on his Xtreme Decathlon and let me fly his plane in the contest by myself!



Standing next to Paul Thomson’s Super Decathlon at the 2019 U.S. Nationals.



The University of North Dakota Aerobatics Team.



Liz at the 2021 Giles Henderson with Dave Butler acting as safety pilot.



With Michael Hare's Xtreme Decathlon.



Elise Wheelock, Adam Messenheimer, Beth McCartan and Liz Birch.



Liz with her parents at EAA AirVenture.

While doing a practice flight before the contest began, I noticed I was having issues with the spin entries. After speaking to several people, I was able to get some great advice on flying the spin differently so that it would break properly. An amazing pilot and judge whom I have started to develop a relationship with is Linda Meyers-Morrissey. She has been a judge at several of the competitions I've attended, and I have always enjoyed talking to her after my flights to see how things went and how to improve, especially on designing Freestyles. With all this great advice I received, I was able to continue improving with each flight, earning fifth place overall in the Sportsman category.

My favorite part about the U.S. Nationals is the group of amazing people who are brought together. At a national contest, you can meet with pilots from across the country. My favorite pilots are the Decathlon competitors. Between the UND students, Michael Lents, Dick Swanson, Sara Arnold, Beth McCartan, and others I have met this year and in years past, they are quite the bunch. At the end of the contest, Dick told me, "There is a big target on your back. I'm coming after you at the next contest." This friendly competition is why I love the Decathlon pilots so much. Not only do we push each other to do better, we also support each other by giving wind reports, advice on how to fly the sequence, and pointers about individual maneuvers.

My most recent contest was the Sebring Aerobatic Championships in November 2021. At a contest earlier in the year, I had made connections with Shaun Brautigan, who had recently acquired a new Super Decathlon and had agreed to bring it to the contest, where he promised to act as safety pilot for several of us. Although the weather both before and after the contest was beautiful, we were unable to complete any contest flights due to rain and low clouds.

After the contest was called, the weather did exactly what it always does — it cleared up. Since the weather had improved and people still wanted to fly, several pilots started giving rides in Pitts, Extras, and MXs. I was able to go up with Marty Flournoy in his Pitts S-2A and flew the Sportsman sequence. Later that night at the banquet, I connected with Faith Drewry, the IAC Chapter 3 president. She has been helping me ever since with great advice and guidance as I look to purchase my own airplane.

I hope to one day have my own two-seat airplane so I can take people for rides and maybe even teach them a little bit of what I know. I have been shown so much kindness and generosity over the years, and I definitely plan to pay it forward, showing others how truly amazing the aviation and aerobatic communities are. **IAC**

# DON'T WAIT

*Get your AirVenture wristbands and credentials mailed to you in advance. We're committed to getting you into the grounds as safely and quickly as possible.*

**EAA.ORG/TICKETS**

**EAA AIRVENTURE  
OSHKOSH™  
EXPRESS ARRIVAL**

In Partnership with **AIRBUS**

# Decisions, Decisions

BY TOM MYERS, IAC 16830



**AS AEROBATIC PILOTS**, we are routinely faced with making many complex decisions in flight. The better prepared we are to make those decisions, the better a flight usually turns out. There is always the possibility that we will have to make some of those decisions under adverse conditions. Being in a disadvantageous situation for the first time is not the ideal moment to be thinking about those decisions. The purpose of this article is to encourage you to think about some of the adverse conditions you may face, what the various options may be, and under what circumstances you would choose particular options.

Specifically, I am referring to what you will do if you find yourself flying a plane that is no longer completely airworthy. Or maybe suddenly not even airworthy at all. As aerobic pilots, we repeatedly subject ourselves and our airplanes to an array of forces that are not insignificant. History has shown that the airworthiness of aerobic airplanes does not become compromised in flight very often. However, not very often is not never.

Not never means that it can happen. Yes, this is an uncomfortable subject to think about. Think about it. From personal experience, the more you think about it, the faster you go from the “uh-oh” moment to the “Okay, here’s what I am going to do” moment.

As aerobic pilots, we have an option available that most straight-and-level pilots do not have. That option is the use of a parachute. I do mean personal parachute here, not aircraft parachute. As in you and what is left of the airplane parting company, and you get the parachute.

