SPORT
Aerobatics
May 2013
OFFICIAL MAGAZINE of the INTERNATIONAL AEROBATIC CLUB

Safety: Doing it Inverted

- Lessons Learned
- Risk Assessment Tool
- Modern WAC
- The Starter

ANNUAL SAFETY ISSUE

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SPORT Aerobatics

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—Gary DeBaun

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REGGIE PAULK

Safety

Coming with responsibility

The May issue has traditionally been the safety issue, and this year is no different. Aviation, almost more than any other human endeavor, is infused with a laser focus on safety. You can't so much as set foot inside a flight school without being introduced to the methods that have contributed to aviation's excellent record of safety. But that doesn't mean we've eliminated accidents.

Flight training is geared toward teaching a person not only to fly, but to learn the warning signs and take appropriate action to avoid a mishap.

The beauty of aviation is that it places ultimate responsibility upon the pilot in command (PIC)—but it also places the ultimate authority on the PIC as well. There are few areas in today's society that entrust individuals with so much responsibility—but the system works.

From the moment a person takes on the awesome responsibility of becoming a pilot, they have chosen to become part of a community of individuals who take pride in the fact that they are in charge of their own fates. Flight training is geared toward teaching a person not only to fly, but to learn the warning signs and take appropriate action to avoid a mishap.

Pilots learn not to trust their instincts—but to follow the evidence and their own training. This is as true in instrument flying as it is in spin recovery. The aviation community has developed procedures to follow when things go pear-shaped. It minimizes risk by safely exposing us to the types of conditions that might prove fatal if we weren't to practice them beforehand. It prepares us to handle those things we don't anticipate with a clear head and a steady hand.

This is the fifth safety issue I've had the honor of editing, but it should be reiterated over and over again that the flying community takes safety seriously and practices it as a ritual before, during and after every flight of every day. It is a constant effort practiced with a nearly religious dedication by those who make it their life's work to ply the skies. *IAC*

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

IAC Needs your help!

Lightspeed Foundation announces grant finalists
by Julie Summers Walker

To applause and laughter, the Lightspeed Aviation Foundation announced the finalists for its annual Pilot's Choice Awards grants program on April 11 at the Sun 'n Fun International Fly-In & Expo. The applause came from the many members of the charitable aviation organizations that attended the announcement—10 of the 15 finalists will have the opportunity to win between $2,000 and $10,000 in grant money. The laughter was brought on by the camaraderie of the organizations, all of whom share the passion for aviation.

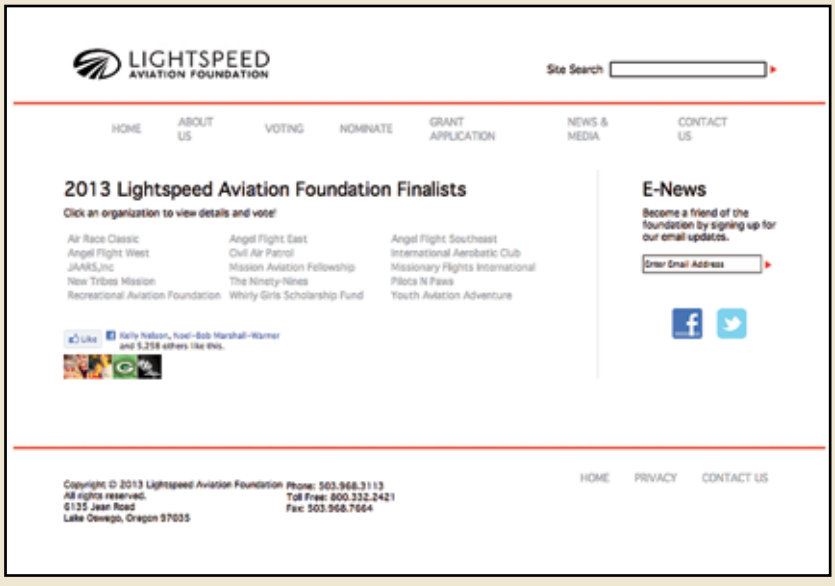
"We want to lift you up and give you a chance to tell your story," said Allan Schrader, president of Lightspeed Aviation. "I'm very pleased that over the past three years we have been able to award more than $300,000 in grants."

