SPORT Aerobatics
MAY 2016
OFFICIAL MAGAZINE of the INTERNATIONAL AEROBATIC CLUB

Spins

Intentional & Unintended

Annual Safety Issue

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From the Guinness World Records' point of view, more is more; however, I was never satisfied only advancing the record by three turns, so I set out to crush it on my next attempt—and 100 is a nice, round number.

—Spencer Suderman

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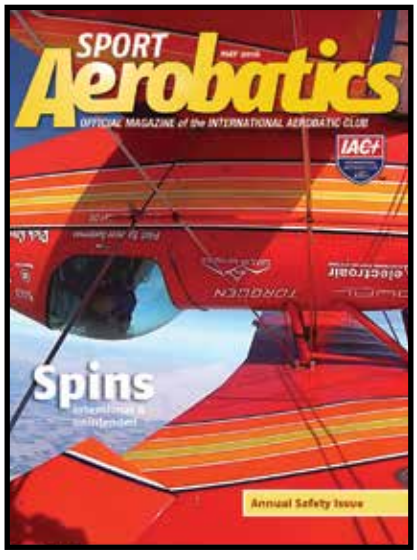
DEPARTMENTS



COVER

Spencer Suderman breaking his inverted -spin record over Yuma, Arizona. Photo courtesy of Spencer Suderman.

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EDITOR'S LOG

BY REGGIE PAULK

The Importance of Upset Recovery Training

Learning about the unexpected

MAY IS THE MONTH WE AGAIN focus on flying safety, and one theme I've heard over and over again is that a competition spin is nothing like an inadvertent spin. I can't tell you the number of times experienced pilots, many of whom have been flying aerobatics for a number of years, have been taken by surprise when they enter an unintentional spin.

Since we're focusing heavily on spins, it only makes sense to feature Spencer Suderman...

I recently had the pleasure of a conversation with John Morrissey, whose "23 Seconds" article again appears in this magazine. He was kind enough to send me a DVD of his called *Survive the Spin*. In it, John gives a frank lecture on the unique aerodynamics of spins; factors that can exacerbate or help recover from a spin and, more importantly, demonstrates actual modes encountered during typical intentional and unintentional spin entries with in-flight videos. Watching the in-flight videos proves that without training, many unintentional spin modes are very difficult to recognize. If there is any lesson at all to be learned about spins, it is that pilots should receive training from a qualified instructor in both intentional and unintentional spin entry and recovery procedures. In addition, the training should include both upright and inverted spins and spin recovery modes.

Since we're focusing heavily on spins, it only makes sense to feature Spencer Suderman, who recently broke his own record of an 81-turn inverted flat spin and achieved a 98-turn inverted flat spin over Yuma, Arizona. The interesting thing about Spencer's achievement isn't the actual record, but the amount of research that went into the effort. I was amazed to read he had made two failed attempts at the record toward the end of last year. But he persevered, and continues to hold the record. Although, I'll bet he's not going to be able to sleep too well knowing he only needs two more turns to break the 100 mark! When is that next attempt, Mr. Suderman?

I want to take a moment to thank all of the volunteers who go out of their way each year to help the IAC be the thriving and vibrant organization it is today. From volunteer coordinators to recorders, judges, and CDs, the IAC depends on the generosity of people who give freely of their time out of sheer love for our sport. Thank you to all of you who often go unnamed and unrecognized—you are the lifeblood of the IAC. *IAC*

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

PRESIDENT'S COLUMN

BY MIKE HEUER, IAC PRESIDENT, IAC 4

The Nationals—A New Location in 2017

Excitement on the horizon

Since 1972 the U.S. National Aerobatic Championships has been held at what is now North Texas Regional Airport (KGYI). Until 1971 the airfield was known as Perrin Air Force Base. After closing it became the Grayson County Airport and first hosted the Nationals the following year.

My first Nationals was in 1968, when it was organized and sanctioned by the Aerobatic Club of America (ACA). I was there with my family, as my father was flying Unlimited in our Ryan ST-A. It almost seems unreal today that pre-World War II antique aircraft made up a great number of the airplanes then used in aerobatic competition, though the Pitts S-1S had just appeared on the scene. From 1968 to 1971 the competition was held at the Oak Grove Airport in Fort Worth, Texas.

The move to the Sherman/Denison, Texas, area proved to be a successful one, though the contest did stray away from that airport on a couple of occasions. The last time was in 1983 when the contest was moved to Mesa, Arizona, for one year. It was back home again in Grayson County the following year, and the IAC has been there since. The IAC took over the responsibility for running the Nationals in 1982 and have also selected U.S. aerobatic teams to compete in world championship events in these intervening years as well.

The airport offers acres of ramp space, a nice runway layout, a full-time aerobatic practice area, and enormous ex-military hangars to house all of the contest aircraft. We have also had superb local cooperation from the chambers of commerce and airport management. Returning to the Texas location became a reunion every year with local friends and IAC members from across the country.

Because of its excellent facilities and potential for growth, the airport has become increasingly busy with itinerant traffic, local corporate jets, and a very active flight school that has hundreds of international students. At the last Nationals, this caused significant delays in flying those categories that have to come below 1,000 feet, namely Advanced and Unlimited. Flying in those categories had to be shut down while aircraft came and went. Though the tower cooperated the best it could, it was an unavoidable problem.

At a meeting of contest officials last year with the airport management and tower people, it was announced that the airport expected a 15- to 18-percent increase in traffic in 2017. Considering that one of our categories took seven hours to complete 26 flights last year, we agreed the location was no longer acceptable. If delays are combined with bad weather, category flight programs would end up being canceled, and our pilot members would not get their money's worth. Everyone comes to fly, to judge, and to volunteer—not to sit around. Therefore, the decision was made to move the Nationals, and we explored several locations.

In the end we received bids from Muskogee, Oklahoma; Newton, Kansas; Union City, Tennessee; and Oshkosh, Wisconsin. Three of these four airports have held regional competitions in recent years and are well-experienced and exposed to aerobatics. For example, Newton has hosted not only a regional contest but also in 2013 welcomed the French aerobatic team, which practiced there prior to the world championships in Texas. The French had nothing but good things to say about their wonderful hosts.

Union City has hosted IAC Chapter 27's contest for several years and will be home to the East Open IAC Championships this coming summer. Oshkosh was home to the 2013 Oshkosh Air Maneuvers contest organized by Michael and Audra Hoy with IAC Chapter 1. Oshkosh was also the site of the 1980 World Aerobatic Championships, which was directed by one of IAC's founders, Don Taylor. We had a lot to work with.

On March 19, at our IAC board meeting in Oshkosh, the directors reviewed all of the bids and voted by overwhelming majority to move the U.S. Nationals to Oshkosh in 2017. The dates will be September 24-29, 2017.

It almost goes without saying that Oshkosh offers the best facilities in the world for an aviation event by virtue of its development over the last 45 years as the site for EAA AirVenture Oshkosh. The IAC has invested heavily in upgrading its pavilion there, and it will serve as headquarters for the contest. The box will be over the airfield. We also plan other activities during the week such as evening social events at the EAA Nature Center and closing ceremonies and awards banquet at the EAA museum's Founders' Wing—the place where EAA's annual Hall of Fame ceremonies are held. We will keep you up to date as plans are solidified.

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

LINES & ANGLES

Nationals to Move to Oshkosh in 2017

After more than four decades of successful U.S. National Aerobatic Championships in Sherman/Denison, Texas, the International Aerobatic Club board of directors voted to move the Nationals to Wittman Regional Airport in Oshkosh, Wisconsin, in 2017. Oshkosh is home for EAA and the IAC, with our offices located in the EAA AirVenture Museum adjacent to the airport. The 2016 U.S. Nationals will continue at the North Texas Regional Airport (KGYI) this coming September under the direction of Gary DeBaun.

IAC President Mike Heuer discusses the reason for the move in his column this month, and the decision came after much discussion and consideration by the board of directors. The IAC extends its thanks to the airport authorities and/or local chapter members from other airports that submitted bids for the event, including Newton, Kansas (Mark Wood); Muskogee, Oklahoma (Mike Davis and Ellyn Robinson); and Union City, Tennessee (Jo Ann Speer and Mike Rinker).

EAA AirVenture Oshkosh is the largest aviation event in the world, and the IAC and the Nationals will benefit from the development of the airfield there, which has resulted in the finest facilities that can be found anywhere for the hosting of a major aviation event. While arguments regarding geographic location were presented in favor of other sites, the IAC board had to consider other factors as well, including *hangarage*, airport facilities, local hotel availability, and the venues available for such things as opening and closing ceremonies, our annual awards banquet, and social events throughout the week. Oshkosh was the obvious choice in all of those areas.

Though many airports offer good locations for an aerobatic box and judging positions, finding hangars for dozens of aerobatic airplanes is not as easy and rules out many possible locations. We also want to offer more amenities to contest participants, and venues such as EAA's Nature Center and the AirVenture Museum, with its aerobatic section, can host evening events and are of a quality rarely found elsewhere.

The awards banquet is planned for the Founders' Wing in the EAA AirVenture Museum. This beautiful section of the museum that houses much of the personal memorabilia of EAA Founder Paul Poberezny is also the location of the annual EAA Sport Aviation Hall of Fame ceremonies in which IAC participates and inducts people who have accomplished so much in aerobatics.

U.S. NATIONAL AEROBATIC CHAMPIONSHIPS 2017 ™

The IAC has invested a lot in terms of funding and time in upgrading our IAC Pavilion on the airport and AirVenture convention site, and that will now be put to good use for more than just one week a year. The conference room will serve as a contest and scoring office, the sales area will be open with IAC's special Unlimited Collection of high-quality merchandise, and the famous and iconic trophies that have been presented down through the decades will be on display in addition to the AirVenture exhibit we will present in 2017. Briefings and a place to gather will be on the large porch.

The IAC Pavilion is located on Boeing Plaza—a huge ramp space that will serve as the starting area for the contest. Contest operations will be primarily on Runways 18/36. Judging will primarily be done from a south position that will preclude having to move as the sun's position changes during the day. Alternate west and east positions will be available if wind direction requires it.

The EAA's campground also will be available to those who wish to bring in their RVs and campers. This has become increasingly popular at our Texas location to the point we have run out of space. But EAA has been accommodating thousands of campers for years, and this will be seamless. Exhibit buildings will serve as hangars for the event and are just to the west of the IAC Pavilion.