Here are some decisions to think about. Under what circumstances will you fly the airplane to your intended destination airport? Under what circumstances will you fly the airplane to the nearest airport? Under what circumstances will you fly the airplane to the nearest place on the ground where you can attempt a normal landing? Under what circumstances will you fly the airplane to the nearest place on the ground where you can attempt any sort of landing? Under what circumstances will you bail out of the airplane? Under what circumstances will you and your parachute stay in the airplane while you do your best to make sure that the airplane does not hurt anyone else when it hits the deck?

Yeah, that last one is a heavy one. With privilege comes responsibility. We have the rare privilege of being able to fly aerobatics. I believe with that privilege comes a responsibility to assure that we own the outcome of what happens if things go very wrong, not those who happen to be around us at the time.

The wayward intake valve.



I have had to land less than fully airworthy aerobic airplanes a few times. I believe that having thought through the above questions and answers ahead of time is one of the reasons that the outcome of these flights was no different than the outcome of any other flight.

The short story on one of these noteworthy flights is that I had an intake valve seat in one of my cylinders dislodge and jam under the intake valve, thus holding the valve open permanently. The failure occurred at the Pacific coastline in the middle of a sequence. The failure resulted in sudden severe vibration.

Here is how I handled the failure. Throttle to idle. Pull to horizontal. The CHT/EGT display says one dead cylinder. Set up for a landing on the beach. Try to find a throttle setting that allows a climb without enough vibration to shake the plane apart. Success. The climb is only about 100 feet per minute, but that is good enough to get me to the nearest airport, home. Head for home. There’s a sparsely populated dense forest between the beach and the western ridge of Silicon Valley. If the engine fails here, bail out. Once over the ridge, the eight-lane Interstate Highway 280 is within gliding range for a

landing if the engine fails here. Past the highway, I can stay over the large preserved grassy open spaces until civilization begins. If the engine fails here, glide back to the highway or land in the open spaces. Civilization next until the airport. Stay within gliding range of the open spaces or the airport for most of the way. There are some parks and athletic fields surrounded by tall trees along the way. I’ve scouted them from the ground. Clearing the trees and landing in them without running into someone or something is unlikely. If the engine fails at the worst possible moment, pick out as empty a field as possible, get the attention of anyone on the ground that I am headed that way, and point the airplane straight down into the field.

The engine never missed a beat. The landing was uneventful. I bought all new cylinders, broke them in, and got busy practicing for the next contest.

Fly safe. **IAC**

**TOM MYERS** has been an IAC member and active competitor since 1990. Tom flies a Zivko Edge 540 in the Sportsman category in the Southwest region. He is a national judge and has served on the IAC board of directors. He is the current chairman of the IT Technical committee and a regular contributor to *Sport Aerobatics* and *In the Loop*.



## 2022 IAC CONTEST SEASON CALENDAR



IAC.org/Contests

DATES	HOST CHAPTER	NAME	REGION	LOCATION	AIRPORT
May 18, 2022	3	Mark Fullerton/IAC Open East	Southeast	Rome, GA	KRMG
May 20, 2022	24	Lone Star Aerobatics Championships	South Central	Sherman, TX	KGYI
June 3, 2022	38	IAC West Open Championship	Southwest	Tracy, CA	KTCY
June 4, 2022	61	Giles Henderson Memorial Challenge	Mid-America	Salem, IL	KSLO
June 10, 2022	67	Apple Cup	Northwest	Ephrata, WA	KEPH
June 10, 2022	80	MAC 50th Anniversary	South Central	Seward, NE	KSWT
June 17, 2022	137	Flagstaff Flyers Regional	Northwest	Killam, AB	CEK6
June 18, 2022	11	James K. Polk Open	Northeast	Warrenton, VA	KHWY
June 24, 2022	15	Harold Neumann Barnstormer	South Central	Ottawa, KS	KOWI

# From the IAC Archives

BY MIKE HEUER, IAC 4, IAC HISTORIAN



**IN 2020, IAC CELEBRATED ITS 50TH ANNIVERSARY.** The last five decades have been a remarkable achievement when looking back over the progress in building a sport from scratch, and the literally hundreds of activities that have been a part of that growth ever since. Unlike most historians, who document the past by referencing primary sources and doing research, I have been lucky to have had a front row seat from the beginning of our club in the winter of 1969 and 1970, and have played a role in most of the years since.