Votes are cast online for the deserving organizations. Online voting is open through October and award recipients will be announced in November. Vote at ***http://www.lightspeedaviationfoundation.org/content.cfm/Voting/Get-to-Know-the-2013-Finalists.***

The 15 finalists are Air Race Classic, Angel Flight East, Angel Flight Southeast, Angel Flight West, Civil Air Patrol, **International Aerobatic Club**, JAARS Inc., Missionary Aviation Fellowship, Missionary Flights and Services, New Tribes Mission, The Ninety-Nines, Pilots N Paws, Recreational Aviation Foundation (RAF), Whirly Girls Scholarship Fund, and Youth Aviation Adventure.

"Do you know how long it would take us to raise this kind of money?" said Recreational Aviation Foundation Florida Liaison Tim Clifford. "Grants like these allow us to take a big sigh of relief and just say 'thank you' and get to the work we need to do."

AOPA President Craig Fuller said, "It is an honor to help you put a spotlight on the good work being done by these organizations. We cannot have too many people recognizing the fine people of general aviation. Everybody wins."



Two New IAC Titles—IAC Open Champion East and West
by Doug Lovell

On Saturday, April 6, at the spring board of directors meeting held at San Carlos, California, the board voted to establish two new championship titles for the IAC. The titles establish an IAC Open Champion East and West in every category flown at two selected regional contests each year. We will fly the titles this year.

It has been true for a long time that not all great competitors can get to the U.S. Nationals due to time, distance, or a combination of factors. Some pilots can get there all of the time. Some can get there some of the time. Most likely real contenders in Advanced or Unlimited will get to the Nationals in team selection years. If they think they can get to another continent to compete, they get to Texas.

Establishing these new titles accomplishes many ends. We now have IAC titles beyond the regionals that all pilots within reach of the 48 states can more or less conveniently vie for at least some of the time. Any IAC member can earn them. We get more ways to play. More to talk about. More excitement. More fun.

Each year, one regional contest east of the Mississippi and one west will host the IAC Open Championship East or West title. The IAC board will designate the contests at its fall meeting following a number of criteria in priority order:

- The regional contests express interest to host the title.
- One contest is west of the Mississippi and one east.
- The region has not hosted the title in the prior year.
- The two contests selected are not both in the two central regions.
- The contest is not too close to the site of the Nationals.

continued on page 4

NEWS BRIEFS

continued from page 3

- Otherwise by attributes impressing the board to nearly unanimous favor or consensus.
- Otherwise by random selection.

These criteria will keep the title moving around a bit. No region or regional contest will become "owner" of the title. You can expect the title to come to your neighborhood every few years and to be near enough to your neighborhood about twice as often. We added a few items to the host regional that are not mandatory but optional. To the degree the host regional is able to achieve them, that contest will be somewhat more challenging, and telling, in the Advanced and Unlimited categories. At the contest director's discretion, time and resources permitting, Advanced and Unlimited may fly a second Unknown program constructed the way Unknown programs are constructed at the Nationals.

Further, preference will be given to national judges for the Advanced and Unlimited categories. If the contest can find them, they use them. This is the same criteria used for selecting chief judges. Now regional judges have one more reason to ramp it up a little and become national.

IAC pilot competitors, the chapter contests let you vie for local dominance. The regional titles let you vie for regional dominance. You can even dominate multiple regions with time, effort, and a healthy amount of piston-pumping fuel combustion.

Now you can dominate the east or the west (or both!) by attending the regionals hosting the IAC Open. If you're getting that good (and you're a U.S. citizen), run at the Nationals for the distinction of gaining the highest honor given to a pilot competitor by the IAC, the title of U.S. National Champion.

This year the Wildwoods AcroBlast will inaugurate the IAC Open East. IAC Chapter 58 hosts the contest at Wildwoods, Cape May County Airport (KWWD), near the southern tip of New Jersey.

The AcroBlast is what it says, a blast, and fun for all of the family with scenic and historic places, beaches, boardwalks, and great family entertainment within miles of the site. The site was a strong contender for hosting the 2013 WAC. Come see why. Dates are Thursday, June 13, to Sunday, June 16.

As of this writing, right here on the heels of the BOD meeting, hosting the IAC Open West is up for grabs.