Due to the economic development that AirVenture has made possible, there are many hotels in the area with a wide range of prices. This will offer contest participants more options on housing. The restaurant situation is also quite good—with higher-end facilities downtown as well as the franchises we see across the country today. Wisconsin has its share of neighborhood restaurants as well, run and owned by local owners.

Dates will be September 24-29, 2017. Typically in

mid to late September, the leaves have turned color, and the temperatures are cooler compared to late September in Texas.

As planning for the 2017 Nationals goes forward, we welcome ideas as to how to improve the event and to make it something beyond just a large contest, though the challenge of running a competition event of this size is always the top priority. Remember that EAA started out in the beginning with a few dozen airplanes flying in and a few tents scattered about for registration and gathering places. Today, AirVenture's variety and scope make it almost impossible to see everything in the few days we are all there.

What would you like the Nationals to offer beyond a box, a panel of judges, and a starting line? Judging seminars, forums, aerobatic instruction, events involving the local community? The suggestion box is open and comments welcome. The president's e-mail address is *president@iac.org*, and feedback and suggestions will be responded to quickly.

IAC Annual Meeting

In accordance with the IAC bylaws, Article VIII, Section 2, notice is hereby given that the annual meeting of the membership will be held as follows:

Date: July 29, 2016
Place: IAC Pavilion, EAA AirVenture Oshkosh
Time: 8:30 a.m.

Agenda for the meeting:
- President's Report
- Treasurer's Report
- Old Business
- New Business
- Election Results and Induction of New Officers and Directors

Election 2016

By the time this magazine reaches the membership, the nominations for the officers and directors positions that were open this year will have closed. The schedule for the election this year is as follows:

Nominations closed—April 5, 2016
Balloting begins—no later than June 29, 2016
Balloting closes—6 p.m. CDT, Monday, July 25, 2016

The method of voting in 2016 will be electronic only via the IAC website. There will be no paper ballots. The election results will be announced by the Ballot Certification Committee at the IAC annual membership meeting on Friday, July 29, 2016, in Oshkosh.

Contest Statistics

IAC Director Doug Lovell has done extensive work for the IAC in developing our contest database and the feed of contest results into that database for quick viewing by IAC members. That database also reveals a lot of information on IAC activity that is of interest to the leadership in development of our programs and rules.

In 2015, a total of 453 pilots flew in IAC-sanctioned competition categories. As expected, the largest was Sportsman (power) with 183 pilots. Second largest was Intermediate (power) with 99 pilots. The smallest was Advanced (glider) with two competitors, both at Nationals. The total may not be the total number of IAC members who flew, as a pilot may have flown in more than one category during the year, but the numbers are useful, nonetheless.

These statistics go back to 2006 when there were 478 pilots in the categories. Our peak year was 2010 with 521. Considering the fact that the United States was in the midst of a recession that year, the numbers flying in competition seem to refute the argument that recessions hurt contest participation, though it is clear that total membership numbers suffer. Overall, the numbers of pilots flying in contests has been fairly stable over the past 10 years. Sportsman also hit a high in 2010 with 203 pilots.

Evan Peers Joins IAC as Official Photographer

Evan Peers of AirSpace Media, Pollock Pines, California, joins the IAC team this year as our official photographer. Evan was present at the 2014 U.S. Nationals and at EAA AirVenture 2015 where he did extensive work for the IAC in conjunction with the 70th anniversary of the Pitts Special. His photographic work has appeared on the cover of *Sport Aerobatics*, and his spectacular photo of a Pitts with fireworks was featured on the October 2015 issue. He will be with us at AirVenture and the Nationals this year, and this will make possible even better magazine coverage and quality for the membership in the future, thanks to Evan's talents, skills, creativity, and energy.

Updates on U.S. Teams

Two U.S. Aerobatic Teams are preparing for competition this summer in Europe, and updates can be found on the IAC website, which also contains links to team Facebook pages where team members can be found posting news.

The U.S. Glider Team will consist of Jason Stephens and Lukas von Atzigen, and they will compete in the Unlimited glider category at the 19th FAI World Glider Aerobatic Championships at Matkó Airport, Hungary, from July 20 to 30, 2016. Jason and Lukas are renting a glider in Poland and have been working with the authorities there on pilot certification issues.

The U.S. Advanced Team (in power) is well underway with its training and preparation, with nine training camps having been held as of this writing. Team pilots will be Foster Bachschmidt, Cameron Jaxheimer, Johnny Wacker, Stan Moye, Kevin Coleman, Craig Gifford, Mark Fullerton, and Mitch Wild. Nikolay Timo-

feev is serving as team manager and coach. The team plans to use one Panzl 330 and three Extra 330SCs. Aircraft are to be shipped to Europe in late June. The team will practice in Hosin, Czech Republic, before relocating the aircraft to Radom, Poland, for the World Advanced Aerobatic Championships.

Judges School Program Yields Results

IAC Judges Program Chair Wes Liu reports that the number of certified judges has increased from 140 volunteers to 177. This is very good news for our regional aerobatic contests that depend on well-trained volunteers to occupy those judges' seats during our contests. Without them, our sanctioned contests would not be possible. Wes' goal for 2016 is to have 200 certified and current judges on our list.

Wes also placed 14 judges schools on the calendar this year around the country, which will help feed the certification of new people into our judging corps and bring veterans back to the fold by recertification. He has also brought judges training materials online and on YouTube. See our IAC website for details (*www.IAC.org/legacy/judges-schools-course-descriptions*).

Nationals Notes

Those planning to attend the U.S. Nationals should note that the contest will start one day earlier this year, on Saturday, September 24, with the general briefing and the Unlimited Free Known scheduled for that afternoon. The IAC website has news and updates at *www.IAC.org/us-national-aerobatic-championships-2016*.

Unlimited pilots will have a new challenge this year since there will be team tryouts for the World Aerobatic Championships scheduled for South Africa in 2017. Unlimited will fly the new Free Known as adopted by CIVA in 2016, followed by two Free Unknowns as had been flown in the past. There will be no Free programs in Unlimited. The 4-Minute Free will be flown on the last day as has been traditional. Rules on the Free Known will be available soon, and Mike Heuer, U.S. delegate to CIVA, can be contacted for more details in the meantime.

A new and larger Welcome Center will be used this year to greet volunteers and to provide a resting place for our hard-working staff. Our thanks to Lauren and Foster Bachschmidt for their sponsorship of the new center (a larger RV). We hope to see you there. Please contact Ellyn Robinson, our volunteer coordinator, if you plan to come and help (*erobinson_iac@yahoo.com*).

The contest director will be Gary DeBaun, who is well underway in his plans for the event at the same time he is traveling across America on his bicycle in a trip from Florida to Washington state.

We urge all pilots who plan to fly at Nationals to preregister. A link to the registration pages is at the Nationals webpage previously listed in this section. This is important because the U.S. team aspirants will be contacted before Nationals with essential information about the World Aerobatic Championships (WAC), pilot agreements, and team policies. We need to know if you plan to try out for the team, and the registration site has a checkbox for this purpose.

Government Relations

A report from IAC's Government Relations Committee was received and reviewed by the board at its March meeting in Oshkosh, and here are excerpts from Vice Chair Wayne Roberts' report to the board. Much of the work of this important IAC committee is conducted behind the scenes, but the significance of its work and its value to IAC members cannot be overstated. The report is as follows:

"For IAC officers and board, there really is no 'off season.' Though competition season is only just now poised for 2016 launch, directors and officers have long been hard at work. Such is the case with many IAC committees, including the IAC Government Relations Committee."

Representation

"In recent years, federal airspace, airworthiness, and environmental regulation has continued to evolve. And, those changes have brought additional challenges, especially so as mandated waiver training for FSDO staff continues to exhibit considerable lag.

"Attrition, attributed by FSDO staff to 'budget cuts,' has rendered many FSDOs understaffed, making waiver issuance, at times, difficult. And, during this time, we've also seen a rather dramatic increase in attempts by local government entities to exercise control of 'local airspace.'

"To meet the rising demand upon Government Relations resources, we have expanded our committee. New members have been named, subject to your confirmation, and appropriate training has been conducted. Committee staff today includes:

"IAC Government Relations Chair **Dennie Thompson** continues to represent IAC's Eastern Region. Dennie is now joined in the Eastern Region by recently appointed **Eric Minnis**.

"**Bruce Ballew** is assigned 'at-large' duties, with primary responsibility for IAC's Central Region. **A.J. Hefel** has now joined Bruce in Central Region work.

"**Darren Pleasance** and **Phillip Gragg**, having joined forces during the summer of 2015, continue to jointly serve the needs of IAC's Western Region.

"Another new addition to our Government Relations team is **Rick Pellicciotti**. Rick, as IAC's first **National Waiver Counselor**, is charged with recruiting and training IAC chapter leaders with respect to FAA waiver regulation and processes. The goal for this initiative is to have at least two trained waiver specialists in each of the IAC's 34 chapters nationwide.

"**Dr. W.B. (Bill) Finagin** has retired from day-to-day committee operations but continues to serve on the

Government Relations Committee as IAC's National Policy Advisor. Our heartfelt thanks to Dr. Finagin.

"**Wayne Roberts**, as committee vice-chair, provides assistance to Chairman Thompson and team support."

EAA/FAA Mid-Winter Recreational Aviation Summit 2016

In February 2016, members of the Government Relations group, along with IAC president Mike Heuer and IAC board member Gerry Molidor, traveled to Oshkosh to attend the EAA's Recreational Aviation Summit. A great deal of vital information was shared, and personal, direct, and invaluable contact with our counterparts in the FAA was facilitated.

Gerry Molidor, Mike Heuer, and Wayne Roberts at the EAA/FAA summit.

Issues addressed include:

NAS aerospace policy and apparent lack in FAA defense of sovereignty. Waiver process and guidance training for FSDO inspectors.More universally consistent implementation of FAA policy. Charting of long-term aerobatic practice areas (APAs).

The FAA has requested a meeting with the IAC at AirVenture 2016, during which we plan to discuss these issues further, as appropriate, and to receive status updates. Action plans, resulting from the meeting, include:

Work with EAA government advocates to draft an official document, declaring FAA sovereignty of the NAS, which could be shared with offending local governmental entity. The goal of this document would be to, hopefully, preclude the need for strenuous efforts in defense of airspace rights.

IAC has been granted provisional approval to attend and monitor FAA waiver training classes for FSDO inspectors to ensure our waiver applications are consistent with FAA expectations, and so that we might better advise our members with respect to waiver processes.

