



SPORT AEROBATICS

OFFICIAL MAGAZINE OF THE INTERNATIONAL AEROBATIC CLUB

JANUARY/FEBRUARY 2022

► UTAH PILOT MAKERS, PG. 6

► 2021 SOUTHERN CALIFORNIA
CLASSIC, PG. 26



TWO BUCK CHUCK

GRASSROOTS AEROBATIC AIRCRAFT, PG. 34

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COVER

ON THE COVER:
Erik Edgren in his clipped wing Taylorcraft and RJ Gritter in his Decathlon during their Two Buck Chuck air shows routine in Oshkosh, Wisconsin.
Photo by @2021LarryGrace

ABOVE:
Nathan Hammond flies his Super Chipmunk with smoke on!
Photo courtesy of GhostWriter Airshows.

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Rule Deviations

BY JIM BOURKE, IAC 434151



AS IAC PRESIDENT I, chair the sanctioning committee and am therefore responsible for granting contest directors (CDs) permission to run IAC contests. As part of the sanctioning process, CDs are welcome to submit rules deviations. These deviations allow contests to run with a bit of creativity.

Here is the appropriate section from the rule book:

3.3 RULES DEVIATIONS

- 3.3.1 The Contest Director may request rules deviations from the IAC Contest Sanctioning Committee.
- 3.3.2 Proposed rules deviations must be attached to the application for sanction.
- 3.3.3 Rules deviations will be published and made available to competitors.

Rules deviations are a useful approach to try out a complicated new idea. As long as the deviation is approved and published in conformance with Rule 3.3, the contest can operate with some customization to the rules.

Whether I will approve a rules deviation depends on many factors, including safety, how the regional and national point series will be affected, the clarity with which the submitter has spelled out the deviation, and how the deviation would affect the image of the IAC. If a contest director submits a carefully worded and complete rules deviation that creates a fair environment for everyone, if the deviation is submitted early enough that competitors can prepare, and if the deviation won't make the IAC look bad or significantly increase the risk to competitors or people on the ground, it is likely to be granted. If I get a request that is vague, that calls for behavior that appears or is reckless, or that creates a playing field that isn't level, I will deny it. I haven't had cause to deny a request yet, proving once again that most people are perfectly reasonable.

The most common rules deviation request is to run a contest without boundary judges. This comes up a lot because some contests are short staffed or they operate out of airports where there is no way to access the boundary positions. I estimate that almost half of our contests operate in this fashion.

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

An interesting concept for a rules deviation came from a contest that wanted to provide an Unknown program for the Sportsman category. However, this request can be accomplished without a rules deviation. Instead of creating an official Unknown, a CD could provide competitors with an Unknown in the form of a Free program, using all the normal Free program rules. This allows competitors to choose between a Free program or the Unknown.

Our Legacy category is another example of a rules deviation. Sadly, this idea has not taken off, to the point where I don't think it can be called viable. But the good news is that we were able to try out this idea and give it a fair shot without introducing new language to the rule book or taking on the associated training burden. Rules deviations are useful for new category ideas because they allow refinement over several contests, and they let us see how popular they will be. As IAC president I am practically overwhelmed by vocal proponents with conflicting ideas on how the category system should be restructured, so I'm grateful we have a mechanism that keeps me from being in the middle of these debates.

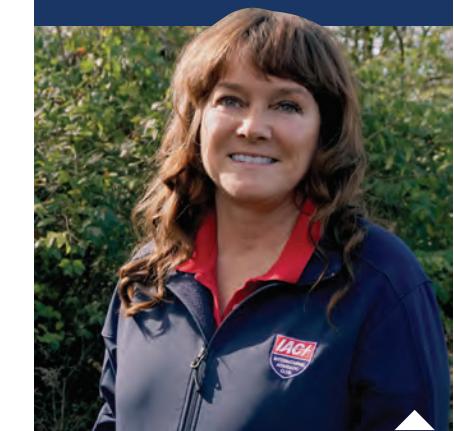
Contests have also used rules deviations in the past to fly CIVA-style Free Unknown programs without having to use the full CIVA rule set, which would be too complicated for a regional contest. They've also been used to add warmup figures in the CIVA style for Advanced for Unlimited competitors. These warmup figures enhance safety and are worth the time they take. (Breaking news: The board just approved these warmup figures at all contests beginning in 2022.)

I'm aware that some contest officials do not want to be bothered with thinking ahead and some feel free to make sudden off-the-cuff changes to the rules. Some even discourage protests or shame competitors so they won't buck against the local flavor. But this is not an acceptable way to run an IAC contest. Ultimately, as sanction chair I have the duty to pull the sanction from any contest that operates outside of the rules, so it is in everyone's best interest to follow them. Issues with sanctions can be brought to me, and I'll work through them as diplomatically as possible, but there should not be any issues if contest directors and juries understand the sanctioning process and work within the system instead of against it. If there is a rule that you do not like, remember that our rules chair, Barrett Hines at ruleschair@iac.org, is available to accept your rule change proposals. And I'm available as well to help you run a safe, fair, and joyful contest!

Please keep your comments coming to president@iac.org! **IAC**

Spreading the Word

BY LORRIE PENNER, IAC 431036



IN THIS ISSUE, WE see there is more than one way to spread the joys of aerobatics. Sometimes it is just being in the right place at the right time, and sometimes it takes a little ingenuity to introduce more pilots to aerobatics.

On a local level, we see how one IAC member, who transplanted from Ohio to Utah, was able to take matters into his own hands by becoming a flight instructor, leasing his Extra 300L to a flight school, and developing a bundled rate for aerobatic students to attend contests.

Three air show pilots share a message to over 600,000 people, which featured grassroots aerobatic-capable aircraft that the average aviator can afford, in the "Two-Buck Chuck" article.

Two southern California chapters come together in Borrego and attract 11 first-time aerobatic competitors. "As it was, 39 pilots flew for a total of 120 contest flights — pretty good for a regional contest," said Michael Church, chief judge of the 2021 Southern California Classic.

In a recent Letter to the Editor, we see that sometimes you can share not only the joys of aerobatics, but a safety message that will benefit other aerobatic pilots by submitting an article to the magazine:

"Read Gordon's article, good points. ("My Jammed Elevator Landing," September/October 2021 issue of *Sport Aerobatics*.) I will keep that in mind for future reference."

"I took my Decathlon up to Newton, Kansas (EWK), quite a few years ago for a July 4 fly-in. Lot of folks wandering around, a father with two small boys, maybe 7 and 9, were looking at the airplane. I asked if they would like to sit in it, got them in the seats, and got chatting with their dad. They were pretty excited, all good. I flew home and realized that the ring was missing from the door release. I thought the kid had pocketed it, shrugged my shoulders, and ordered another from American Champion Aircraft (ACA), about \$10 as I recall.

WHETHER YOU ARE AN INDIVIDUAL, PART OF A CHAPTER, OR IN THE PUBLIC EYE AS AN AIR SHOW PERFORMER, THERE ARE A MYRIAD OF WAYS YOU CAN SHARE YOUR LOVE OF AEROBATICS.