Good luck all you aerobatic genius masters of the sky. Good fortune, good flying, good fun. Fly to the IAC Open East or West this year and contend to be the first recipients of the new IAC Open Champion. *IAC*

Last year I bought a Pitts S1C for the 2012 contest season. As an A&P and aircraft builder for the last 45 years I pretty well knew what to look for during the pre-purchase inspection. I did a 20 minute run-up after the inspection and all was well.

I wanted to make it home in one shot, no stops, so we topped off the center wing tank with fuel from the seller's personal fuel storage tank. I noted it did have a filter, so I did not take any fuel samples. I drained about a gallon of fuel from the one and only fuel tank sump. I noted no contaminates and was satisfied.

After a brief run-up I took off and flew east, lev-

Lessons Learned:

Smoke Tanks Do Not Make Good Auxiliary Fuel Tanks

Contamination

BY GARY DEBAUN
IAC 4145

eling off at 2000 AGL. The engine was running like a fine Swiss watch. I did a few rolls and flew inverted for about 30 seconds. I was happy . . . it would be a good contest season.

Twenty minutes into the flight I opened the fuel valve for the top wing tank to let it drain into the main tank (this was the standard procedure for my Acroduster Too for many years). I was using my I-Pad and Foreflight to navigate. However as a precaution I decided to go IFR (I follow roads). Approximately 5 minutes after opening the wing tank fuel valve, the engine surged and quit.

At 2,000 AGL you do not have much time. I closed the wing tank fuel valve, checked the magneto switch, played with the throttle a bit – then decided to concentrate on landing. The narrow country road in front of me was void of traffic so I set up my dead stick approach and drove her onto the road (wheel landing). I made a perfect landing and bled off the airspeed, but when the tailwheel came down I lost complete sight of the road. The airplane drifted slightly over onto the soft dirt of the shoulder and it pulled me down into a ditch in which I did a slow-motion nose over and finished inverted.

Prior to landing, I opened my canopy in hopes of a quick eject should things go wrong. During the sudden stop in the ditch the canopy slammed shut and locked. I was upside down and could not get the canopy open. After initial panic (I was worried about fire) I settled down, turned off the magneto and master switches – but could not reach the main fuel valve. After about 20 minutes I managed to get the canopy open, parachute released and crawled out – with only a scratch on my head from the canopy.

The cause of this accident was fuel contamination, and here is how it happened.

This Pitts, as many do, had a wing tank. It was designed and used as a Smoke Tank, and thus had no sump. At some point it was converted into an auxiliary fuel tank, but still without a sump, and no way to drain any contamination or condensation which might accumulate. When you open the wing tank valve fuel drains by gravity into the main tank. So you can see where this is going . . .

Being in somewhat of a hurry to get the Pitts home I had neglected to put two and two together. The Pitts had been sitting for eight months, there was two gallons of fuel in the top wing tank prior to topping it off. Condensation is a natural process – there WAS going to be some water in that tank. Yes, I sumped the main tank, but did not think much about the wing tank.

On another point, I did not check for fuel contamination from the seller's own fuel storage tank. There was a filter and I assumed the fuel was fine. I'll never know if this was a contributing factor or not.

This was a stupid mistake which could have been avoided by opening both fuel valves and draining all the fuel from the tanks. Failing that, I should have at least flown a local test flight which included switching tanks several times within gliding distance of the runway.

The lesson here is this: Make sure you can sump all fuel tanks individually. Be wary of smoke tanks converted into fuel tanks and finally, if you are using a private fuel source, take all precautions to ensure you are getting good clean fuel. IAC

Regional Safety Coaches and the Aerobatic Risk Assessment Tool

Safety in the IAC

BY STEVE JOHNSON
IAC SAFETY CHAIR

For the last several years, the FAA has been trying to improve aviation safety. Recently the NTSB and FAA came up with the new Safety Alerts program, designed to help reduce general aviation accidents. The safety alerts are printed documents that cover different hazards and potential solutions. While overall aviation safety is very good, the general aviation small aircraft group does not have a very good safety record. The NTSB has been issuing safety alerts since 2011 to help reduce GA accidents. The most recent safety alerts have had to do with stalls at low altitudes, VFR flight in marginal conditions, mechanical issues, and decision-making. Each of these safety alerts uses recent accidents as examples.