Additionally, we are pleased to report some degree of success in multiple initiatives championed by the IAC Government Relations Committee for a number of years.

Long-Term APA Charting

For many years, the board has been aware that the IAC Government Relations team, especially Dr. Bill Finagin, has worked with the FAA to realize VFR sectional chart depictions of long-term aerobatic practice areas (APAs).

Recently, we were informed the IAC's proposal has gained traction and has been approved for implementation. Accordingly, we should begin to see APA depictions of long-term APAs on FAA VFR sectional charts during the second quarter of 2016.

The aerobatic icon, prepared by IAC's Margo Chase at the request of IAC President Mike Heuer, was presented to the FAA as our suggested APA chart icon. (Editor's note: The icon was presented as an alternative to an FAA proposal.)

It is entirely likely we must await actual publication to know precisely which icon the FAA's charting group has chosen to employ. Our thanks to Margo Chase and to Dr. Bill Finagin.

Three-Year Long-Term APA Waivers Are Approved

While we still await publication of a much-anticipated FAA waiver guidance revision, we are pleased to announce that one long-sought element has received, at least partial, acceptance.

For many years, and for what we deem rather obvious reasons, we have lobbied the FAA for the elimination of specified end dates on long-term APA waivers. At long last, we are pleased to report significant success. While we have, as yet, failed to achieve the elimination of long-term APA waiver end terms, with the issuance in October 2015 of FAA JO 7210.3Z, the maximum APA waiver term has been extended to three years.

JO 7210.3Z is composed of some 516 printed pages and may be viewed and downloaded here: *www.FAA.gov/documentLibrary/media/Order/7210.3Z.pdf.*

Relevant copy from JO 7210.3Z, Part 6, Chapter 18-1-6(e) is appended below:

e. Specify the effective and expiration dates, including hours of operation. The specific dates and hours of operation must allow sufficient time for the accomplishment of the operation and, if appropriate, an alternate date to cover cancellations that might be necessary due to adverse weather conditions. Except for waivers or authorizations issued by ATO for unmanned aircraft flight or Flight Standards, waivers or authorizations must not be made effective for more than 12 calendar months. Waivers or authorizations issued by Flight Standards and ATO may be made effective for 24 calendar months in accordance with Flight Standards and ATO policies. Flight Standards may issue waivers for aerobatic practice areas (APAs) to re-

main in effect for 36 calendar months. If a longer duration is requested, or the operation is of national importance, advise the proponent to petition for an exemption utilizing 14 CFR Section 11.63, How and to whom do I submit my petition for rulemaking or petition for exemption.

IAC Chapter 1 vs. Morris, Illinois

We are pleased to report that the federal case, styled above, has been concluded. IAC Chapter 1 has achieved a major victory, has received a definitive order from Federal Court, and has accepted compensation from the city of Morris insurance carrier. With that victory, the judge has confirmed FAA airspace sovereignty, and Morris has formally agreed not to interfere with operations in the national airspace system (NAS).Wayne Roberts went on to say in his report that much work remains to be done and urges IAC members to support Chapter 1 through donations, membership dues, and participation in chapter activities. Wayne also paid special tribute to the tireless efforts of IAC Director Bruce Ballew in his attention and devotion to this project for the past five years. Many thanks from all of us, Bruce!

Kevin Elizondo Wins Soucy Award for 2015

Congratulations to Kevin Elizondo who is recognized as the IAC competition pilot who achieved the highest percentage of points possible during the 2015 contest season by competing in three or more contests, one of which was the U.S. National Aerobatic Championships.

This prestigious IAC award was conceived and donated by L. Paul Soucy of Louisville, Kentucky. Mr. Soucy was one of the first members of the IAC and an early member of the board of directors. His purpose was to recognize not only skilled pilots but also those who supported a minimum number of contests as well as the U.S. National Aerobatic Championships. He died in 1971.

The master trophy is on display at the IAC Pavilion in Oshkosh, Wisconsin. A laser-cut plaque with a photograph of the permanent trophy set in the plaque will be awarded to Kevin during the IAC Gathering of Members dinner on Friday night, July 29, in the Nature Center at EAA AirVenture, Oshkosh, Wisconsin.

In the 2015 contest season Kevin flew in five contests as a Sportsman power competitor in the Southwest Region and flew at Nationals, scoring an overall average of 86.90 percent. Contests flown were:

- Hammerhead Roundup
- Duel in the Desert
- Coalinga Western Showdown
- Happiness Is Delano
- Borrego Akrofest
- U.S. National Aerobatic Championships

Kevin was born in Litchfield, Illinois, in 1963. His interest in flying developed during high school when a friend's father was building a Pitts S-1S. His first aerobatic flight was in a Chipmunk at 15, and he was hooked. He attended the EAA Oshkosh convention in 1981 with his friend, his father, and Phil Sisson who was Kevin's mentor, a national champion in his own right, and previous winner of the Soucy award. Kev flew the Pitts S-1S he had finished just in time for the convention. He watched Leo Loudenslager and the Christen Eagles fly and made it his goal to become an aerobatic pilot.

Kevin Elizondo

Following graduation at 17, he entered the U.S. Air Force and served as a flight mechanic aboard the DC-9 medevac aircraft at Scott AFB in Belleville, Illinois. Kevin spent his off time pursuing his goals, attending college, and learning to fly at the Scott AFB aero club. After leaving the Air Force at 20 years old he worked as a CFI and A&P, completing his Bachelor of Science degree at Parks Aviation College.

After graduating from Parks in 1987 he moved to the West Coast to work for Douglas Aircraft Company. Kevin is a former regional and major airline pilot and president of IAC Chapter 36 in Southern California.

IAC Election Opens

Nominations for the open IAC officer and director positions closed on April 5, 2016, and Nominations Chair Lynne Stoltenberg has announced the following candidates:

President: Mike Heuer

Secretary: Lynn Bowes

Directors (three to be elected): Debby Rihn-Harvey, A.J. Hefel, Rob Holland, and Ron Schreck

Candidate profiles can be found at *www.IAC.org* along with voting instructions. There will be no paper ballots this year, and voting will be electronic only. The balloting will close on Monday, July 25, 2016, and the winners announced at the IAC annual meeting in Oshkosh on Friday, July 29. The meeting begins at 8:30 a.m. at the IAC Pavilion. ***IAC***

IAC

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LETTER TO THE EDITOR

A Member Questions the Sequence

Dave Watson, IAC 26557

I am currently jumping for joy having read Giles Henderson's "Grassroots?" lambast of the recent choices made by our IAC Sequence Committee, our directors, and the entire board (see *Sport Aerobatics*, March 2016). I agree wholly with his implications that we are not doing what we are charted to do by fearing and avoiding putting spins in our lower category sequences. We recently polled our Chapter 38 membership and found unanimous consent that they want the spin back in Primary and Sportsman—FOR SAFETY REASONS! If IAC fears a deliberately initiated spin in these categories, why did they simultaneously design a Sportsman Known that essentially mandates a break be taken (probably even two breaks) in grassroots planes in order to avoid the high likelihood of an inadvertent stall-spin predicated by the poor energy flow at the end of the sequence? Even if the grassroots pilots are savvy enough to take the nearly necessitated break(s) to avoid the inadvertent spin it so tempts, why have we poked them in the eye with the 15 to 30 points of penalties they will likely accumulate over the contest in comparison to the higher performance planes? This is the true essence of "category creep." Please also see Gordon Penner's half-page disclaimer on the increased safety awareness necessitated by this diabolical sequence. (Thanks to him, too, for his article in the same issue.)

I do also agree with Giles that we need a new Primary sequence for 2017, but I am not in favor of the one suggested in his article for two reasons: 1) two downwind 45's on the same line, and 2) I don't think a 45 up with half-roll can be done competitively (or safely in all cases) by the grassroots pilots and planes (without inverted oil systems) that we need to encourage back into our ranks. Two years ago I sent a proposal to the Rules Committee; it seemingly went nowhere. I also suggested we change the name from Primary to Journeyman to try to give the category a more appealing name.

One more plug while I am on my soapbox. I think we need to remove the restrictions that hold Super D's in Sportsman (i.e., snaps that are universally known to damage these otherwise wonderful planes). This year the Rules Committee accepted a portion of my proposed rule revision to allow the substitution of a four-by-four for the snap in Intermediate Frees. I shout out "thanks" to them for that great first step taken. However and unfortunately, they simultaneously disregarded the intent of the entire proposal and put TWO snaps in the Known!

I would like to thank Giles and Gordon for the time and energy they put into their articles and hope many of our members make the call to their regional directors and/or respond to *Sport Aerobatics* if they also agree with the seemingly wrong direction our management is taking in these regards, despite the reassuring words (they have spoken and are quoted in Giles' article) that contradict these actions. I also hope our management actually reads this magazine and takes definitive action to determine if Giles and I are in the vocal minority or the majority—*and then report back and do something if we are in the majority!* We may be becoming a group divided over basic principles, and actually knowing what each of our leaders' intents are would be beneficial so that we can vote them in or out according to our individual desires. Words are one thing, actions are another.

A Response to Dave Watson's Letter to the Editor

Brian Howard, Chair—IAC Known Sequence Committee

Dave Watson's letter to the editor indicates there is some misunderstanding among at least a few IAC members about the process, thought, difficulty, and hard work that goes into creating and testing the Knowns for each competition year. The job of recommending Knowns each year to the board of directors for their review and approval belongs to the Known Sequence Committee (KSC), of which I am chairperson. Originally, the KSC's task was limited to the Primary through Intermediate categories, as the Advanced and Unlimited Knowns were left to CIVA to choose. Beginning in 2015, those two upper category Knowns were added to our responsibilities as well. The issues highlighted in Mr. Watson's letter deal principally with the Sportsman Known, however, and that's where the majority of my comments will be directed.

Creating a well-designed Known is actually quite a difficult task with the difficulty being inversely proportional to the category being flown. The upper categories generally are flying higher-performance airplanes, are much less affected by wind, and have a much wider selection of figures that may be used to compose the Known. The Sportsman Known, on the other hand, has a relatively small number of figures from which to choose, and must be designed to be flown by everything from Citabrias to Extras. The Sportsman pilots may be first-time competitors, or they may be wizened veterans. They may be flying their one and only Sportsman competition before moving up, or they may be "professional" Sportsman pilots, perfectly happy to stay put but wanting some new challenges along the way. Thus, Sportsman Knowns

must somehow be both fun and reasonably challenging while accommodating the entire range of airplanes and pilots showing up at a contest to fly the sequence.