"Shortly afterwards the airplane went in for annual, and, sure enough, the pin was in the tail. Elevator jam waiting to happen! A couple of weeks later one of my aerobatic students who was an engineer at the Wichita Aircraft Certification Standards office showed up to fly with a copy of an ACA warning about this exact scenario. I chuckled and showed him the extra pin hanging over the workbench.

"Pin check is on my preflight and postflight every time!"

Tony Johnstone, IAC 16578

Whether you are an individual, part of a chapter, or in the public eye as an air show performer, there are a myriad of ways you can share your love of aerobatics. Share your ideas and what has worked for you. Drop me a line at editor@iac.org. **IAC**

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

Call for Nominations for the IAC Hall of Fame

MANY PEOPLE HAVE MADE significant contributions to the sport and art of aerobatic flight. Some have dedicated their lives to aerobatics. Some of these people may not be pilots. You know who they are!

The deadline for nominations is February 1, 2022. The official nomination petition can be found online at [IAC.org>Archives>Hall of Fame](https://IAC.org/Archives/Hall-of-Fame).

The International Aerobatic Club Hall of Fame was formed in 1986 to give appropriate recognition to those who have made a significant contribution to aerobatics. The following year, Jose Aresti, Duane Cole, Curtis Pitts, and Frank Price became the first inductees to

receive this prestigious honor. This year, Verne Jobst (2020) and Kirby Chambliss (2021) were recognized.

All nominations are reviewed and voted on by the selection committee, which consists of seven members. Those selected are then recommended to the IAC board for final approval. Inductees are recognized at a banquet at the EAA Aviation Museum in Oshkosh, Wisconsin, which is held in conjunction with the fall IAC and EAA board meetings.

For more information, please contact the IAC Hall of Fame Committee Chair David Martin at pkakro@earthlink.net. **IAC**



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Patty Wagstaff, IAC 9010

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PHOTOGRAPH BY JASON TONEY



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Pilot Makers Advanced Flight Academy's Aerobatic Team

BY JEFF GRANGER, IAC 19907

IN 2018, I RETIRED and moved from Ohio to Park City, Utah. I leased my Extra 300L to Pilot Makers Advanced Flight Academy in Provo and worked on getting my flight instructor rating, with a view toward developing and mentoring new aerobatic competitors. Now after three years, it's starting to pay off. We have a nascent aerobatic team within the flight school and a plan for traveling to contests together and eventually starting an IAC chapter in Utah.

In addition to the Extra for the advanced phase of spin training and for higher-category aerobatic training, we now have a Citabria for tailwheel and entry-level spin training. As more young instructors like Kendra Hart, Bryce Brimhall, and Alex Tally come on board able to fly and teach in both the Citabria and the Extra, we have been able to develop a nice cadre of students who are interested in aerobatics, both recreational and competition.

Bryce Brimhall with the school's Citabria.



Jeff Granger enjoys flying his Extra 300 and his new life in Utah.

PHOTOGRAPH BY JEFF GRANGER

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Although we have several nearby areas to practice outside of the Provo Class D airspace, we had not been able until recently to do ground critique. Of course, this is critical if one is to perform well at the contest level. Fortunately, our founder, Barry Hancock, has a waivered aerobatic practice area at the Nephi airport, about 30 nm to the south of Provo, established for his air show practice.

I helped him lay out this “box” several years ago, expecting that we would use it eventually for practice days for the team and eventually the chapter. Nephi is a great location for this. It is a relatively quiet field, with a single north-south runway and a large ramp with self-serve fuel, but no staffed FBO or mechanical services. Although few aircraft are based there, they have an active glider club and skydive operation, so the airport authority is used to the field being used primarily for sporting aviation. The area to the west is completely unpopulated ranch land, and one could easily lay out box markers. Even without box markers, the runway and section lines provide a nice reference for competition practice.

On the Judge's Line at the Tequila Cup.



The aerobatic practice box at Nephi, Utah.



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On October 16, we were able to have a great practice day for six potential Primary and two Sportsman competitors. Cost is a significant factor for new competitors, and Bryce worked out a package rate for the Citabria. The bundle gave about a half-hour in the airplane with a safety pilot (none of them are currently insured to solo the Citabria), with me coaching by radio. At the end of the session, each participant flew the Primary sequence for a score to approximate how they would do at a contest.

Jeff takes a student out in the Extra 300 for flight instruction.



PHOTOGRAPH BY JEFF GRANGER



Marana, Arizona, the site of the Tequila Cup.

ONE OF OUR PRIMARY GOALS WAS TO MAKE THIS SPORT A BIT MORE AFFORDABLE AND ATTAINABLE TO THOSE WHO ARE YOUNG AND PASSIONATE ABOUT BEING GREAT AVIATORS.

The enthusiasm level at the end of the day was “sky high” for traveling to a contest together. We have another similar practice schedule in early November and are working on a bundled rate for competitors in the Citabria, traveling to the Tequila Cup in Marana, Arizona. By providing a bundle that includes aircraft rental, safety pilot, and a share of the ferry costs, a new competitor can predict the cost to attend their first contest and is much more likely to join up.

We are excited to be growing the aerobatic community in the Salt Lake Valley. One of our primary goals was to make this sport a bit more affordable and attainable to those who are young and passionate about being great aviators. So far, it has proven to be a wonderful success, and I can't wait for what the future will bring to Utah.

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. **IAC**

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Practice days at Nephi can be quite brilliant, fun and cold.



About Pilot Makers Advanced Flight Academy

BY JPILOTMAKERS.COM

PILOT MAKERS ADVANCED FLIGHT Academy was founded to give aviators in the Mountain West, and beyond, the opportunity to enhance their flying skills and knowledge through tailwheel and aerobatic training, with the belief that expanding our envelope as pilots improves both our safety and enjoyment as aviators.

Loss of control in-flight (LOC-I) has been on the rise in both commercial and private aviation. The unintended consequences of conservative basic training, “safer” aircraft design, and more advanced avionics technology create a reliance on things other than pilot skills. By bringing back skill sets that have been lost to these unintended consequences, Pilot Maker advocates for and teaches more advanced pilot skills to offset the increasing reliance on technology that has been hindering physical flight skills.

Bryce Brimhall with his mentor and aerobatic coach, Jeff Granger.



Jeff's Extra 300 serves as one of the flight school's aerobatic trainers.



PHOTOGRAPH BY PILOT MAKERS ACADEMY

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At the end of the day, exposure to the entire flight envelope is what gives us more confidence and enjoyment in flying. More advanced pilot skills make us better, safer, more knowledgeable aviators when the unexpected happens.

Founder Barry Hancock, IAC 28007, has been flying and instructing in high-performance aircraft for over 15 years. With nearly 4,000 hours of flying to his credit, he has earned instrument, commercial, and flight instructor certificates. He holds type ratings in several vintage warbirds, including jets.