It appears that over the years our GA accident causes have not changed much; stalls/spins, VFR into IMC (a decision-making subset), maintenance issues, and decision-making continue to be the main causes of GA accidents. The FAA has recommended that charter companies, corporate flight operations, and flight schools develop Safety Management Systems (SMS) programs to help increase safety in their operations toward reducing accidents. An SMS program was one of the NTSB recommendations from the Reno Air Racing crash in 2011. Eventually, similar safety programs will be required of us in the aerobatic community. To that end, I have started on a few new safety programs for the International Aerobatic Club (IAC). The first is the development of a network of regional safety coaches. These are active IAC members and competitors who understand our sport, our psyches, and the hazards we face in contest environments, as well as traveling to and from contests. These safety coaches can help with real-world solutions to safety problems at our contests and practice days. Please don't hesitate to find, meet, and use your regional safety coach for any safety questions or assistance.

One of the tools developed for our IAC SMS program is an aerobatic risk assessment tool. This tool can be used to identify and minimize the hazards and risks for pilots and the local airport area. For individual pilots, increased risks would include being a new aerobatic pilot, pilots moving up to higher categories, pilots flying without a safety pilot for the first time, etc. Each of these factors represents an in-

Contest Risk Assessment Tool

Contest:
Location:
Dates:

Pilot Qualifications & Experience		**Score**					
Pilot Total Time	1-5	1	Over 500 Hours=1	300-500 Hours=2	150-300 Hours=3	50-150 Hours=4	<50 Hours=5
Pilot Acro Time	1-5	1	Over 500 Hours=1	300-500 Hours=2	150-300 Hours=3	50-150 Hours=4	<50 Hours=5
Pilot Contests Flown	1-5	1	0-2=5, 3-5=4, 5-10=3, >10=1				
5 or Fewer Contests Total	1-3	1	Yes=3, No=1				
<4 Contests in Current Category	1-5	1	Fewer than 4=5, More than 3=1				
Safety Pilot (Adv & Unl = 0)	1-10	0	Primary & Sportsman-Yes=1, No=10; Intermediate Solo=5; Adv & Unl=0				
Category Flying	1-5	1	Pri/Spt=5, Int=3, Adv=2, Unl=1				
	Pilot Score	**6**					
Operating Environment							
>10 MPH x-wind in Box	1-5	1	Yes=5, No=1-4				
>10 MPH x-wind on Rwy in Use	1-5	1	Yes=5, 5-10 MPH=3, 0-5 MPH=1				
Narrow/Short Rwy	1-5	1	<3k ft=5, 3-4k=3, >4k=1				
Ramp Area/Dead Prop Zone	1-5	1	Good=1, Fair=3, Poor=5				
Local Ceiling/Vis	1-5	1	3000/3=5, CAVU=1				
Scattered Clouds in Area	1-5	1	Yes=5, No=1				
Local Density Altitude From AWOS)	1-5	1	0-2,500 ft=1, 2,500-3,500=2, 3,500-4,500=3, >4,500=5				
Daily High Temperatures	1-5	1	<75=1, 75-85=3, >85=5				
	Environment Score	**8**					
	TOTAL	**14**					

Pilot Score	**Enviro Score**	**Total Score**
Low Hazard = 6-19	Low Hazard = 8-13	Low Hazard = 14-32
Med Hazard = 20-30	Med Hazard = 14-24	Med Hazard = 34-54
High Hazard = 30-38	High Hazard = 25-40	High Hazard = 55-73

creased risk for those pilots and for the contest staff. Additionally, environmental factors such as lower ceilings, high-density altitude, strong winds, crosswinds on a single runway, congested ramp space, and other factors increase the risks at a specific contest or practice day site. The aerobatic risk assessment tool can be used by pilots to determine their individual level of comfort and safety in a particular contest environment. For example, a relatively experienced Decathlon pilot has just bought his first Pitts and is moving up to Intermediate from Sportsman. This scenario would show a slight increase in risk for the pilot. Now throw in a new airport with a narrow runway and some crosswinds, and the total risk for this pilot just increased significantly. Using the aerobatic risk assessment tool allows our pilot to recognize that several factors have all added up together to increase the hazards for his flight to the new contest site in his new airplane.