This article is the beginning of what will be a series of looks back into our history, so members can appreciate how far we have come and the amount of work that has been done by a large cadre of volunteers who made this sport possible. It is an amazing story. Let's go back 50 years ago as a beginning in that series.

## THE KRIER MUSEUM

Harold Krier, the 1968 U.S. National Aerobatic Champion and member of our U.S. aerobatic teams, was a mentor and hero to many of us, including this author. He joined IAC in late 1970 and carried member number 1000. His book, *Modern Aerobatics and Precision Flying*, was first published in 1963 and was a handbook to many of us who got our start in those early years and a historical record of aerobatics' pioneers. Harold lost his life in an accident in July 1971, and the year after that, it was announced in IAC's new magazine, *Sport Aerobatics*, that a museum would be created in Harold's honor in Ashland, Kansas, and would contain some of his airplanes and associated memorabilia.

It took some time and effort, but the museum was eventually created and stands today at the Ashland airport in tribute to one of Kansas' greatest aviation heroes. The museum houses the Krier Kraft biplane of his own design, which was flown at the World Aerobic Championships in 1964 by Harold and in 1966 by Charlie Hillard. By the time the 1966 championships had rolled around, Harold had transitioned to his famous Super Chipmunk, again highly modified by him personally. The Chipmunk is currently in the Antique Airplane Association's Airpower Museum in Blakesburg, Iowa.

Today, Ashland is also known as the location of training camps organized by John Morrissey, IAC 3238, one of IAC's best known past champions, team member, and world-class trainer and coach. John educates his students in the Krier history and the museum while they are in Ashland under his guidance.

## ADVANCES IN THE CATEGORIES

1972 marked the year the Free Program was introduced into the Intermediate category, and Advanced saw Unknown sequences for the first time. Ever since that year, IAC officials have created and provided Unknowns for IAC sanctioned contests. This is no small task but well-handled now by a special committee for this purpose. Hundreds of sequences have been designed and flown over the decades.

## THE AEROBATICS HALL OF FAME

The International Aerobatics Hall of Fame is one of IAC's most important programs today, and every year in November, a person from within the ranks of the sport is recognized for

their contributions. IAC has a list of those inductees on its website, and each year, the Hall of Fame committee considers nominations. The leaders of EAA, its divisions and affiliates, and friends and families of inductees gather at the EAA Aviation Museum in Oshkosh to honor these people. It is a highlight of the year for all of sport aviation.

IAC was the organization that launched it all. At the December 6, 1971, meeting of the IAC's board of directors, the concept was first discussed, and then announced in our magazine in early 1972. However, quite a few years went by before it was all finalized, and the first induction of Hall of Fame members took place in Oshkosh in 1987 during the IAC's championships in Fond du Lac. At the time, we were the only organization in the EAA family that had a Hall of Fame, but the others followed in

subsequent years. Inducted in 1987 were Duane Cole (air show pilot and author), Curtis Pitts (designer of the Pitts Special line of aerobatic airplanes), Frank Price (the first American to fly in the World Aerobatic Championships in 1960), and Jose L. Aresti (inventor and author of the Aresti catalogue).

## THE ACHIEVEMENT AWARDS

IAC's Achievement Awards program was introduced in May 1971 and in the subsequent months was a roaring success. In early 1972, the winners of the various awards were announced in the magazine; 292 awards were issued, and since IAC was approximately 2,000 members at the time, this was a testament to its success and popularity. The program continues today, and thousands of awards have been issued. **IAC**



## EAA Is Opening New Doors Into Aviation

Inspire your child's next great adventure with EAA's AeroEducate™ and help grow their aviation curiosity into a lifelong passion – or career! AeroEducate gives you free access to:

- > Aged-Based Aviation Projects
- > STEM Activities
- > Aviation Career Exploration
- > Scholarship and Career Resources

Register your child for their free AeroEducate account and begin exploring the world of aviation today!