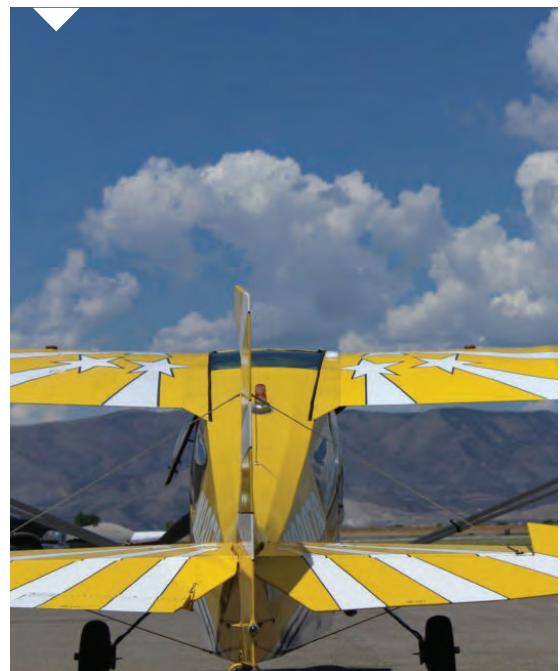
Barry is an active competitor on the IAC contest circuit, with several trophies to his credit. He is also active on the air show circuit, performing low-level aerobatics in the T-6. He is one of the few civilian pilots to fly in formation with military F/A-18 Hornets and has also led a formation flight of 26 aircraft at EAA AirVenture Oshkosh in Wisconsin.

Pilot Makers Advanced Flight Academy exposes student to the entire flight envelope.



**AT THE END OF THE DAY,
EXPOSURE TO THE ENTIRE
FLIGHT ENVELOPE IS WHAT
GIVES US MORE CONFIDENCE
AND ENJOYMENT IN FLYING.**

The flight school's Citabria is used for tailwheel and aerobatic training.



Barry has had articles published in several aviation-related publications, and regularly speaks to youth and special-interest groups about making dreams come true through our unique gifts and talents. He has owned several businesses, but his passion is aviation — particularly aerobatics and instruction. As a result, he has recently set aside other pursuits to be involved in aviation full time. Barry and his wife, Michelle, live locally with six appropriately troublesome children. **IAC**

Utah Pilots Find Value in the Practice Box

BRYCE BRIMHALL, IAC 441962

COMPETING IN AN AEROBATIC contest was something I always wanted to do from the moment I started flying. It seemed so far away, and slightly unattainable. I had no idea where to even start ...

I was lucky enough to be hired as a flight instructor at a school that emphasized good stick and rudder skills and upset recovery and that had tailwheel and aerobatic aircraft. This opened the door to the world of aerobatics for me.

I worked alongside the other instructors to create an opportunity to not just fly aerobatics, but be critiqued, judged, and scored by an IAC judge. We were able to simulate the contest environment, which was key to being prepared for our first contest. I didn't know how well I was being prepared until I was competing for the first time at the Tequila Cup. Then I realized, this is just like we practiced. Being familiar with the box procedures, rules, and scoring all made me feel more at ease and gave me the opportunity to relax and fly great!

If I were to give any advice to someone wishing to compete in aerobatics, it would be this: Find a good instructor/coach, receive upset recovery and spin training, and practice in a simulated contest environment. Make the practice like the contest by having someone judge and score each maneuver you fly, respecting contest rules, and incorporating the radio procedures you will use when competing.

We are lucky to have Jeff Granger as a mentor and coach and for all of us getting involved.

Bryce Brimhall at a fuel stop on the way to the Tequila Cup.





Kent Miner; ready to give competition a try.

KENT MINER, IAC 441967

I FLEW IN THE practice box just to have some fun getting familiar with the procedure and to build up g-tolerance. I did not initially intend to compete. But when I arrived at Marana, Arizona, with the others for the Tequila Cup, I was there, the airplane was there, and only two others had registered for Primary. Bryce was available to be a safety pilot for me so it seemed right to give competition a try.

While my first foray into the world of competition was not ideal, in that my practice could have been more focused on the maneuvers, the experience I gained will certainly carry through to both future practices and competitions and will not soon be forgotten.

Here's what I would recommend to others who want to compete with confidence: Get some good instruction and coaching. Practice the maneuvers in an environment that is as close to what you will see in the competition. Above all, have a capable safety pilot with you until your skills mature.

PHOTOGRAPHY BY JEFF GRANGER

LISA DRAPER 441944

PRACTICING IN A LOCAL aerobatic box environment was an empowering experience. We were able to build relationships as a team before traveling together, improve flying skills affordably, and share our passion with other aviators.

Receiving and reviewing feedback from a national judge was incredibly helpful. Not only in live practice, but when I got my score sheets back after competition, I understood what comments and scores meant, and had a good idea of how to improve for next season.

Getting to know other aerobatic pilots in my area was a huge plus that will likely keep me in the sport long term. As an added bonus, I was able to invite my brother and other pilot friends to practice with us, bringing them closer to the sport in an affordable way and laying the groundwork for future team members, which was exhilarating.

"Getting to know other aerobatic pilots in my area was a huge plus that will likely keep me in the sport long term." Lisa Draper

I made a decent number of mistakes in the box this season, and because of practice days I knew what to do to get through the rest of the routine. I felt able to bounce back, because I had a basic knowledge of the sport, how it was scored, and my flight structure as a competitor.

I knew how to check my belt, enter the box properly, wag in and out, and take interruptions when necessary for safety and figure accuracy.

My recommendation to others is to find a motivated group with an experienced safety pilot and a coach on the ground. Get spin and upset recovery training, and then get to business of growing together.

Thank you to the Pilot Makers team! I'm looking forward to next season. **IAC**



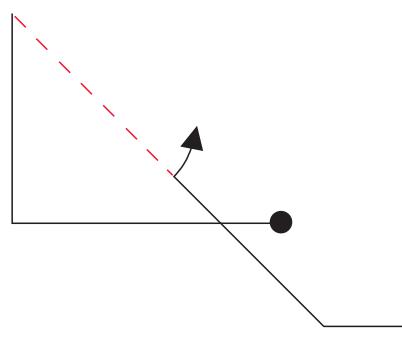
The Wedge – Where to Look and Airspeed Help

COMPILED BY LORRIE PENNER, IAC 431036

WHILE SOCIAL MEDIA AND communication platforms like the Acro Exploder can sometimes produce rumors and incorrect information, oftentimes you can also find good, sound advice delivered by experienced aerobatic pilots and flight instructors. In a November 2, 2021, email through the Acro Exploder, Ed Haywood posed a simple question that received a lot of well-measured and thoughtful replies.

"Having trouble with shark's tooth in 2021 Sportsman in my Super Decathlon. Not sure about terminology, but the one where you pull vertical to initiate (Wedge), not the reverse. About half the time, I finish the second pull from vertical to 45 inverted with right wing low. Wings are level coming through inverted, so the bobble is happening in the last 45 degrees of the radius.

The Aresti notation for a wedge or shark's tooth.



"Is your wing not level on the 45 downline? You might be inadvertently applying a little aileron." Andrew Boyd.



PHOTOGRAPH COURTESY OF IAC ARCHIVES



Pete Muntean flies his Super Decathlon in Sportsman in the Northeast region.

"I am entering at 150 mph, pulling 4g to vertical, pausing for a 2 count, then popping the stick rearward and relaxing to float over the top. Is the cause not enough airspeed over the top? Or am I not properly compensating for aerodynamic forces at slow speed, such as yaw/roll coupling from slipstream? Maybe I am relaxing too much and not maintaining positive g-load? Any tips appreciated."