For the contest director, the aerobatic risk assessment tool can help him or her identify physical and environmental hazards at the local airport, as well as weather hazards as they come up. Some contests that have traditionally strong winds in the afternoons will try to have the lower category pilots fly in the morning to avoid the stronger winds. Ramp space and egress and ingress routes can become very important as a contest gets moving. Our airplanes typically have limited visibility while taxiing, and we want to avoid head-on encounters as much as possible. Setting up a circular route for airplanes will eliminate potential head-on issues, and the aerobatic risk assessment tool can help identify such hazards. If a contest director finds there are several new aerobatic pilots at his/her contest, the risks are increased, and steps can be taken to reduce those risks, once identified. At a Midwest contest two years ago, three aerobatic pilots arrived with their coach and a Cessna Aerobat. During registration, it was learned that this "college aerobatic team," including their coach, had never been to an IAC contest, did not know the rules, the box layout, or the basics of aerobatic competition. Knowing this ahead of time, and recognizing that the coach would not be of much value, the team was assigned a group mentor, an experienced IAC competition pilot, who provided the information and safety knowledge this group needed to have a fun and safe time at the contest. The aerobatic risk assessment tool will help contest staff identify pilot and environmental hazards ahead of time, so that plans can be made to reduce or eliminate the hazards.

This risk assessment tool can be used by contest and practice day staff to ensure that they have made the decisions necessary to reduce risks where they can. Additionally, individual pilots can use the aerobatic risk assessment tool to ensure they are making proper decisions, based on their skill, knowledge, and the local environment. The generic form for the aerobatic risk assessment tool is attached to this article and can be downloaded from the IAC website in the Safety Resources section. Please forward any comments or questions about the Aerobatic Risk Assessment Tool to me at *gjunkie1@aol.com*.

Your IAC safety staff, the safety chair, and the regional safety coaches are trying to help the IAC, already a very safe organization, become even better. The safety staff can be your resource, as a pilot or contest official, to help identify and eliminate hazards at our contests and practice days. IAC

Nomex Needs Care, Too

Survival equipment

BY ALLEN SILVER
www.SilverParachutes.com

When asked to contribute to this year's safety issue, many topics came to mind. Most of you know by now I work with parachutes. What many of you do not know is that while in the Air Force, I also worked with other types of survival equipment. What I would like to talk about in this issue is Nomex flying clothing and your helmet. You do wear them, don't you?

Nomex is a very unique material that *does not support combustion*. It's something that many of you wear and give little consideration or thought to. It's not just something you wear to change the oil in your aircraft so your clothes don't get dirty or to see how tight you can wear it to impress your fans. It's a lifesaving piece of equipment that requires some tender loving care.

Just as important as your flight suit is your helmet. *Always wear your helmet*! It's not just another piece of expensive equipment. Both your Nomex flight suit and helmet work in harmony to protect your hide from getting scorched and your head from getting severely injured should your aircraft stop suddenly, as in the case of an accident. Not wearing your helmet because it's uncomfortable is not a valid excuse. This can be fixed by making sure your helmet has been fitted properly to your head to prevent hot spots and discomfort. Leaving it in the trunk of your car is not a good choice.

A number of years ago I gave a seminar on the proper wearing of Nomex flight suits and helmets. Someone listened and decided to modify the way he wore his survival equipment. A few months later I was thrilled to receive a call from him stating that those changes saved him from serious burns and possible death.

Look carefully at Photos 1 and 2. These two photos show the actual flight suit and helmet worn by the pilot that survived the fiery crash of his P-47 (see Photo 3). It's amazing the condition of the flight suit compared to the helmet. It shows no visible signs of fire damage. Now take a closer look at the helmet (in Photo 2) and you'll see the fire damage. The paint was melting and running down the side of the helmet, but the pilot's turned-up collar protected his neck. Most importantly, the visor was down and it protected his eyes and face. This photo may not show clearly the damage to the visor, but it is glazed over from the intense heat. Imagine the injuries that he could have suffered if his visor had not been down and locked.

To achieve the maximum amount of protection you must understand that the proper wearing of both your Nomex flight suit and gloves is vital to your survival. Look carefully at Photo 4. Exposing any part of your body could have disastrous results in the event of an emergency. Many pilots roll up their sleeves and turn down their gloves, complaining on a summer day that

PHOTO 1

PHOTO 2

it's too hot wearing their flight suit as recommended. Being caught in a fire is hot also! A little discomfort is better than ending up in the burn ward of a hospital. Flight gloves are extra long for a reason. In Photo 5 you see my left arm has the glove on the outside of my flight suit. This is the way many people assume you wear them. In case of a fire, hot liquid could run down your sleeve and into your gloves. Again, *the gloves are designed extra long for a reason*. Now look at my right arm in the photo.