There are no rules that govern the Knowns of any category. The only official guidance for Known construction is found in the *IAC Policy & Procedures Manual (P&P),* Section 221, which, for Sportsman, states: "Proposed power Sportsman Known sequences shall be flyable by aircraft without inverted fuel or oil systems, in the class of 115 hp Citabrias." Beginning in 1993 an unwritten policy of no snaps in Sportsman became a de facto standard. Interestingly, snaps were used in Sportsman from 1970 (the beginning of my personal records) through 1992. They were mostly full, horizontal snaps, but a couple of Sportsman Knowns during those years used full snaps on a 45 downline, and the 1984 Sportsman Known even used a half-snap on a 45 upline; a figure, by the way, just introduced to Intermediate Knowns in 2013. Recall that the pilots of the 1970s and '80s were generally flying much less capable airplanes than today.

Mr. Watson makes a point that there is no spin in the 2016 Sportsman Known and implies that this is a regular, and unwelcome, trend. There is no policy within the IAC, written or not, that spins will or will not be used in Sportsman Knowns. In fact, since 1970, there have been only three years spins have not been used: 1970, 2013, and 2016. Hardly a trend. There are, however, many good reasons to not use a spin in the two lower categories.

First and foremost, spins use a tremendous amount of altitude without proving a whole lot about the competitor's aerobatic skills. A Sportsman pilot has only 2,000 vertical feet of airspace to work within the box. Less altitude is available if the pilot wants some buffer at the bottom of the box so as not to risk being called low. A good planning number for a competition spin (spin plus achieving a viewable vertical downline plus return to level flight) is 1,500 feet, perhaps as little as 1,200 feet for an experienced pilot. That leaves at most 500 feet for the remainder of the figures in the sequence. Of course, some "gainer" figures (e.g., Immelmann) can add to that, but for the lower-performance Sportsman airplanes the amount of achievable "up" is minimal. Looking back at many of the Sportsman Knowns from past years, the sequences had to include two and sometimes three aerobatic turns to provide a decent number of figures in the sequence.

With the cost of attending contests and flying in general what it is, don't the Sportsman pilots deserve a sequence that uses the available box for much more interesting, fun, and challenging figures than a spin?

Second is the issue of safety. An oft-repeated mantra is that spins must be required in Knowns so pilots learn how to recover from any accidental spin in which they may find themselves. The facts and logic do not bear that out. Of course, absolutely all pilots require spin training, and my personal opinion is that formal spin training should be a prerequisite for competition. However, the training to properly execute an upright competition spin of one to one and a half turns does almost nothing to prepare a pilot for an accidental spin in an unknown direction and attitude. I could not find a reference to quote, but my recollection is that there has either been no spin fatalities or at most one spin fatality in all of IAC competition history. However, there most definitely have been several spin accidents involving solo pilots practicing competition spins. Let's figure out an acceptable way to ensure that all competitors have completed training from a knowledgeable instructor in the full regime of spins—upright and inverted, normal and flat, accelerated, intentional, and accidental—before being allowed to compete. But believing that not having a spin in every Primary and Sportsman Known sequence is contributing to a lack of safety is simply not supported by the facts. I urge you to read the article "23 Seconds" by John Morrissey in this issue for a complete dissection of the issue of spin training and spins in competition.

The Known Sequence Committee is composed entirely of very experienced competitors (past and present), instructors, and coaches who have experience in a wide range of airplanes. The sequences moved forward to the board of directors for their consideration have been test flown either by a member of the KSC or a designated and experienced "test" pilot, with the results of those test flights factored into the final recommendation. The 2016 Sportsman Known, for example, was test flown using both Decathlons and a Great Lakes. The test pilots reported that while the last figures in the sequence were challenging, they were flyable in those airplanes. We've also had a subsequent report from the aerobatic training program at the University of North Dakota (UND) that the "new Sportsman sequence turned out much better than expected, especially the last few figures." Note that this was in a Decathlon with two pilots onboard!

The maneuver that must be perfected to accommodate the 2016 Sportsman Known is the Immelmann. I have no doubt that those writing about the travesty of the Sportsman sequence are sincere in their belief that the lower-performance airplanes cannot perform the last maneuvers without a break, but with proper technique that is simply not true. Neil Williams, in his book *Aerobatics*, describes a technique for cleanly flying the Immelmann in a Stampe, an airplane with a max level flight speed of 101 knots, a redline of 120 knots, an empty weight of 1,146 pounds, and a 130-hp engine swinging a fixed-pitch prop. A perfect descriptor of a grassroots aerobatic airplane, no?

Some years ago Bill Thomas and John Morrissey expanded on Neil Williams' technique and developed procedures for flying the Immelmann in low-performance airplanes with zero chance of any autorotation resulting from a botched figure. John

has taught those techniques ever since at his Ashland training camp. In fact, the reduction in drag using these techniques is so significant that an airplane like the Decathlon will accelerate during the half-roll and have plenty of energy on completion for the 2-point roll. This technique for flying the Immelmann has worked so well that it is taught as a routine matter in the Decathlon to all of the students in the UND aerobatic program.

The lack of a spin in the Sportsman Known provides pilots with the opportunity to exit the reverse shark with any speed/energy they desire and maintain good energy during a properly executed slow roll with enough remaining for the Immelmann. The reason the roll after the Immelmann is a 2-point is to allow the aircraft to accelerate during the roll and the pause between the half-rolls. Further, that 2-point roll need not be centered over the Y-axis, just balanced about the Y-axis with the Immelmann.

The last point in Mr. Watson's letter I'd like to address is his comment regarding snap rolls in the Decathlon. Snaps have always been approved by the pilot's operating handbook (POH) for the Super Decathlon, and I believe the Decathlon type as a whole. To be sure, careful control of entry speed is essential, but using input from the UND aerobatic training program (one of the largest aerobatic training programs in the country using Decathlons), I have been informed that the ideal speed for a good snap in the Super D is 80 mph, 10 mph less than the maximum POH entry speed. One of the UND instructors reported to me that speed control was very good prior to each of the snaps in the 2016 Intermediate Known.

In regard to the oft-reported fuel tank issues when snapping a Decathlon, the fuel tank baffle defect was addressed by American Champion in any Decathlon manufactured or having had new wings installed since 2004. The UND program has no prohibition against its students flying snap rolls in its Decathlons during Intermediate competition, assuming the student has satisfactorily demonstrated to the instructor his or her ability to manage energy. Snap rolls in the Decathlon do presume careful control over entry speed, but all IAC Intermediate Knowns and Unknowns are designed to only use snap rolls where complete control over entry speed by the pilot is possible. Bottom line: The KSC is well aware of the constraints that, when adhered to, make snap rolls and Decathlons perfectly compatible.

The IAC does understand the need for sequences flyable by the grassroots pilots/airplanes. This year marks the first year we've split with CIVA on the Advanced and Unlimited Knowns to accommodate our pilots flying legacy airplanes. We've had a lot feedback from Advanced and Unlimited pilots during this first year of IAC-developed Knowns that they can now happily fly those sequences in airplanes that previously struggled greatly or simply were not capable of flying in those categories. The lower three categories are test flown in the legacy airplanes for the same reason: to ensure they are flyable by the benchmark airplanes specified in the *P&P*. To further ensure this remains true, this year I have added one of the chief instructors, and MCFI-A, from the UND program to the KSC. The UND program is certainly one of the best Decathlon aerobatic training programs in the country. Taking advantage of their expertise as instructors, their knowledge of the Decathlon's abilities/limitations, as well as having the opportunity for the proposed Knowns to be test flown by actual students with minimal experience will further ensure that future Known sequences pass the grassroots test before they are even recommended to the board.

IAC Knowns will continue to provide an opportunity for challenge and growth of skills while remaining fun and flyable by the full range of pilot experience and airplane capability (per *IAC P&P 221)* now inhabiting our organization. The Knowns may or may not include spins as dictated by the overall design. They may even require a little extra work before the season begins to learn or perfect certain figures or flying techniques. I'm pretty sure that's why we fly aerobatics. We want to have fun (the prize money certainly isn't the reason!), hone the skills we have, and learn new skills as aerobatic pilots. I trust this discourse has provided you with a better understanding of the process used to create the Knowns, and the care and diligence taken by both the KSC and the board of directors to ensure that the best possible Knowns are available for all IAC contest categories. **IAC**

Setting the Inverted Flat-Spin Record

Busting through 81 turns

BY SPENCER SUDERMAN

First They Call Me Crazy, Then They Ask How I Did It

On March 20, 2016, I flew the Sunbird S-1x experimental biplane to an altitude of 24,500 feet in the restricted airspace over the Barry M. Goldwater Range in Yuma, Arizona, then entered an inverted flat spin. At an altitude of 2,000 feet above ground level (AGL), the recovery was initiated and the Sunbird smoothly returned to level flight at 1,200 feet AGL. A new world record of 98 inverted flat spins crushed the previous Guinness World Record of 81 set by me in 2014.

Nearly everyone I talk to about this, especially pilots, call me crazy, then they ask how I did it. If you are going to break this record, you must start higher and spin faster than the last attempt, and that is what I did.

Two years ago on March 13, 2014, at Naval Air Facility El Centro, I climbed a certificated Pitts S-2B to an altitude of 23,000 feet—mainly due to the supplemental type certificated (STC'd) Electroair electronic ignition installed on the engine—then inverted flat-spun it 81 times. The record I broke that day was 78 turns set in 1999. From the Guinness World Records' point of view, more is more; however, I was never satisfied only advancing the record by three turns, so I set out to crush it on my next attempt—and 100 is a nice, round number.

Data-Driven Approach

Programs like this need key performance indicators (KPIs) to measure accomplishment and make go/no-go decisions at every milestone. My KPIs are time per rotation, turns per 1,000 feet of altitude, and ceiling. The Pitts S-2B, with its Lycoming IO-540 engine and MT constant-speed prop, takes 2.2 +/- 0.1 seconds to complete one inverted flat-spin rotation at the high rpm setting. This figure is consistent at every altitude and yields predictable descent rates. Having

developed performance tables of propeller (rpm) settings, manifold pressure, and resultant spin rates, I know the optimal settings to obtain maximum performance from the plane. These measurements were taken with multiple video cameras and analyzed frame by frame after every test flight with data transcribed into spreadsheets and crunched through algorithms that I have developed over the years of running this program.