Immediately the comments began to fly. By the end of the day, half a dozen replies came through, and from November 3-6, over 24 replies flew back and forth over the internet. In no particular order, here is some of the advice given, some from longtime IAC members, CFI's, and even from a pilot new to the sport sharing their own experience.

"All the things you list may be a problem. If you're fairly new to aerobatics, there may be a simpler cause.

"I've flown as safety pilot with maybe a half dozen other people through the Sportsman routines over the years, so I'm no expert, but a consistent problem I see is them just not 'seeing' the horizon while inverted.

"There's some kind of 'the world's upside down, so I'm just going to not process it' switch in our brain or something. Are you looking at the wing through the pull to inverted? Are you looking at its height relative to the horizon rather than just the 45-degree angle? Try the maneuver again, but ignore the angle; just focus on the height."

Joe McMurray in his Super Decathlon starts his pull over the top.



"Try pulling over the top at a higher speed and focus on keeping wings level and see how you do. This will avoid possible stall or prop-fuselage issues getting too large. Try not looking at the wings for a precise 45 and just look straight ahead and see if you can keep wings level."

"You could also be riding the rudder. I've seen this too — add right rudder during the pull, and then just stand on it all the way through the maneuver. This will also cause a dropped wing."

— Mike Neuman, IAC 437372

"When you come over the top, where are you looking? Pick a spot on the ground that would be 45 degrees from vertical and pull to it. Look at that spot; as you pull or float to it you will see any roll or yaw. Keep that spot as your focus point for the entire length of the line. Use your sighting device only momentarily to check your accuracy after you set the 45-degree line. If you watch the sighting device as you pull or float over the top you will be off heading and roll as you pull or float around." — Dave Prather, IAC 431515

*Note: At this point, Ed does let everyone know, "I do look forward until I am past inverted. I switch my view to the sight gauge as I am approaching 45 to set the angle. Will experiment with views a bit and see if that helps. Thanks."

"I will offer somewhat different advice. First, what is your entry speed for the figure? That will determine a lot of what happens as you hit the vertical up. In a Decathlon you need speed to go vertical up. That said, you do not need to make long vertical up lines. Not a judging criterion.

"Next, always have your eyes looking at some view that will help you fly the maneuver precisely. Never let your eyes just look into space.

"Finally, I find that most of the time I am looking past a wingtip during figures like the wedge or shark's tooth that you are trying to fly. That is, in the pull to vertical, look past your wingtip at a point out on the horizon and nail your wingtip to that point. Pull the stick straight back and do whatever you have to with your feet to keep the wingtip carving a 1/4 loop around that point out off your wingtip. If your wingtip moves in relation to that point, correct with your feet. And you need that view to set a good vertical. Then count one banana and pull over the top corner, again keeping your wingtip nailed to the point out on the horizon. Fly over the top corner; don't flop with no speed. The top corner is supposed to be round, and making it oval is good for a point deduction from your score."



In the wedge or shark's tooth, where are you looking?



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 or www.southeastaro.com

EXTRA NG




Julia Harrington is looking forward to trying her hand at the wedge in the 2022 Sportsman sequence in her Decathlon.

"Looking out past the wingtip you can set your inverted 45 line. NOW look forward out the windshield and find the point that you will roll around. Do your roll to the upright 45 down and check your wingtip view again to get that 45 correct. Finally, pitch back to level upright flight looking forward and using your feet to keep your flight path on axis. Hope this helps." — Wes Liu, IAC 10467

*Another note: At this point, Ed does let everyone know, "Entry speed has been around 160 mph. I am coming out of a Cuban so have plenty of speed. However, I think I have been too gentle on the initial pull up because of the extra speed, so I will focus on a more aggressive entry."

"When you pull over the top (in the shark's tooth) you're flying upwind, at a very low airspeed. If you have a stiff headwind, the Decathlon's horizontal component just disappears and the 45 downline sags like an MDF baseboard."

"I have different techniques for all these things. I interrogate the verticals according to Cecilia's book, pull enough g's to maintain a wind-corrected radius, and my entry speeds vary depending on the previous figure." — Aditya Anne, IAC 441109

"All things at the top of vertical figures start with good verticals. If you are dragging a wing on the upline, things get wonky on top. When you calibrate your sight gage, start with perfecting your verticals." — Miko Aviation, Paul Miko, IAC 437539

"...you're probably just inadvertently applying a little aileron. A very common error is that when pilots pull back on the stick with their right arm, they don't pull the stick directly back with respect to the axis of the aircraft. They pull it back on a slight diagonal, directly back to their right shoulder, which is pretty natural. You

must be conscious of this and work to not do it. This is easy enough to see with a camera inside the cockpit." — Andrew Boyd, IAC 28206

In the end, Ed reported on the Acro Exploder, "Higher speed over the top and a bit more pull fixed the problem. I do change my view from the wing to the roof when I hit 30 degrees past vertical, though I am still learning to make effective adjustments at that point. Thanks for the advice!"

The Acro Exploder (aka ACRO E-mail Exploder) was developed by Dr. Günther Eichhorn for aerobatic enthusiasts as a source of communication. It does not represent official IAC policy or opinion. **IAC**

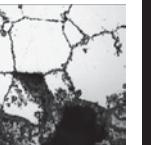
► DISCLAIMER: The comments and suggestions contained in this article are based on the general observations and experiences of the authors. This article is not a substitute for actual flight training with a certificated flight instructor in an aircraft rated for aerobatic flight at a safe altitude.

Appearance Maintenance

FACTS, FIXES & TIPS
FROM THE PROS

CORROSION:
Safe to assume it's under control?

Your aircraft is covered with the only type of exterior paint made to perform in extreme conditions. This may give you some peace of mind, but at cruising altitude, all bets are off. Out here, your plane's shiny exterior is constantly being assaulted by extraordinary temperatures, moisture, potent UV light, oxidation and atmospheric pollutants.



Any of these can kick-off a corrosive attack. Paint will dull as the surface oxidizes or worse, moisture can penetrate, traveling randomly beneath the painted surface to form unseen pitting.

Prevention is very nearly impossible, but active protection, regularly applied, can effectively control corrosion. Look for exterior sealants like NuGlaze Paint Sealant & Polish or NuImage for polished metal, for their ability to form hydrophobic barriers and shield against UV degradation.

Wipe & Wax: The Way To Go in the In-Between
Somewhere between a full-out drywash and a rinseless wetwash is the cosmetic wipe down. This single-step, wipe-until-dry cleaning method uses residual polish as both cleaner and gloss enhancer, so you'll need an industrial strength cleaner with a protective sealant, like CitriCut Xtra.

Depending on amount and type of soiling, CitriCut Xtra can be diluted and manually applied with a mothead or pad. Agitate surface to loosen soils. DO NOT allow to dry.

Hand buff, collecting residual polish with cloth, to a clean, brilliant shine.