PHOTO 3

The glove should be worn *under* your flight suit. The extra length gives the maximum protection you might need when unlocking a hot metal handle or anything else your lower arm comes in contact with.

Bring your attention to Photo 6 where I'm pointing. It is very important that the collar of your flight suit be turned up to protect the back of your neck. If I didn't have my collar turned up, at least 3-4 inches of my neck would be exposed. Wearing it turned up better protects you from liquid running into your flight suit.

Now that you have finished flying, and the odors from your flight suit have been keeping your friends at a distance, some of you might actually decide that washing your flight suit is not a bad idea. You need to pay careful attention to the washing instructions the manufacturer recommends. If you're lucky enough to have someone else doing your laundry, make sure that person knows the special Nomex washing requirements. As previously mentioned Nomex doesn't support combustion, but washing it with a nice sweet-smelling fabric softener can coat the material, and it will burn. That's why you want to keep your flight suit away from anything that can adhere to it and burn. Most over-the-counter powder detergents will do the job just fine. Just don't get fancy. I suggest washing it in cold/warm water by itself. You can dry it by hanging it up or tumble it dry at a low heat and you're good to go flying again.

What about the gloves? Don't toss them into the washing machine with your flight suit. They don't do well in a washer. Put them on and wash your hands in the sink as you normally would. Rinse them while still on your hands, then carefully remove them trying not to stretch them out of shape. Lay them flat on a towel to absorb excess moisture, and they will dry just fine. Don't wring them out as this could stretch and damage the leather.

If you have any questions, please call or e-mail me. All my contact information is on my website at *www.SilverParachutes.com*. **IAC**

PHOTO 4

PHOTOS COURTESY ALLEN SILVER

PHOTO 5

PHOTO 6

The Modern World Aerobatic Championships

A walk through history

By Gordon Penner
FAA Gold Seal CFI, Past Two-Time Master CFI-Aerobatic, and
and Lorrie Penner
Assistant Contest Director, 2013 World Aerobatic Championships

In the movie *Top Gun*, fighter pilot "Iceman" asked "Maverick," "Who's the best pilot?"

In October 2013 the World Aerobatic Championships, or WAC, will be coming to America. Sherman/Dennison, Texas, will host up to 100 of the world's best pilots. Let's look into the modern World Aerobatic Championships and see how it has developed through the years, going through two world wars in the process, to become what it is today.

On October 14, 1905, the FAI, or Fédération Aéronautique Internationale, was formed. Its job is to verify and catalog all aviation records, and set standards for those records. Modern World Aerobatic Championships records, under the FAI, are those that have been held since 1960.

Even though airplane flight began in America, it was the Europeans who really developed and expanded aerobatic flying in the years between 1906 and World War I. In 1913 Adolphe Pégoud did the first inverted flight, and Russian Army pilot Petr Nesterov did the first loop. Nesterov was first arrested for risking Army property, but was later promoted to captain and became an international hero.

By the end of World War I in 1918 the "Red Baron," Manfred von Richthofen, along with his friends and his enemies, were doing a full suite of aerobatic maneuvers in much improved airplanes. The winner of a dogfight got a higher score of kills and was allowed to continue living. Thankfully, a less lethal measure of pilot excellence came about after the war.

In America aerobatics were normally performed as a spectacle along with air races in the 1920s and 1930s. Army pilots Jimmy Doolittle, along with Flying Tigers founder Claire Chennault and his Three Men of the Flying Trapeze became quite famous for aerobatics in that era.

It was in Europe that aerobatics were set up as a competitive Olympics-style competition. Both Germany and France developed mathematical judging systems in 1928. 1934 saw the first real world competition, with two pilots losing their lives in the contest. World aerobatic competitions were held throughout the 1930s, most famously in Berlin together with the 1936 Olympics, until World War II intervened in 1939.

After World War II aerobatics in America suffered a serious body blow. A pilot who had a tenuous connection to the air show crashed into the crowd in Flagler, Colorado, in 1951 while performing an aerobatic maneuver. Twenty people were killed, some of them children, and another 50 were injured. The event stopped U.S. national competitions and limited most nonmilitary air shows until the early 1960s.

The opposite occurred in Europe, where many competitions started up in the 1950s, the most prestigious of which was the Lockheed Trophy competition in Britain.