The 2014 spin of 81 turns was actually 81.75, and my spreadsheets predicted that 83 turns would occur from 23,000 feet with recovery at 2,000 feet (21,000 feet of spinning). So my algorithms are accurate to within +/- 2 percent. After the spin stabilized by 22,000 feet, the rate was three turns per 1,000 feet. Just before the recovery at 2,000 feet AGL, the rate had increased to 5.5 turns per 1,000 feet. The average rate was 3.9 turns per 1,000 feet for this spin. To break that record and hit my goal of 100 turns, I would need to find an airplane that could average 4.5 turns per 1,000 feet and start higher.

The algorithm predicted 100 turns, given 22,000 feet of spinning would be required. Since I knew that I would initiate the recovery at 2,000 feet AGL, it meant that I would have to start at 24,000 feet AGL to hit the goal.

Flying in the requisite altitudes for this spin is no easy feat for the common stable of aerobatic planes in the world today, given the fuselage length, distribution of mass, engine/prop technology, and airfoil design meant for low-altitude performance. Even state-of-the-art composite monoplanes are challenged by design to climb higher than 23,000 feet and deliver more than 80+/- turns. Further complicating the approach to solving this challenge is that shorter airplanes spin faster due to mass closer to the center of gravity (CG) but lack the horsepower to haul themselves into the flight levels.

Spencer Suderman smiles after accomplishing his mission, a world record for most inverted flat spins.

After carefully studying the inverted flat-spin performance of several Pitts S-1s and finding that they tend to make one rotation in 1.8 seconds on average, I determined that this turn rate would get the job done. The S-1 and the S-2B have similar wing loading and power-to-weight ratios. Given the shorter fuselage on the S-1s, I had confidence that this was the critical success factor for the mission. There were still many unknowns—particularly around the capability of any given S-1 to reach flight level (FL) 240 since the S-2B struggled to climb above FL 230.

Lack of Experts

During the summer of 2014, while attending EAA AirVenture Oshkosh, I set out in earnest to launch the 100-turn inverted flat-spin program. Lining up sponsors was easy because they saw the publicity that my 81-turn sponsors enjoyed, but finding the technical expertise to guide me proved to be the real challenge. The inverted flat spin, in my opinion, is the most misunderstood aerobatic maneuver.

Part of my early research was to prove that there is no laminar flow over the wings during the maneuver, so normal control inputs to aggravate a spin simply don't work as many pilots believe. So many "aerobatic experts" gave me advice, unknowingly erroneous, that I could accelerate the spin by pulling back on the stick during the maneuver. My cameras told me otherwise after applying tufts of yarn to the tail surfaces and trying different stick and rudder positions during spin tests. That testing ended after demonstrating conclusively through video documentation that as long as your right foot keeps the rudder pedal on the stop and the prop/power setting is optimal, there is a nominal spin rate for the plane. This is critical knowledge because inverted flat-spin rate is about rpm and propeller weight, not flight control manipulation.

Sunbird S-1x

I first saw the Sunbird S-1x in early December 2014 and knew it could help me accomplish my goal. Dan Rihn designed the Sunbird in the late '70s using the ideas of the Pitts S-1 reimagined into an airframe with a 260-hp Lycoming IO-540 engine! At just under 1,000 pounds empty weight with a three-blade, wide-chord MT propeller, it was more than 200 pounds lighter and 3 feet shorter than the S-2B. That combination of attributes promised to get me the altitude and spin rates to do the 100-turn spin!

Just after the New Year's celebration of 2015, the Sunbird arrived by trailer at Ray's Aviation in Santa Paula, California, to begin its preparation for a world record flight. Since the Sunbird is experimental, it became a test bed for several technologies to lighten the plane and make it perform better. Electroair provided their STC'd electronic ignition, and Sandia Aerospace provided a lightweight STC'd STX-165

transponder/encoder unit. EarthX Motorsports provided a lightweight lithium iron phosphate (LiFePO4) battery that weighs 3.9 pounds, and Micro AeroDynamics provided vortex generators that enabled the flight controls to remain effective in the high-altitude thin air for the climb and spin entry. Aerox provided a full mask rebreather bag type oxygen system that is STC'd for use up to FL 250 and makes efficient use of the oxygen bottle, thus allowing the smallest and lightest version to provide a sufficient supply.

My first flight in the Sunbird occurred the morning of April 9, 2015, and was unforgettable! Lining up on Runway 22 at Santa Paula, I took a deep breath and pushed the throttle forward. What happened next was unbelievable—it hit 80 mph in four seconds and jumped off the runway in 500 feet, then accelerated past 140 mph as it climbed at a 45-degree angle. The Sunbird is a rocket!

At my home airport in Camarillo, California, the runway is 6,000 feet, and my Pitts S-2B can reach 1,500 feet at the end of the runway with a 90-mph climb at a 40-degree deck angle. The Sunbird can reach 2,300 feet with a 60-degree deck angle at 90 mph. Given the way the Sunbird outclimbed the S-2B, it became apparent that reaching altitude would not be a problem.

The Dream Slips Away

The remainder of the spring and summer flying consisted of documenting spin performance using my methodical approach with incremental changes to rpm and throttle settings recorded on a spreadsheet. The results were not looking good as the Sunbird not only spun slower than the S-2B with similar settings, but I couldn't find any combination of settings that produced a faster spin. I saw my dream slipping away and was dreading the inevitable phone calls to my supporters, admitting failure.

When the Sunbird was first completed in 1990, it had a two-blade Sensenich fixed-pitch propeller that was later replaced by the MT. The Sensenich weighs 42 pounds, while the MT weighs 68 pounds. It was suggested that a reduction in spinning mass would lower gyroscopic rigidity (polar moment of inertia), which might be too great for the diminutive mass of the Sunbird to overcome. If this theory were proven correct, then it would explain why the S-2B spins faster, given a nearly identical engine and prop.

Redemption

By early autumn, the original Sensenich prop was back on the Sunbird and test flights resumed. The takeoff performance of the plane was no longer exciting, but the first inverted flat spin was practically a religious experience! I immediately knew the plane was spinning faster, but I had no idea how fast until I looked at the video. The Sunbird was inverted flat-spinning at 1.7 seconds per rotation! After a few more flights, I decided to have the Sensenich repitched for better climb performance. The last few test flights were to measure time to 17,999 feet, and the results were highly encouraging.

While the plane spun faster with the fixed-pitch prop, it was also descending faster. The most important KPI, turns per 1,000 feet, had improved, and that was what really mattered. Another interesting observation was that spins per 1,000 feet were much faster at higher altitudes than with the constant-speed prop. The next thought to cross my mind was to get a lighter fixed-pitch prop, as there are modern composite propellers on the market that weigh less than 20 pounds; what stopped me are the weight and balance issues that would be created.

The CG envelope for the Sunbird is 1.8 inches, and the heavy MT prop required lead weight at

the tail to keep the CG at the aft end for better spin performance. It would have been very challenging to add 22 to 24 pounds to the nose to compensate for a lighter prop. Given the current performance and the projections from my spreadsheets, I knew that the Sunbird would break the previous record even if it only reached 20,500 feet, and I was confident it would go much higher. At this point, I was losing hope for the 100-turn spin, but more than 81 seemed assured.

Karl Ott gives a final thumbs-up before Spencer attempts his record flight.

Going for the World Record

Having planned from the start of this program to work with Marine Corps Air Station (MCAS) Yuma to break the record in the restricted airspace over the Yuma Proving Ground, I called to get on the schedule for November 22, 2015. Departing from Yuma International Airport/MCAS Yuma at 8:20 a.m., I reached 23,500 feet at 8:51 a.m. and entered the spin.

What happened next was surprising as the rate of spin was noticeably faster than I had previously experienced. The reclined seating in the plane, which works well for positive-*g* tolerance, was working against me as I spun inverted. Centrifugal forces drove my body toward the tail, and the seat acting like a ramp forced my head into the canopy. I literally couldn't breathe as my head and neck jammed into the canopy, creating the risk of positional asphyxiation. Recovering the spin after only 5,000 feet, I flew back to the airport thoroughly disappointed.

How could this have been a surprise after all of that flight testing? The answer was found after reviewing the videos from the flight. The spin rate was 1.5 seconds per turn, much higher than I had experienced during practice spins in the lower altitudes. The good news was that flight data from the cameras improved the performance algorithm for the plane, supporting the probability of hitting the 100-turn goal if I could get through the maneuver.

My crew chief, Karl Ott, a Cessna 172 pilot and a former race car builder/driver, fitted an additional lap belt with crotch strap into the plane that is lower than the Hooker Harness to keep my body from moving. I now had an eight-point seat belt system. After test-flying the new seat belt, I again called MCAS Yuma and scheduled the airspace for December 13, 2015.

Departing Yuma on the 13th for attempt number two was a repeat of attempt number one, except that I let the Sunbird climb until it simply wouldn't go higher; it reached 24,600 feet. I entered the spin and got past the first 5,000 feet, then began to notice—while straining to keep my head in position to see the panel—that I could feel pressure and pain building from the neck up. At 15,000 feet, unable to continue, I recovered from the maneuver. The spin got the better of me for the second time. Experimental airplanes are like this; you solve one problem, then find several others that need fixing as a result.

The seat in most Pitts-type planes is a function of the airframe; an aluminum pan stretched across the frame rails, and the reclined position of the Sunbird's pilot seat was not working for me. Once again, Karl leveraged his race car background and engineered an aluminum race car seat into the plane with no modifications to the airframe. This provided an upright seating position similar to the S-2B and a headrest to take the strain off my neck.

On Saturday, March 19, 2016, my crew and I arrived in Yuma to prepare for Sunday morning's third attempt at breaking the world record. Mike Kobylik, president of Electroair, was there to support me and share in the potential success. His company's ignition technology was the critical success factor when the 81-turn record was set, and this attempt was no different. I ate a bowl of Lucky Charms at breakfast, then got on with the task at hand.

Takeoff occurred at 8:41 a.m. on the 20th. I reached 24,500 feet at 9:15 a.m., where the manifold pressure was merely 10 inches and the outside air temperature was -12°F. The spin was entered at 9:18 and 22 seconds. The old record of 81 turns was broken at 9:20 and 47 seconds at an altitude of 5,300 feet AGL when the 82nd turn was completed. The recovery began at 9:21 and 17 seconds at 2,000 feet AGL after 98.5 turns—just under 3 minutes after it began. The Sunbird returned to level flight at 9:21 and 24 seconds at an altitude of 1,200 feet AGL.