PRO TIP! FLUFF THE WOOL
"Fluffing" a new wool pad eliminates those pesky fibers that clump together with captured soils and residual polish. Here's the fix... Attach wool pad and start rotary buffer around 1000 RPMs. Hold compounding spur on the edge of the pad. Slowly move it vertically across the pad, towards the center. Repeat until little to no fibers are shedding.

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2021 Southern California Classic



MICHAEL CHURCH, IAC 12032

PHOTOGRAPHY BY MICHAEL CHURCH AND IAC CHAPTERS 36 AND 49



The 2021 Southern California Classic; the group photo at the end of the contest.

LAST MARCH, CHRIS OLMSTEAD and A.J. Wilder approached Chapter 36 President Bryan Jones with the suggestion that IAC chapters 49 and 36 pool resources to create a single contest, merging 49's Duel in the Desert (May) with 36's Akrofest (October). The venue would be California's Borrego Valley Airport, the traditional home of the Akrofest.

The idea took shape: Chapter 49's Apple Valley contest was removed from the 2021 schedule, and the two groups began to divvy up chores for a combined October event.

Chapter 36 took on IAC and FAA sanction/waiver details, contest registration, hotel negotiations, and food planning. Chapter 49 had the contest program, trophies, and prize money. Smaller chores were similarly divided, and the contest was published on the IAC website. The "Southern California Classic 2021" had life.

The lure of prize money (\$3,600 in all, thanks to the generosity of the Figure 1 Foundation) helped attract pilots from across the Western United States. A week before the contest started, we had 48 promised contestants: the largest number seen in Borrego since the '90s.

But chickens don't always hatch, and as registration and practice got underway, we learned a bad weather forecast in central California would cost us nine entrants. We had plenty of room for them, and more, so it was a blow. As it was, 39 pilots flew for a total of 120 contest flights — pretty good for a regional contest.

Some pleasant notes:

- We benefited tremendously from the reopening of the airport restaurant, now named *The Propeller*.

Our host was Patrick Meehan; he served breakfast and generously made room for contest registration, scoring, and the morning briefings. For three days, we enjoyed air-conditioned comfort and the chance to take breaks from the busy work of the contest. It was a blessing.

- Mike Eggen and Mark King could not bring their aircraft, due to mechanical issues. Marianne Fox offered her Decathlon, and Mike and Mark attended and flew.

- The Unlimited pilots donated their prize money to the lower category winners; Marianne gave hers to Chapter 36.

Mark King, Marianne Fox, and Jim Bourke relax under the wing of Marianne's Decathlon.



2021 Southern California Classic



Mark Sparks taxis out in his Great Lakes 2T-1A to take his turn in the Sportsman category.

Thursday

By late afternoon, Thursday's practice flights showed us just how crowded the field would be: When registration closed, we had 10 Primary pilots, 14 Sportsman, seven Intermediate, four Advanced, and four Unlimited. Perhaps the best news was the show of hands when Bryan polled the group the next day for first-time competitors. I believe I saw five raise their hands. (Editor's note: The IAC database later confirmed there were 11 new competitors!)

Sean Moran served as registrar, and on Thursday night, he and Bryan divided the pilots into two flights: Unlimited/Intermediate/Primary (21), and Advanced/Sportsman (18). When it came to volunteers, there were sufficient grading judges, boundary judges, assistant judges, and recorders to fill every role — great news! We need to look back to 2017 for the last time we had similar success at Borrego.

All these things sounded good. We had the people, but nothing works if they aren't in the right place at the right time. Thanks to Matt Sparks, volunteer coordinator, for rounding up and herding all the cats.

Friday

Friday's flights moved smoothly, and by day's end, we had 50 percent of the contest in the bag: Both Unlimited and Intermediate had moved through their Frees.

Friday also marked the start of Borrego Days, a popular and well-attended town event. It seemed a natural to schedule the 4-Minute Free flights for that afternoon, and a good-sized crowd showed up to watch the energetic capers of three Unlimited pilots: Rory Moore, A.J. Wilder, and Jim Bourke. Jim walked away with the victory.



Friday's flights moved smoothly, and by day's end, 50 percent of the contest was in the bag.

2021 Southern California Classic

TOP: Eric Lentz-Gauthier taxis his Yak 52 for an Unlimited category flight.
BOTTOM: Great Lakes pilots, Paul Miko, Howard Kirker, and Hudson Davis.



Saturday

We got down to business a bit more quickly on day two: The first prop turned before 8:30 a.m. Despite mechanical problems with a couple of aircraft, the starters were able to shuffle pilots around and get everybody into the box with few delays. For that and all the other work involved in processing 120 flights in two days, the starting crew of Howard Kirker, Pawel Miko, and Eric Lentz Gauthier deserve lots of praise.

Nothing would have worked without prompt placement of the boundary judges — a thorn in our side for longer than I care to remember. The problem was solved by using two drivers: Matt Sparks and Craig Jones. Like so many other non-flying volunteers, Craig is in line for buckets of praise. I have forgotten how many times he sped out to the corners to handle random problems.

PHOTOGRAPHY BY MICHAEL CHURCH AND IAC CHAPTERS 36 AND 49

Saturday Night

When folks walked into the banquet site, you could hear the delighted response to the trophies from blocks away. A.J. Wilder and Ray Maxon (Ray's Aviation) had worked together to create a stunning array. The first-place propeller blades were beautifully finished (and large enough to create problems on the flight home).

Second- and third-place winners took away cleverly reworked engine parts — a camshaft, a comm antenna, and meticulously finished valve covers stick in my memory. Even the “clinkies” were special.

And there was prize money! I have heard it was once common at aerobatic contests but had yet to see it: The norm for competitors is money goes out, never in.

With the decision by Unlimited winners to turn their share over to the lower categories, \$900 was paid out to the first three places in each: Primary, Sportsman, Intermediate, and Advanced all benefited.

Thank you for the stunning trophy array goes to A.J. Wilder and Ray Maxon (Ray's Aviation).



2021 Southern California Classic



Five Decathlons, five Great Lakes, five Pitts Specials, two Yaks, and a sprinkling of Christen Eagles, Extras, and three Laser 200s rounded out the competition aircraft at the contest.



Time to brief before the contest gets started.

Scoring

Of course, prizes cannot be awarded without knowing who gets them. Credit for scoring goes to Bill Hill, Judy Phelps, and Janeen Gaul. Scores were collected from the chief judge's table even as a category was continuing to fly, ensuring a steady stream of entries into the scoring program. The result: I heard from one competitor that scores came out more promptly than even those at the U.S. Nationals.



The Wrap

Bryan Jones gets most of the praise: He led the charge in Chapter 36 to proceed with a joint contest, and then ran the event with great skill and energy.

The October Akrofest always has fallen close behind Nationals. That event has come to draw more and more western U.S. pilots in the last decade, causing attendance at our regional contest to drop off: Two contests held so close together add up to a lot of flying. The appeal of the Southern California Classic 2021 went a long way toward fixing that problem, and the future looks bright. Here's hoping we do it again!