The Lockheed Trophy contest, along with similar competitions in the 1950s, were judged more on artistic impression than on precision. Modern aerobatic contests are more like the pre-World War II European contests, where the precision flying of stan-

dard maneuvers is the judging standard. Since airplanes were becoming more and more capable, a standard "language" had to be created. The first postwar system used internationally was that from Francois d'Huc Dressler. Dressler died in 1957. His system was used from 1955 to 1962.

Starting in 1964, and continuing to this day, the FAI adapted the "Sistema Aresti" for judging world competitions. It is now just called the Aresti system, and it was developed by Spanish air force Col. Jose Luis Aresti. It is very precise mathematically as well as geometrically.

The unofficial two-track aerobatic system, where competition is judged by very rigid mathematical standards and air show-type flying is judged more on artistry, is now in place worldwide. The bridge between the two is the 4-Minute Freestyle, otherwise known as the Final Freestyle. The regular Known, Free Program, and Unknown sequences are judged by the Aresti standard. The 4-Minute Freestyle, on the other hand, is judged on a more artistic basis, similar to the old Lockheed Trophy contests. Tumbling maneuvers like the lomcevak are allowed in the 4-Minute Freestyle, as is smoke. The 4-Minute Freestyle also has its own winner and its own trophy.

Speaking of trophies, starting in 1964 the individual winner of the world competition is presented with the Aresti Cup. Donated by Col. Aresti, it is covered with gold and silver accents. The trophy is a work of art as well as being the top award. The winning men's team in the World Aerobatic Championship is presented with the Nesterov Cup. It was donated by Russia to the FAI in 1962 and named for Russian aerobatic hero Petr Nesterov.

The winner of the 4-Minute Freestyle sequence is presented with the Manfred Stroessenreuther Cup. Named for the late German aerobatic champion who excelled at this event, it was donated by the South African Aero Club through the Deutscher Aero Club. A separate women's championship was started in 1966, and since 1986 its winner has been presented with the Royal Aero Club Trophy.

COURTESY MIKE HEUER

Ladislav Bezak


COURTESY MIKE HEUER

Frank Price at Bratislava in 1960.

The 1960s

The first postwar, modern-format World Aerobatic Championships (and the first to be sanctioned by the FAI) was held in Bratislava, Czechoslovakia, in 1960. The first world aerobatic champion was a Czechoslovakian pilot, Ladislav Bezak, flying a Zlin 226T. The rest of the Czech team was close behind in Zlin 226As. The aircraft were well-flown by the Czechs, who won the Nesterov Cup for 1960, 1964, and 1978, and won the Aresti Cup in 1960, 1978, 1984, and 1986. They were definitely a force to be reckoned with.

The Zlins were a world-beating advance in aerobatic technology, capable of many new maneuvers, especially in the vertical. The Zlin 226s, 326s, 526s, and Zlin 50s battled with the Russian Yak-18s and Yak-50s to be the winning airplanes on the world stage from 1960 until the 1990s. The only real interruption in this battle was when the Pitts S-1S won in the 1970s. The rise of the Sukhois, the Extras, and the CAPs came in the 1990s.

In 1960 Ladislav Bezak was the first pilot to use the "lomcevak" maneuver in a world event, although other pilots had been developing the maneuver in the mid-'50s and flown it for the Lockheed Trophy. It is not in the Aresti catalog but does get flown in the 4-Minute Freestyle.

In an article, Bezak wrote in regards to the name of the maneuver, "I am afraid my own sister is responsible for this one, but I must say I rather like it.

". . . My sister, a nice and gentle lady, but who does not know anything about flying, and who does not speak the Moravian dialect at all (lomcevak is a purely Moravian word), repeated what she thought she had heard and, *Voilà!* The

name is variously translated as 'log in the head,' 'headache,' or 'look at that drunk trying to walk,' depending on which Czech you talk to."

The Americans were the poor stepchildren when it came to the world aerobatic stage in this era. The photograph on page 11 shows American Frank Price standing alone (left), but proud, behind the American flag at Bratislava in 1960. The foreign national teams had been practicing daily for years. Frank had flown air shows between crop dusting gigs.

The 1970 U.S. Aerobatic team won the World Championships held in Hullavington, England.