A world record was set that will be very difficult for anyone to beat; however, the century mark was not surpassed. I doubt any plane will spin faster, but one could start higher if it's lighter, breathes better in thin air, and has a motivated pilot at the controls. IAC

Intentional vs. Unintentional Spin Recoveries

The fastest spin recoveries result from intentionally spinning the plane. That statement does not imply the recovery method is faster or more efficient, only that the pilot quickly moves through the step of recognition into recovery. Intentionally spinning a plane is a controlled maneuver, no matter the spin mode or attitude. The experienced pilot knows how he entered the spin and thus how to recover, so the resultant altitude loss from entry to recovery is minimal.

I know from experience that a Pitts will recover from a fully developed power-on inverted flat spin to level flight in less than 1,000 feet. There is no question as to spin direction or flight control position, so at the desired time I simply employ PARE (power to idle, ailerons to neutral, rudder to opposite, elevator to neutral or beyond as needed), then recover from the dive.

Spins resulting from botched aerobatic maneuvers or skidded base-to-final turns in the pattern are the most dangerous because they surprise the pilot. It is entirely likely that an unintentional spin will not be recognized in the incipient phase and will become developed before the pilot realizes that a spin has been entered. Botched aerobatic maneuver spin entries rarely look like the intentional entry. In some cases, the plane may yaw gently in the sky, then suddenly and violently spin—especially if the power is in. How much altitude will you lose before you even recognize that the plane is spinning?

There is good reason to practice new maneuvers higher than normal until you can consistently recover with the same indications in start and finish altitudes and airspeeds. Practice spin recoveries regularly and preferably in a two-seat plane with a qualified instructor who tells you to close your eyes until he has put the airplane into a spin, then makes you do the recovery, with eyes open, of course! If there is more than one method to recover a spin in your plane, know them and develop the discipline to execute the recovery and wait the required time for the spin to stop.

For instance, PARE works in every plane; however, the Beggs/Mueller emergency recovery (power off, hands off, rudder opposite) only works 100 percent of the time in a Pitts and may not work at all in other planes such as the Decathlon. It is not easy to have the discipline under pressure to let go of the stick if this technique hasn't been well-rehearsed.

If you are afraid of spins or certain kinds of spins, then get with an instructor and do more spins! Your aerobatics will improve only when you have the confidence to fearlessly perform the maneuvers.

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23 Seconds

BY JOHN MORRISSEY, IAC #3238

As this is our yearly safety issue, I'd like to take this opportunity to share some thoughts about spins, both in and outside of our competition arena . . .

This is not a traditional "how-to" piece, but rather a reflection, perhaps an eclectic one, on the benefits of proper spin training, as well as balancing the risk-management equation when placing mandatory spins in entry-level compulsory flight programs. This is not a push to eliminate either spin training or spins from competition. Rather it is just an outside-the-box think piece that focuses on the risk/reward aspect of including spins in the lower altitude arena of competition aerobatics—perhaps something aerobatic instructors, entry-level Primary and Sportsman pilots, and even contest directors may want to rethink.

Let me begin by looking at the rationale for spin training outside the competition arena. Simply stated, this training is mandatory for anyone who plans to engage in all-attitude flight. Aerobatic aspirants must learn to confidently recover from both proactive and inadvertent autorotation. In fact, this training should be mandatory for all pilot certificates, as it is never a question of *if* one is going to have a departure from controlled flight, only *when*. *Departure* is a protocol word that means an unintentional transition from the flight envelope at less than the stall angle of attack (CL_{MAX}), to autorotation in the post CL_{MAX} regime. When this unintended transition from good guy country to bad guy territory occurs, it is assumed that all departures have an extremely high probability for disorientation. It is for this reason that both emergency spin recovery procedures, as well as traditional proactive spin recovery methods, must be mastered.

By way of a brief review, the emergency recovery procedure should always be used following a departure when the associated disorientation severely limits timely and accurate determination of the spin direction and/or type. The emergency recovery method must also be used anytime an intentional spin recovery procedure is not working. This reversion to the emergency spin recovery method must be an immediate preplanned default reaction. If the intentional spin recovery is not producing results, the pilot is doing something wrong; therefore, one must *immediately* transition to the emergency recovery procedure, as it eliminates most of the decision points required for preplanned recovery

procedures, i.e., the upright or inverted spin determination. And of course, all of this training should be accomplished at 6,000 feet AGL or higher to allow as much time as possible to sort out any recovery procedure errors, to minimize time compression during recovery attempts, and to provide adequate time and altitude for successful parachute use if the recovery problem cannot be solved.

INQUIRING MINDS

I was curious how many of our Primary and Sportsman pilots have had thorough and extensive spin training covering all aspects of intentional and emergency spin recovery procedures. And I wondered if this training covered the result of incorrect out-spin aileron use in both positive and negative spins? And had that training required the student to demonstrate *proficiency* in handling those unintended eventualities?

So I asked a few of them, 35 to be exact, about their spin training. It turns out only three of those pilots interviewed had received the exposure and training I felt is required to handle the 'what if' situations that can and do occur when one is learning spins. Most, but not all, had trained in upright spins of up to one and one-half turns. Some were just self-taught using procedures they learned from books. Many had heard of the emergency recovery procedure but had not actually received specific flight training or experience with the procedure. Interesting!

Now let's continue with this thread and think about spins in the lower altitude environment of our competition arena. To put ourselves in this mindset, try to imagine yourself flying in the box as an unobserved spectator with an entry-level pilot in the Primary sequence—a pilot who has received only limited, but not extensive, training in the entire spectrum of spins. Watch closely as our pilot begins by setting the 45-degree line of the first maneuver and exiting for the one-turn spin at 3,500 feet. Quickly now, spin coming up. Idle. Stall. Stick full back. Left rudder, full in. Ailerons centered? Well, close, but the stick is offset a little to the right.

We can break the rules, but we cannot escape the laws of physics.

During recovery we observe another small procedural error—forward stick is applied *prior* to recovery rudder. Rate of rotation increases instead of slowing, stick is now very hard to move forward... aircraft not responding as the pilot remembers...pilot continues to try to solve the problem...time compression begins...then uncertainty...rapid, flailing movement of controls...still spinning... panic...realization...then, too late...too late...too late....

Unusual? Unlikely?

Not in my experience. I have watched this scenario dozens of times when giving spin instruction over the past 33 years. And this does not even begin to cover the many other unintended control inputs that can cause departures and prevent their recoveries. The most common

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serious error I have observed is the unintentional use of out-spin aileron in upright spins to either stop the rotation or to try to help the rudder stop the rotation—the perfect combination of events that leads rapidly to the perfect storm—the flat spin mode.

FACTS AND FIGURES

Now let me make this time-compression scenario a bit more realistic by looking at some actual flight-test numbers associated with time remaining when the aircraft does not answer the helm during attempted spin recoveries. In a vanilla upright spin from the top of the box at

We were no strangers to the concept of jettisoning doomed aircraft.

3,500 feet, one has approximately (~) 28 seconds and 3,100 feet to stop the spin and begin the pull to level flight.[1] To accomplish this, the spin must be stopped and recovery begun at least 400 feet above the ground. And to accomplish this, any spin recovery issues must be sorted out by at least 800 feet on the altimeter to compensate for altimeter lag and allow for the altitude loss experienced during the transition from autorotation to the downline where the pull to level can begin. Applying those figures to a basic one and one-half turn upright spin, a typical aircraft will lose ~450 feet and five seconds by the time the aircraft completes one and a half turns. At this point the pilot has ~3,050 feet of altitude remaining to stop the autorotation and complete the pull to level flight. Four hundred feet of that 3,050 feet is going to be required for the pull-out from vertical down to level flight. This leaves the pilots with ~2,650 feet (~23 seconds) to sort out any recovery problems.

Only 23 seconds!

And those 23 seconds are from the point where recovery should have begun. By the time the pilot begins to realize he is having a problem, as mentioned in the previous Primary flight example, fewer than 23 seconds are available. Said more realistically, if the initial spin recovery control inputs do not immediately produce normal, reassuring evidence of recovery, then exiting autorotation is highly unlikely for pilots with the limited spin training and experience previously mentioned. Once 23 seconds have elapsed, there may not be enough altitude left for recovery even if the spin is stopped. Throw in a few more seconds and recovery is impossible. We can break the rules, but we cannot escape the laws of physics. When the time-distance equation begins producing negative numbers, ground impact is inevitable.

CALLING IT QUITS

At this point I believe a word is in order about bailing out in these circumstances. The parachute is not a viable option if spin recovery is not well in hand after the initial spin recovery controls are applied. Let me say this again. If the spin is entered from 3,500 feet and cannot be stopped at the desired number of rotations, for whatever reason, bailing out is no longer a viable option to save the pilot. There is no longer enough time or altitude to exit the plane and open the chute.

I realize that statement is not intuitive, so please bear with me while I explain. When I was leading the four-ship Pitts Black Hawk Aerobatic Team in the mid-'80s, our slot pilot, Lew Shattuck, and I decided to see just how long it would take us to exit the cockpits of our Pitts S-2Ss aircraft if we were faced with a bailout situation. I put on my chute, strapped in, and closed the canopy. In the single-seat S-2S the canopy is opened by first unlocking the latches holding it forward, sliding it to the rear, and locking it in place with, unfortunately, about 2 inches of the canopy still protruding forward into the cockpit area. Lew then walked out of sight. Just as I began to think he had been distracted by another task, I heard and felt a loud bang on the turtledeck. At that instant, Lew started his stop watch. I won't drag you

COURTESY JOHN MORRISSEY

The author in his S-2S, and (below) with the 1986 Black Hawk Team.

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through the rest of the details except to say that all I had to do to stop that watch was to open the canopy, release my two safety harnesses, remove my headset, stand up in the seat, and get one leg out onto the wing walk. We each tried it four times. Our best time was 23 seconds—and this after several attempts inside a hangar with no wind, lateral *g*, or panic. From this data we determined that if we experienced a control jam in pitch

. . . the spin is much more of an air show demonstration and/or a maneuver to be mastered for safety considerations rather than a pure classic aerobatic figure.

on a vertical downline with a true airspeed of ~170 mph, we would have to initiate our egress at 6,800 feet to give us any chance of a chute opening by 500 feet, and only then if everything worked perfectly. We were no strangers to the concept of jettisoning doomed aircraft. During the course of our Air Force careers Lew had ejected three times and I once.