Michael Church is the Chief Flight Instructor at Sunrise Aviation in Santa Ana, California. He has been an IAC member since 1986, is a national judge, and flew competition in the Advanced category. **IAC**

2022 IAC CONTEST SEASON CALENDAR



IAC.org/Contests

DATES	HOST CHAPTER	NAME	REGION	LOCATION	AIRPORT
February 22, 2022	62	2022 Estrella Classic (Glider) and U.S. National Unlimited/Advanced Glider Championship	Southwest	Maricopa, AZ	E68
April 22, 2022	36	Hammerhead Roundup	Southwest	Borrego, CA	I08
June 4, 2022	61	Giles Henderson Memorial	Mid-America	Salem, IL	KSLO
June 10, 2022	80	MAC 50th Anniversary	South Central	Seward, NE	KSWT
June 18, 2022	11	James K Polk Open	Northeast	Warrenton, VA	KHWY
June 24, 2022	15	H. Neumann Barnstormer	South Central	Ottawa, KS	KOWI

TWO BUCK CHUCK

KAYLIN HART, IAC 440518

NATHAN HAMMOND, BETTER KNOWN as *Ghost Writer* in the air show circuit, had a crazy idea to put together an air show act for EAA AirVenture Oshkosh 2021 featuring grassroots aerobatic-capable aircraft that the average aviator could afford. His hope for the act was to promote safe and affordable aerobatics as well as the IAC as a whole.



PHOTOGRAPHY BY @2021LARRYGRACE

LUKE CARRICO

"ANYONE CAN FLY AEROBATICS, NO MATTER HOW DEEP THEIR WALLETS, WITH THE RIGHT AMOUNT OF PRACTICE AND PASSION."



(left to right) Luke Carrico,
Alex Jamison, and Nathan
Hammond



N

ATHON PUT TOGETHER A script with air show announcer Luke Carrico that paid homage not only to the 50th anniversary of the IAC, but also to the club's role as the governing body for aerobatic competition in the United States. The script outlined the various competition categories and pointed out the great number of legendary air show pilots who got their start flying clipped wing Taylorcrafts and Piper Cubs. For this reason, and to demonstrate what lower-power, lower-cost aircraft could

do, Nathan wanted a J-3 Cub, a Champ, or a Taylorcraft to be featured in the act.

He immediately thought of Erik Edgren and R.J. Gritter to collaborate with on fleshing out this vision, both passionate grassroots pilots. Erik would fly his Taylorcraft, R.J. his Decathlon.

The three friends met up at Erik's private aerobatic box and set out to create an air show routine unlike anything in this circuit today. They took elements out of each of their individual routines to create an exciting new program, and after a week of practice and alterations, the Two-Buck Chuck air show routine was born.

The group debuted the act in Oshkosh, Wisconsin, with Luke Carrico narrating the whole event. Two-Buck Chuck inspired aviators of all ages, demonstrating that with the right amount of practice and passion *anyone* can fly aerobatics, no matter how deep their wallets are. Luke worded this idea aptly, ending the performance with, "Whether you're looking to fulfill that dream that you've always wanted, or perhaps add another skill to the aviation logbook, there's nothing wrong with a Two-Buck Chuck airplane."

NATHAN HAMMOND

Growing up encompassed by the world of air shows, Nathan was an avid aviation enthusiast from the start. At age 12, Nathan became involved with Steve and Suzanne Oliver's SkyDancer Aerobatics, based in Danville, Kentucky (KDKV), as an assistant, while his father worked as a ferry pilot for the team. It was through this arrangement that he met the first love of his life — the Super Chipmunk. "The Chipmunk is my one airplane. If you are destined to fly one airplane for the rest of your days, I would choose the Chipmunk. However, I do leave the door open because I haven't flown a Corsair," he joked.

Determined to find a way into the Olivers' airplane, Nathan worked hard to earn his credentials. He soloed at age 16 and got his private pilot certificate at 17. He proceeded to acquire hundreds of cross-country hours, following his father from air show to air show in the Hammond family's Cessna 172, picking him up from his ferry job. When Nathan turned 18, his father handed him the keys and said, "I've seen the country, now it's your turn." Nathan was elated. He was now the full-time crew chief for SkyDancer Aerobatics, ferrying the Super Chipmunk to wherever it was needed.

Nathan accumulated thousands of hours in the aircraft during this time and soaked up as much information and guidance as he could from the Olivers. His motto was "ears open, eyes open, mouth shut," and he was thrilled to have such inspiring mentors to guide him into the industry. He felt Steve Oliver was a practical man and believed Steve knew he would one day take over the "family business."

Steve coached Nathan not only in the sport, but also in the business aspect. Steve taught him how to operate as a performer and as a business, and Nathan attributes much of *Ghost Writer*'s success to Steve's mentorship. Eventually, Steve and Suzanne agreed it was time for Nathan to have his shot at the skywriting circuit, and he could not have been more enthralled. His first skywriting appearance was at the Atlanta Motor Speedway for the NASCAR race in front of 100,000 spectators. No pressure, right? His father assisted in the coaching process leading up to the big event, and Nathan felt ready to take on this new chapter of his career. "The only thing that I hadn't picked up on was that it's a rollercoaster for 45 minutes, and there is no stopping it.

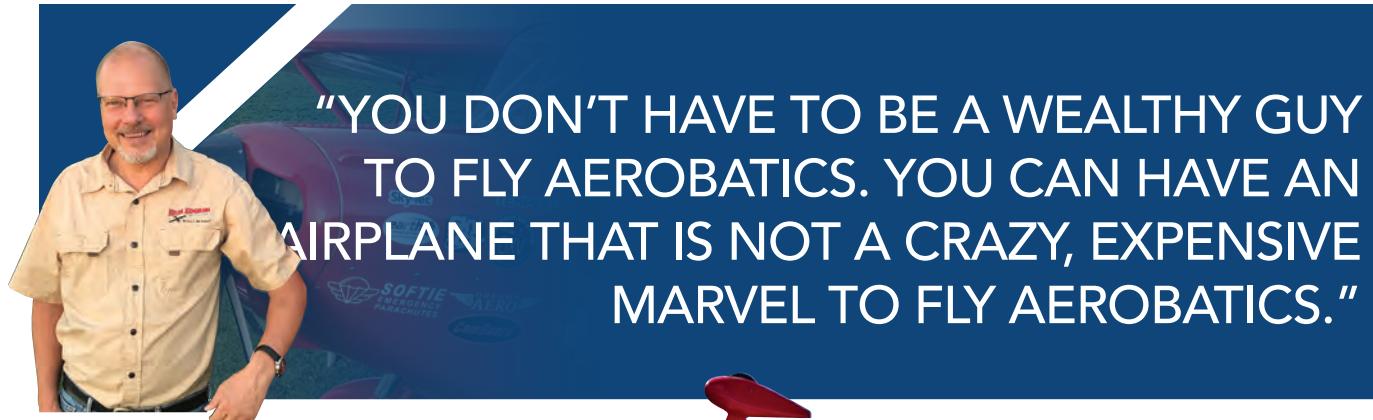
"Once you begin a word or phrase, you have to see it all the way through," he said.

The art of skywriting takes a great amount of focus, technique, and most of all, stamina. As the light on Steve's career began to fade, he focused all his energy on helping Nathan get his start. Steve trained Nathan as his backup and was the one who encouraged him to get qualified in aerobatics. Nathan trained and practiced, and by the time Steve retired, at 70, he had earned his Statement of Aerobic Competency card.