Scan the QR code below to get started or go to [AeroEducate.org](https://AeroEducate.org)



Our partners:



AIRBUS SIEMENS




**OFFICERS**
**PRESIDENT**

Jim Bourke

**TREASURER**

Jordan Ashley

**VICE PRESIDENT**

Rob Holland

**SECRETARY**

Sara Arnold

**EXECUTIVE DIRECTOR**

Stephen Kurtzahn

**BOARD OF DIRECTORS**
**NORTHEAST REGION**
**DIRECTOR**

John Ostmeyer

**CIVA RELATIONS**

Mike Gallaway

**SOUTHEAST REGION**
**DIRECTOR**

Marty Flournoy

**COLLEGIATE PROGRAM**

Jordan Ashley

**MID-AMERICA REGION DIRECTOR**
**Craig Gifford**
**CONTEST SANCTIONING**

Jim Bourke

**SOUTH CENTRAL REGION**
**DIRECTOR**

Debby Rihn-Harvey

**EXECUTIVE COMMITTEE**

Jim Bourke

**FINANCE COMMITTEE**

Jordan Ashley

**NORTHWEST REGION**
**DIRECTOR**

Peggy Riedinger

**GLIDER AEROBATICS**

Jason Stephens

**SOUTHWEST REGION**
**DIRECTOR**

Brittanee Lincoln

**GOVERNMENT RELATIONS CHAIR**

John Smutny

**HALL OF FAME COMMITTEE**

David Martin

**INTERNATIONAL DIRECTOR**
**Dagmar Kress**
**IAC HISTORIAN**

Mike Heuer

**JUDGES PROGRAM**

DJ Molny

**SEQUENCE COMMITTEE**

Mike Ciliberti

**NOMINATIONS**

Doug Sowder

**RULES COMMITTEE**

Barrett Hines

**ACHIEVEMENT AWARDS**
**CO-CHAIRS**

Dave Watson and

Brittanee Lincoln

**SAFETY COMMITTEE**

Keith Doyne

**ANNUAL AWARDS**

Patty Anderson

**TECHNICAL COMMITTEE**

Tom Myers

**Softie Pilot**

Emergency Parachutes

by: Para-Phernalia

Many In Stock For Immediate Delivery

Details at:

[www.SilverParachutes.com](http://www.SilverParachutes.com)

New Gallet Helmet parts, all 50% off!

- Largest Dealer for Softie Parachutes
- Great Deals on New & Used Parachutes
- S.M.A.K. PAK™ Parachute Survival Kits
- Bailout Safety Seminars Worldwide

Silver Parachute Sales &amp; Service

Phone: 209-532-7070

 Email: [Allen@SilverParachutes.com](mailto:Allen@SilverParachutes.com)


# ADVERTISE WITH US

**DISPLAY ADVERTISING**

For more information contact  
 Sue Anderson at 920-426-6127 or  
[sanderson@eaa.org](mailto:sanderson@eaa.org)

**CLASSIFIED ADVERTISING**

\$5.50 per 10 words,  
 100 words maximum.



**STAY CONNECTED** with IAC's member benefits, and the world of aerobatics on the web, in our e-newsletter!

TO SUBSCRIBE:  
[WWW.EAA.ORG/NEWSLETTERS](http://WWW.EAA.ORG/NEWSLETTERS)



# UNIQUE ANYTHING ELSE

A formation of vintage and modern aircraft flying through a blue sky, leaving white smoke trails.

## Featured Anniversaries

- > United States Air Force 75th
- > B-29 80th
- > Van's Aircraft 50th
- > EAA Young Eagles 30th

**EAA® AIRVENTURE  
OSHKOSH  
2022**

**JULY 25 - 31**  
[EAA.org/Tickets](https://EAA.org/Tickets)

Free youth admission ages 18 and  
under is supported in part by





© 2022 Experimental Aircraft Association, Inc.

## A WHOLE NEW WAY TO ROLL



The EAA and International Aerobic Club Aircraft Insurance Plan has all the special coverage options IAC Members require for recreational aerobatics, aerobatic competition and practice, airshow performances, and aerobatic flight schools.

Visit [EAA.org/Insurance](https://EAA.org/Insurance) today for the right coverage at the best price for you.

Aircraft | Personal Non-Owned | Powered Parachute & WSC Trike | Accidental Death & Dismemberment | Flight Instructor | Hangar | Airport



Administered by Falcon Insurance Agency, Inc.

[EAA.org/Insurance](https://EAA.org/Insurance) | 866-647-4322

*When you insure with the EAA Aircraft Insurance Plan you are helping IAC promote and enhance the safety and enjoyment of aerobatics.*