So please allow me another little sidebar to the main discussion here. Bailing out of an aircraft in a vertical descent can and will take a lot more altitude that one might think, especially if cockpit exit procedures are not refined and practiced. So remember this if and when you must leave your aircraft: Unless there are flames coming back over the canopy, always open or jettison it prior to unstrapping. And always take off your headset prior to trying to rise from your seat. If not, you will find yourself smartly yanked right back into the sitting position. If your headset is integral with your helmet, the decision on helmet removal is yours, but if all you do is unplug the jacks before you jump, those two jack cords will beat you unmercifully prior to chute opening and can get tangled in the risers as well. With helmets, a quick-pull radio cord disconnect at the helmet will save

the day, especially if you forget to manually disconnect your jack plugs.

Another important issue came up during flight verification of these figures that needs to be emphasized. A fully developed spin will take longer to stop after recovery controls are applied than those from typical Aresti competition variants. Those two-turn (or less) spins recover nicely when full opposite rudder is applied about 45 degrees prior to the desired exit heading and forward stick at 20 degrees prior. Well developed spins that have continued for ~3,000 feet or more can take two to three turns to stop the rotation. And of course this takes more time and altitude.

I realize that the data in our sport would seem to be counterintuitive to my findings. I can only remember one spin fatality during actual competition since 1975, and that was in the Sportsman category. However, I have been on the judging line when I have observed three incidents that could easily have gone either way—close calls that had only three to five seconds left before recovery would have been impossible. One was a world-class pilot at a world aerobatic contest. It was a near run recovery with only a hundred feet to spare. Likewise, I do not know how many have perished in self-taught attempts to master spins. I suspect there have been more than a few, as I have had to assist several pilots with their recoveries during spin training. My experience is that the quality and confidence of our entry-level competition pilots is not now what it once was years ago when many of our aerobatics accessions had been trained in tailwheel aircraft by instructors who were well-qualified in such matters and demanded a high level of proper rudder usage skills.

I have also started to feel that in addition to the risk management aspects of entry-level competition spins, there are two other factors that might favor the elimination of mandatory spins in these categories.

The first factor: energy. I always plan for a 1,500-foot altitude loss for a competition spin. In Primary and Sportsman we only have 2,000 feet of altitude to use. The 1,500-foot loss in a spin is just a straight short to ground energywise. If eliminated it would give our grassroots aircraft significantly greater competitive capability while increasing the effective amount of altitude for the sequence by about 500 feet as well as eliminating the energy loss required when slowing for the spin entry.

The second factor is a nontraditional outside-the-box thought concerning aerobatic competition: In the truest sense, the spin is much more of an air show demonstration and/or a maneuver to be mastered for safety considerations rather than a pure classic aerobatic figure. In a sequence it always causes an undesirable tempo change when the rhythm and energy of the performance are decreased for spin entry, only to be regained at a significant sacrifice in altitude. When I offer either a proposed Known or Unknown compulsory sequence to either the IAC or CIVA, I never include a spin as it is required in the Free program's versatility requirements. And one spin demonstration per contest category should suffice.

To be clear, this is just a think piece on safety, with no specific agenda other than a request to review mandatory competition spin requirements from a different mindset. Try considering the issue from this perspective: When a loop goes poorly, or a roll dishes out above 1,500 feet, the results from a safety sense are usually negligible. When an Immelmann or a hammerhead goes wrong, there is real potential for a departure, but at least the aircraft is going up when the trouble begins.

When a spin goes wrong, the plane is headed down, time is short, the response must be perfect the first time, and the ground is unforgiving. ***IAC***

John Morrissey is a former member of the Society of Experimental Test Pilots and the recipient of the 2001 IAC President's SPIN DOCTOR award.

[1]Times and distances will vary with center of gravity (CG), spin mode, and aircraft type. These figures are for a Pitts S-2A with the CG in the middle of the fore and aft range, full aft stick, and left rudder with ailerons centered.

Growing New Judges

One volunteer at a time

by Wes Liu, Chair IAC Judges Program

Just as the airplanes we compete in have evolved through the years, the IAC Official Contest Rules has become a thicker book. In 2016, those volunteering for their first contest as grading judges have to be ready to look at many details—corners, lines, loops, rolls, etc.—of each of the many Aresti figures that they see flown in front of them.

Historically, candidate regional judges sit as assistant judges and try to learn to rapidly read and speak Aresti to the grading judge, while they also try to peek at the competitor executing those figures. Our assistants are learning to read and speak Aresti, but we are falling short when it comes to teaching them how to grade a figure that is being executed at 200 mph in front of them. We see that for the first two or three contests, our new judges tend to be a little too generous with the scores they award as their critical eyes and math skills come up to speed.

We need to teach grading figures. For 2016, we will be updating the practical experience requirements for candidate regional judges to include working with a current judge to observe a practice day or contest flight and to try calculating and speaking grades. This means that candidates will find a current judge to work with, and we will encourage current judges to recruit and mentor candidate judges.

So how will this work in practice? At the 2015 Kathy Jaffe Challenge, candidate judge John Fellenzer and national judge Rick Runnels volunteered to try working together as mentor-student. Here is what they had to say:

Rick: I mentored John in the Sportsman category, which I believe works best for many reasons. It provided more time, relatively speaking, to look at and discuss the different components of a maneuver in their basic form, in real time—very similar to critiquing pilots on their sequences. We were able to talk and see what makes up the maneuvers and what was lacking, so we were able to discuss the downgrades and then total them up, working from 10 and keeping track of the current score as we deducted the downgrades.

I structured it by having him call the maneuvers for the first half of the first flight, with me stating what I was seeing to come down with a score. During the second half I asked him to come down with a score, then I gave my score to the recorder and told John why I scored the flight as I had. John found it amazing how much lower my actual score was than what he had given. During the second round of flights I did one flight and John did the next. Each time, I agreed or overruled his score with an explanation of why, and I gave the recorder my final score so I still held ultimate responsibility. As we did this, John's grading scores became lower as he understood why I gave a lower score than he did.

John: We judged 45 flights during the Kathy Jaffe Challenge contest held at South Jersey Regional (nine Primary and 36 Sportsman flights). Rick structured the program much like the "telling and doing technique" used in flight instruction (instructor tells, instructor does, student tells).

When it came time for me to make the call and provide a fair and unbiased grade for the competitor, I was very surprised at the level of pressure and the speed at which the figures were flown. As a competitor since 2005—several times a contest director, club officer, and as an assistant judge for many years—I felt I had a very good understanding of the figures, grading criteria, and the ability to call the numbers with little to no error and with good consistency. Well, I can tell you I overestimated my abilities. At first it all seemed a blur, as one figure morphed into the next. Lines, angles, radius, pauses, aircraft attitude, trajectory, etc. were happening at a rate that was nearly impossible to keep ahead of—and we are talking Primary and Sportsman flights. On more than one occasion I fell well behind the power curve.

It's clear to me that without the mentoring program, my first few calls as a grading judge would have been well off the mark, and my lack of consistency would have resulted in improper results for the competitor.

I am highly impressed with the mentoring and how it has given me greater confidence in my abilities—and more importantly, a better expectation for proper grading.

Rick: On the third flight I had him score all the flights with me, basically agreeing with his score with few changes. So looking at the score sheets after the category, we seemed to be close to the lowest-scoring judge. Ha!

It was interesting seeing the progress John made and discussing why it is easy to give a higher score. Very common in judging. We want competitors to "feel" good about their flights, but that really does not help them become better competitors. John began to realize how a pilot could owe us points!

In summary, Rick and John's experience is one example of how we can help our candidate judges maintain their enthusiasm, get more from the training, and arrive at their first contest as regional judges ready to deliver scores just as accurate as those of their more experienced peers. We plan to add this activity to the requirements for 2016. Candidate judges can meet a current judge at a chapter practice day or a contest. For current judges, this is an opportunity to pass on all of the skills and experience they have gained. Everyone wins.

See you at the box.

A-Form Chicken Scratches

Recorder shorthand

BY WES LIU, CHAIR IAC JUDGES PROGRAM

I recently attended a contest with retired Navy squadron commander David Taylor, who has started competing in a Staudacher. Dave related to me that every Navy pilot who lands aboard the ship is graded just like International Aerobatic Club competitors are. There is a team of landing signal officers (LSOs) taking notes for the pilot's permanent file for every shipboard landing. Dave also explained that the Navy LSOs have a standard shorthand they use so that you can go to a pilot's file years later and understand exactly what the judges saw during an individual landing.

How does this relate to the IAC? At contests we recruit a lot of otherwise unskilled friends and bystanders to perform the recorder role in the grading judge teams. These nice folks do their best to scribble down what they hear the grading judges say, with different amounts of ability and handwriting quality. If we, the grading judges, have time, we brief these volunteers on some of the common comments they will hear and how they might write abbreviations. You probably explain it differently than I. And it always happens that sometime later, our competitor friends, especially the Primary and Sportsman pilots, stop us with the A Forms in their hands and ask, "What does this mean?"

Dave's suggestion was that we pull together the common abbreviations into a list and/or tell the recorders to just write the first letter of each word we give them. The obvious benefit will be to free the inexperienced volunteers from having to invent abbreviations, letting them write faster and more completely. If the recorder can capture more of the grading judge commentary, our competitor friends will be less likely to see an incomplete and incoherent scrawl.

The table below captures some common abbreviations that I have seen used. I added some abbreviations to the list that capture comments that I make when acting as a grading judge. In writing these down, I noticed that most of the abbreviations are pretty unique. That will help future readers of A Forms. The judges reading this list might know of additional common judge comments and abbreviations. I suggest that it can be a "living" list. The list can go in the contest director's material on the IAC website if it will be helpful.

If these abbreviations help, contest directors and chief judges can hand out copies of the below list to recorders when setting up the judges line for each category.

Feedback is welcome.