Nathan began flying a comedy routine in the Piper J-3 Cub at the Rhinebeck Air Show in Red Hook, New York. He attributes much of his early success to the friendship and mentorship of his coach, Greg Koontz. Greg instilled in him the primacy of safety in air show aerobatics and the perspective of not only understanding your limits as a pilot, but also the limits of your aircraft.

Eventually, Nathan leased the Super Chipmunk from Steve and Suzanne to try his hand at the air show business. They had this arrangement for several years, before he officially purchased the aircraft in November 2019. When Nathan began leasing the aircraft, he knew he needed to brand himself distinctly from the Olivers. He was struggling to envision a new brand name when a friend told him, "You know, you are the most famous guy at Oshkosh, and nobody knows who you are. You're just a ghost up there!" Thus, *Ghost Writer* was born and has been a fan favorite ever since.

"If you are destined to fly one airplane the rest of your days, I would choose the Chipmunk." Nathan Hammond



Erik Edgren in his clipped wing Taylorcraft.

ERIK EDGREN



Already fascinated by aviation, when Erik Edgren was 8, his father took him to an EAA fly-in convention for the first time. It changed his life. As he stood and watched the air show in awe, he remembers deciding then and there that one day he would be an air show pilot and fly at Oshkosh. After years of hard work, resilience, and a few roadblocks along the way, Erik has finally made the dream of flying at AirVenture a reality.

Erik Edgren grew up inspired by comedy aerobatic routines, such as Dick Willets'. At the age of 19, he started learning aerobatics, practicing whenever he could. Recalling his early aerobatic days, he commented, "Practice doesn't make perfect, but it sure makes better." A motto most pilots involved in the sport can relate to.

"You don't have to be a wealthy guy to fly aerobatics. You can have an airplane that is not a crazy, expensive marvel to fly aerobatics," Erik said. He estimates that it is possible to build an airplane for roughly \$25,000. He is passionate about making aerobatics as safe and affordable as possible.

When Erik came into possession of his clipped wing Taylorcraft, it had a C-90 on the nose with a wood propeller. By the time he was prepared to make his Oshkosh debut, he had converted the engine to a C-85 with O-200 crank and rods with 9 to 1 pistons that produces roughly 100 hp. Next, he turned to Craig Catto for advice on upgrading the propeller. Craig believed in the air show venture Erik was building and wanted to be a part of the magic. He offered Erik a propeller — his first sponsorship — insisting, "With this lightweight hybrid wood and composite designed prop, your airplane will climb faster, cruise faster, and run cooler." Eager to put Craig's claims to the test, Erik tried the prop, and the performance did not disappoint. To Erik, the paramount quality in a propeller is the

increase of airspeed it allows, and this Catto prop accelerated Two-Buck Chuck amply. Erik has been flying the aircraft regularly from -3g to +5g, enjoying every second.

Many people wonder what the crowd line must look like from the performer's point of view, but Erik said he has no idea. When in the air, he is completely absorbed in his routine. And when asked about his Oshkosh debut, he replied, "Was I nervous? You bet I was nervous! Until I pushed the throttle forward. Then, it's business, and the nervousness is over with at that point." His professionalism and love for the sport has gotten him far in the industry, inspiring aviators of all levels and backgrounds. "People said I looked really happy [after the Oshkosh debut]; what they didn't know is that I was holding back tears of happiness." It has been a long, grueling journey to get to where Erik is today. However, he has truly enjoyed the adventure and looks forward to seeing what his future in the air show circuit has in store.

R.J. GRITTER



R.J. Gritter grew up in a flying family and was taken to air shows as early as he can remember. There was no aerobatic community at the local airport, but at the age of 12, he discovered the world of radio-controlled aerobatics and became deeply involved. R.J. went on to compete in the World Championships for Indoor Aerobic Model Aircraft, run by the Fédération Aéronautique Internationale (FAI), as well as the FAI's World Air Games in Dubai. His passion for RC aerobatics soon broadened to full-scale aerobatics, a love that would never fade.

R.J. has always wanted to build on the foundation he had acquired flying radio-controlled aircraft and get in an airplane to re-create those maneuvers. At the end of high school, R.J. had the opportunity to learn some basic aerobatics in a Citabria. His love for aerobatics grew even more after that, but once at university, he quickly found that collegiate academics left little time for flying.

When he was just about to graduate from university and move on to graduate school, R.J. had the opportunity to fly an Extra 300 with IAC member Johnny White. After tumbling the aircraft for over 45 minutes, he knew this sport is what he needed to pursue and became consumed with flying aerobatics. He opted out of grad school, got a job, and saved all he could to buy an airplane.

In December 2015, he and his parents purchased a 150-hp Decathlon, and they haven't looked back since. With his RC background, R.J. was familiar with the mechanics of aerobatics and was thrilled to finally be able to practice the sport he loved. At the end of 2016, R.J. performed his first air show at the Flying Circus Air Show in Bealeton, Virginia, where he had been volunteering and practicing for more than a year.

R.J. tried his hand at competition aerobatics; however, he enjoys the camaraderie and freedom of air shows more, having experienced extreme competition in the world of RC aircraft for so long. He has plans to return to competition aerobatics one day, but for now he relishes spreading the message of safe, affordable aerobatics to anyone he can. **IAC**



R.J. Gritter in his 150-hp Decathlon.

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Lithium Batteries and Airplanes

BY KEITH DOYNE, IAC 10545

WHEN I DECIDED TO do this article, I had no idea how many pilots in the aerobatic community use lithium-ion batteries in their aircraft. Occasionally, I would read or hear a comment in support of lithium-ion batteries, never realizing how popular these batteries have become. People looking to save weight and have a good battery to start their engine are taking a long look at lithium-ion batteries. They are smaller and lightweight and have plenty of

cranking amps for their size. As with any new product, there are some drawbacks, i.e., higher cost than a lead-acid battery and the need for a modern ground charger. For those pilots with certified aircraft, there are a few lithium-ion batteries that are approved for aircraft with 24-volt systems. There is an STC for 12-volt lithium-ion battery use in a Cessna 182, and the manufacturer expects to add more airplanes to the STC in the future.

Most people agree: Making an aerobatic aircraft lighter is good. A dry cell battery weighs about 13 pounds. The lithium-ion battery weighs about 4 pounds.



The EarthX lithium-ion battery is lightweight, helping to reduce your aircraft's weight.



► This photo is from *EAA Magazine* and Dick Sunderland. Originally printed on page 88-92 of Sport Aviation Magazine - March 2018 edition.