Form A Shorthand
Form A Remarks Box Abbreviations for Judges Line Recorders

CL	Climbing
D-	Descending
+↑	Positive up
-↑	Negative up**
+↓	Positive down
-↓	Negative down
EH	Exit high
DLW	Dragging left wing (add + or - for up or down)
DRW	Dragging right wing (add + or - for up or down)
-45	Shallow 45
+45	Steep 45
+R	Long after roll
-R	Short after roll
PTL	Pinch to line
F@3	Flat at 3 o'clock (or whatever o'clock the competitor is flat at)
VR	Varied rate
OR	Opened radius, as in "opened radius at 4 o'clock" or "OR@4"
CR	Closed radius, as in "closed radius at 2 o'clock" or "CR@2"
OC	"Ovalled" corner, as in "ovalled corner 2"
FO	Flew over
TQ	Torqued
NP	No point
OVR	Over rotated
UR	Under rotated
AFT	After
LOW	Competitor appears to be flying too low
LOW-LOW	Competitor appears to be flying very, very low

PRESIDENT'S COLUMN

contintued from page 3

One of the best pieces of news I have is this—Gary DeBaun will be back as our contest director for the 2017 Nationals. Gary first served as the contest's leader in 2015, is continuing that work this year, and has postponed a planned trip to Europe and will head up our Nationals operation in Oshkosh. Gary is a delight to work with, very experienced, and will help ensure we have a superb event.

My thanks also to Jack J. Pelton, EAA's CEO, for supporting the IAC and for the excellent cooperation we have received so far from the EAA staff. Their support is crucial to a successful event.

Safe flying and keep in touch! IAC

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No more packing

Future operational procedures

Where did 2015 go? It's 2016, Easter has hopped on by, and everyone is busy preparing for this year's flying season. How do I know? I'm being inundated with parachutes to pack. It seems like I just returned from December's ICAS (International Council of Air shows) convention in Las Vegas.

As I looked around at all the activity at the convention, I had to think back on my own career in the air-show industry and what it has meant to me. I saw before me many new and rising stars, and I also saw the images and faces of those who had "gone west" into the setting sun.

> This time of year I've always had to prepare and deal with the expected rush of pilots getting ready for the upcoming season.

In some form or another I've been involved with parachutes and the air-show industry for more than 50 years. I have almost 600 faithful customers, many of whom are also my friends. Even while thinking back on the 80-plus saves I've had, I realize now is the right time for me to switch gears and start smelling the roses.

This time of year I've always had to prepare and deal with the expected rush of pilots getting ready for the upcoming season. Once the sun comes out for more than two days straight, many of you start to panic. I hear the cry, "My airplane needs dusting off, I need dusting off, and my parachute needs servicing." To put it mildly, it's a busy time for me. But as of May 1, I will no longer be packing pilots' emergency parachutes. Between my 25-year Air Force career and my civilian customers, I've packed well more than 35,000 parachutes. My hands are telling me *loud and clear* that they need a rest.

In my opinion it takes a special person to pack and service a pilot emergency parachute, and after looking for almost two years for someone who could take over the packing portion of my business, I've found him. His name is Robert Marshall, and he lives in southern California. By the time this column is published, most of my customers will have received an e-mail with all the details.

I'm not disappearing. I will continue to manufacture my five-point AcroBelt and SMAK PAK Survival Kits for your parachutes. Most importantly, my 30-plus-year relationship/dealership with the Softie line of pilot emergency parachutes, manufactured by Para-Phernalia, will remain as solid as before.

I also want to assure my faithful readers that I will continue to write this column as long as the folks at *Sport Aerobatics* will let me. Here's a plea for your help. I'm always looking for fresh ideas and questions to answer, so please continue to e-mail them to me. You can also call me with your questions and suggestions if you like.

One of the things I've enjoyed the most is traveling around the country and world, giving bailout seminars for pilots. It has given me the opportunity to meet many of you in person and to answer specific questions related to your parachute or aircraft. The title of my PowerPoint seminar is "Emergency Bailout Procedures for Pilots and Survival Equipment." The handout material for my presentation can be found on the home page of my

website, *www.SilverParachutes.com*. This past year I've also been asked to give a different kind of presentation. It's on my air-show career, which spans more than 40 years. Many of you already knew I was a professional sky diver, wing walker, and airshow announcer. Now I can also bring your group a presentation that includes a lot of video footage of my career. I'll let you decide, but I've been told the presentation is humorous and a lot of fun.

I still fall out of an occasional aircraft. After all, I've been doing that for more than 54 years and will continue to make occasional pilgrimages to the drop zone. However, I truly enjoy staying in the aircraft and have more than 1,900 hours. Now what can I do next?

I suppose before I sign off I should give you some pearls of wisdom.

One issue that keeps recurring is that I receive parachutes so far out of adjustment that you could fall out of them if you had to bail out. Remember, don't leave home (I mean your aircraft) without it. Falling out of your parachute harness is another sign of a very bad day. Please have your parachute *checked by your rigger for proper fit*. He or she needs to know your height and weight. Suggest that the webbing be hand-tacked in place once it's adjusted properly to prevent slippage as you go about taking it on and off before and after each flight. If you don't visit your rigger in person, maybe sending a picture of you with your parachute on will help him or her properly adjust it.

Another issue I often see in my shop is the rip cord protector flap being bent from people getting in or out of their aircraft. Please do not force yourself into or out of your cockpit. If you are hanging up on something like your seat back or the turtledeck, alter the way you enter or exit your aircraft. Don't be the proverbial bull in the china shop. This could dislodge your rip cord pins and accidentally open your parachute container, requiring a repack. Even more interesting and exciting—imagine what could happen if it inflates in strong winds. That's why it's so important to check the security of your rip cord pins *every time* you put your parachute on.

Enough for now. I need to start thinking about packing my shorts and sunscreen and deciding on a beer or mai tai. Remember, I'll still be doing most of what I did before, but *no more packing and no 9-5 sign on my door*. I welcome your comments and questions. Fly safely. **IAC**

CONTEST CALENDAR

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

Sebring Spring (Southeast)
Thursday, May 5 – Saturday, May 7, 2016
Practice/Registration: Saturday, April 30 – Wednesday, May 4
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Sebring Regional Airport (SEF): Sebring, FL
Phone: 561-644-1312
E-Mail: *donchartmann@yahoo.com*

Gulf Coast Regional (South Central)
Friday, May 13 – Saturday, May 14, 2016
Power: Primary through Unlimited
Location: Jackson County (26R): Edna, Tx
Contest Director: David Prather
Phone: 281.467.5403
E-Mail: *davessn763@gmail.com*

Duel In The Desert (Southwest)
Friday, May 13 – Saturday, May 14, 2016
Practice/Registration: Thursday, May 12
Rain/Weather: Sunday, May 15
Power: Primary through Unlimited
Location: Apple Valley Airport (APV): Apple Valley, CA
Contest Director: Chris Olmsted
Contact Information: Primary Phone: 831 334 7232 E-Mail: *chris@olmstedaviation.com*

Hoosier Hoedown (Mid-America)
Saturday, May 21 – Sunday, May 22, 2016
Practice/Registration: Friday, May 20
Power: Primary through Unlimited
Location: Kokomo Municipal Airport (OKK): Kokomo, Indiana
Contest Director: Mike Wild
Phone: 765-860-3231
E-Mail: *mike.wild@hotmail.com*
Website: *www.hoosierhammerheads.com*

Ben Lowell Aerial Confrontation (South Central)
Saturday, May 21 – Sunday, May 22, 2016
Practice/Registration: Friday, May 20
Power: Primary through Unlimited
Location: Sterling Municipal Airport (STK),Sterling, CO
Contest Director: Bob Freeman
Phone: 303-709-6465
E-Mail: *2bafree.man@gmail.com*
Website: *www.iac12.org*

Armed Forces Memorial (Southeast)
Friday, May 27 – Saturday, May 28, 2016
Practice/Registration: Thursday, May 26
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Grenada Municipal (GNF): Grenada, MS
Contest Director: Michael Tipton
Phone: 573-922-9600
E-Mail: *michael.tipton@hotmail.com*

Salem Regional Aerobatic Contest (Mid-America)
Friday, June 3 – Sunday, June 5, 2016
Practice/Registration: Friday, June 3
Power: Primary through Unlimited
Location: Salem-Leckrone (SLO): Salem, IL
Contest Director: Joe Overman
Phone: 314-452-6049
E-Mail: *joeoverman2000@yahoo.com*

Coalinga Western Open Championship (Southwest)
Friday, June 3 – Saturday, June 4, 2016
Practice/Registration: Thursday, June 2
Power: Primary through Unlimited
Location: New Coalinga (C80): Coalinga, CA
Contest Director: Tom Myers
Phone: 650-799-6854
E-Mail: *tom.myers@stanfordalumni.org*
Website: *www.iac38.org*

Bear Creek Bash (Mid-America)
Thursday, June 9 – Sunday, June 12, 2016
Practice/Registration: Thursday, June 9
Rain/Weather: Sunday, June 12
Power: Primary through Unlimited
Location: Richard B. Russell Regional (RMG): Rome, GA
Contest Director: Mark Fullerton
Phone: 864-316-5250
E-Mail: *markpcc2003@yahoo.com*

Lone Star Aerobatic Championships (South Central)
Friday, June 10 – Saturday, June 11, 2016
Practice/Registration: Thursday, June 9
Power: Primary through Unlimited
Location: North Texas Regional Airport (GYI): Denison, Tx
Contest Director: J. J. Humphreys
Phone: 940-564-6673
E-Mail: *jjhump1@brazosnet.com*
Website: *www.iac24.org*

Wildwood Acroblast (Northeast)
Saturday, June 11 – Sunday, June 12, 2016
Practice/Registration: Friday, June 10
Power: Primary through Unlimited
Location: Cape May County Airport (WWD): Cape May, NJ
Contest Director: Tom Barrett
Phone: 202-679-6600
E-Mail: *tbarrett@nert.com*
Website: *www.iac58.org*

Ohio Aerobatic Open (Mid-America)
Friday, June 17 – Saturday, June 18, 2016
Practice/Registration: Thursday, June 16
Rain/Weather: Sunday, June 19
Power: Primary through Unlimited
Location: Bellefontaine Regional Airport (KEDJ), Bellefontaine, OH
Contest Director: Samuel Weaver
Phone: 937-681-2680
E-Mail: *piperj3cub46@gmail.com*
Website: *http://www.iac34.eaachapter.org/*

Killam-Flagstaff Aerobatic Contest (International)
Saturday, June 18 – Saturday, June 18, 2016
Practice/Registration: Friday, June 17
Rain/Weather: Sunday, June 19
Power: Primary through Unlimited
Location: Killam-Sedgwich/Flagstaff Regional (CEK6), Killam,Alberta, Canada
Contest Director: Randy Skiba
Phone: 403-504-7788
E-Mail: *randallj@shaw.ca*
Website: *www.aerobaticscanada.org*

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