When looking at lithium-ion batteries, the issue of protection for overcharging or balancing of the cells in the battery is very important. Both EarthX and Aerovoltz manufacture lithium-ion batteries that have a battery management system (BMS), which provides protection for the battery. The BMS can disconnect the cells from the rest of the system to prevent damage to the battery cells. At the 2021 U.S. National Aerobatic Championships, a competitor was cleared by the starter to crank up the engine and taxi out. The pilot went to start the engine, and everything went dead. He had no power at all, just as if his battery completely died. After some assistance to remove the

cowlings, the battery was checked, and there was over 13 volts measured across the battery. After a couple of minutes, the pilot got back into the airplane, turned on the master switch, and amazingly, now there was power. The cowling was put back on the airplane, and the pilot started the engine and taxied back to his spot on the ramp. This pilot was using an EarthX lithium-ion battery in his airplane. The prevailing thought was the EarthX BMS disconnected the battery cells from the system, which resulted in the dead electrical system. In those few minutes used to do some initial troubleshooting, the BMS reset, and magically, the power was back. It seems the BMS did its job too well.



Like EarthX, the Aerovoltz battery has a battery management system (BMS), which provides protection for the battery.

Most people would agree that making an aerobatic aircraft lighter is good. A simple solution is to change to a lighter battery. In the past, people changed from the old lead-acid battery weighing about 25 pounds to a more modern dry-cycle battery weighing about 13 pounds. The next iteration is a change to a lithium-ion battery weighing about 4 pounds. An additional weight savings of about 9 pounds is achieved. Just by changing batteries, you reduce the overall aircraft weight by over 20 pounds. However, there is a situation where this simple change may cause more problems than it solves.

MOST PEOPLE WOULD AGREE THAT MAKING AN AEROBATIC AIRCRAFT LIGHTER IS GOOD. A SIMPLE SOLUTION IS TO CHANGE TO A LIGHTER BATTERY.

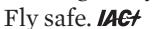
Changing batteries will change the weight and balance, which could move the center of gravity (CG) close to or past the forward limit. A perfect example are pilots who fly solo from the rear seat in a Pitts S-2A/2B/2C aircraft. If the pilot and parachute are not that heavy and there is a lightweight lithium-ion battery behind them, the resultant CG

could be very close to the forward limit. As the pilot burns gas flying, the CG could go past the forward limit. A check of the aircraft's pilot operating handbook or flight manual might give a hint of potential pilot weight concerns that impact the aircraft CG — an unintended consequence of changing to a lithium-ion battery without looking at all impacts. If you had an overall plan to reduce the weight of your experimental aircraft, it is easy to add a lithium-ion battery to the list of modifications or changes. The potential CG issues can be resolved before any installations are made. However, a certified aircraft requires more effort and work. Hopefully, the aircraft type certificate provides some lightweight equipment options, or existing STCs allow for lighter equipment use. You could also go through the process and get your own STC or obtain field approval through FAA Form 337. At any time you change the weight of your aircraft by adding or exchanging equipment, update the aircraft weight and balance data, plus check to see the impact to the CG.

Temperature presents a challenge for all aircraft batteries. There are aerobatic pilots flying in Arizona in the summer and pilots flying in Canada in the winter. If the temperature is low enough, that cold battery will not start your engine. If you use an external engine heater to warm up your engine and oil, maybe think about that battery in the aircraft. A little heat

might help it perform better. At the other end of the temperature spectrum, high temperatures can cause damage to battery cells and lead to a battery fire. The EarthX manual clearly states not to expose its batteries to temperatures above 200 degrees Fahrenheit and not to charge the battery at temperatures above 140 degrees Fahrenheit or in direct sunlight. If you mount your lithium battery in the engine compartment, placing it in an insulated battery box would be a good idea. After that hot summer flight as you taxi back to the hangar, the engine compartment temperature can rise quickly. It will raise not only your oil temperature but also the battery temperature. If either temperature gets high enough, you will receive an unwanted surprise. Plan ahead to avoid the problem.

Lithium-ion batteries will continue to be used in aviation. They have many benefits, but at the same time, they require a bit more thought and planning. For pilots looking for more performance by reducing their aircraft's weight, lithium-ion batteries can be part of the answer — small, lightweight, and plenty of cranking capability. Take the time to talk to other aerobatic pilots using lithium-ion batteries and get their input. Go online and read the manufacturer's technical literature. When you make an informed decision, you can maximize your benefits while thoughtfully minimizing or eliminating the limitations.

Fly safe. 

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The Inaugural 'Leo' Is Awarded: 2021 National Point Series Championship Winners Announced

BY BOB FREEMAN, IAC 8532

THIS ARTICLE IS THE final update for the 2021 National Point Series Championship (NPSC) award, known as the Leo Trophy. Qualified NPSC competitors each flew contests in at least three different regions, with their best result from three regions earning qualifying NPSC points. These points are awarded to each pilot based on their percent rank performance of each independently ranked contest. This method isolates the results of each contest from other contests, such that the variations in conditions between contests are eliminated. Summing straight percent scores introduces problems in comparing pilot performance across contests due to contest-to-contest variations from wind differences, sky and cloud conditions, number of judges on the line, judging variations between contests ("hard versus easy"), use of boundary judges or not, sequences flown, etc.

The competition for this trophy builds slowly throughout the season as pilot results and NPSC points are added each week for each region. Pilots must compete in three different regions to earn NPSC points. The end-of-the-season contests add quite a bit of excitement, as adding the third region points can qualify pilots for the trophy, changing the leaderboard significantly. First-place pilots will have their name inscribed on the permanent Leo Trophy, which will be on display at the IAC Aerobatic Center. They also will receive individual trophies. First-, second-, and third-place winners will be awarded stickers indicating their NPSC standing.

The Leo Permanent Trophy

Here are the first-, second-, and third-place results for the introductory year of the Leo Trophy, named in honor of famed IAC competitor Leo Loudenslager. Congratulations to the winners and contenders for the NPSC Leo Award. Detailed results will be posted soon.

The first-place pilots have their names engraved on the permanent trophy, which is on display in the IAC Aerobatic Center in Oshkosh, Wisconsin.



National Point Series Champion in the Advanced category: Matthew Dunfee



National Point Series Champion in the Sportsman category: Phillip Gragg



National Point Series Champion in the Intermediate category: Brittnee Lincoln

	Sportsman	Intermediate	Advanced	Unlimited
1st Place:	Phillip Gragg	Brittnee Lincoln	Matt Dunfee	n/a*
2nd Place:	Ruedy Nathan	Jerry Esquenazi	Dave Watson	n/a
3rd Place:	Marianne Fox	Leigh Hubner	Christopher Combs	n/a

***Note:** An honorable mention goes to Jim Bourke in Unlimited. Jim was the only pilot who flew in three regions. Per P&P 227 of the *IAC Policy and Procedure Manual*, there is no winner in the Unlimited category for 2021. Due to bad weather, the Sebring fall contest added no qualified flights, and as a result, Jim was the only Unlimited pilot with three regions.

P&P 227 NPSC Changes for 2022

The requirement for two flights to be completed at a contest for the NPSC points to qualify has been eliminated going forward. Only one flight will be required at a contest in order for the points to qualify for NPSC points in 2022 contests.

The Primary category has been added to the NPSC award in 2022, with a one-time restriction added for the Primary category winner. **IAC!**

Competitor Season Numbers for the 2021 NPSC Leo Trophy

Competitor Summary	One Region	Two Regions	Three Regions	Total
Sportsman	109	17	3	129
Intermediate	66	5	3	74
Advanced	40	9	6	55
Unlimited	16	6	1	23
				281

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