EAA PHOTO

Charlie Hillard

Frank got to Bratislava at considerable personal expense. He flew his aircraft, a Great Lakes biplane, to the east coast from Texas, took it apart, and put it on a Pan Am transport. Once across the Atlantic he put the airplane back together and then flew it to Bratislava.

He was flying behind the Iron Curtain at the height of the Cold War. Afterward, he did not have the money to get his airplane home. Seven months later he was able to get his Great Lakes home. It's difficult to look at that photo and not feel a sense of gratitude for Frank's determination to make the United States a part of the World Aerobatic Championships from the very beginning.

Frank Price brought back valuable information on the advanced state of aerobatics in Europe and the U.S.S.R. Both nations were far ahead of America in that regard. He also brought back the lomcevak and the beginnings of the Aresti system. Most important of all, he formed an aerobatics club based on the British Tiger Club to promote and organize aerobatics in the United States. It was called the American Tiger Club. Later, the EAA formed the Precision Flying Division, and the Aerobatic Club of America was formed. The first American to win the World Aerobatic Championships, Charlie Hillard, was an alumnus of all of these organizations.

Frank Price also went to Hollywood. In the Robert Redford picture, *The Great Waldo Pepper*, Frank did the aerobatic flying for the fictional German ace "Ernst Kessler" as well as some of the Jenny flying.

1962 was the year of the Hungarians. The contest was held in Budapest, Hungary. The winner of the Aresti Cup was Hungarian Josef Toth in a Zlin 226T, and the Nesterov Cup was won by the Hungarian team. The U.S. team consisted of Duane Cole, Lindsey Parsons, and Rod Jocelyn. Lindsey Parsons flew very well and placed fifth against a number of Zlin and Yak monoplanes while flying the 1930s-designed Great Lakes. The others also did reasonably well in their older designs, but it was clear it would be a while before the Americans were competitive.

In 1964 the contest was held in Bilbao, Spain, and Spaniard Tomas Castano won the Aresti Cup in a Zlin 226T. Bezak and his team were back to win the Nesterov Cup for Czechoslovakia again. 1966 was where we began to see the rise of the Russian Yak-18, which is a derivative of a military trainer. The contest was held in Moscow, U.S.S.R. The winner of the Aresti Cup was Russian Vladimir Martemianov, flying a Yak-18M. The Nesterov Cup went to the Russian team.

1966 was also the first year we saw a female world champion, won that year by Russian pilot Galina Kortschuganova. On the left side of the Atlantic the first Pitts S-1Ss were now being flown, most notably by Bob Herendeen, Mary Gaffaney, and Gene Soucy.

1968 closed out the decade with another home team win. The contest was held in Magdeburg, East Germany, and the Aresti Cup went to East German Erwin Blaeske flying a Zlin 526A. The Nesterov Cup went to the East German team. The women's world championship was won by Madelyne Delcroix of France.

The 1970s

The second decade of the modern WAC opened in 1970 at Hullavington, England, with Soviet pilot Igor Egorov winning the Aresti Cup. Charlie Hillard placed third overall. The Americans were up and coming. The IAC was also in its formative stages at this point.

The United States team of Bob Herendeen, Charlie Hillard, and Gene Soucy took the Nesterov Cup. Many think that but for an engine failure Bob Herendeen would have been world champion in 1970. By now the Pitts Special S-1S had become the de facto American team airplane, and its unusual performance was having its effect on the WAC.

In 1972, in Salon de Provence, France, the Americans dominated the WAC. Charlie Hillard became the first American to become world

champion. Hillard, with his teammates Gene Soucy and Tom Poberezny, took the Nesterov Cup for America for the second time. The U.S. team included Hillard, Soucy, Poberezny, Art Scholl, Bill Thomas, Mary Gaffaney, and Carolyn Salisbury. Mary Gaffaney won gold medals in her first two flights and became the first American to win the Women's world aerobatic championship, and placed fifth overall.

The 1974 WAC was canceled for political reasons. In 1976, the WAC was held in Kiev, U.S.S.R., and the Soviets responded to the Pitts with the introduction of the Yak-50. Unfortunately, 1976 was the year remembered primarily for Cold War judging controversy, with everything going heavily in the Russians favor. It got so bad that the world community voted in the Tarasov-Bauer statistical scoring programs to identify and ameliorate judging bias. The Tarasov-Bauer system was voted in for the 1978 WAC.

In 1978, the WAC went to Ceske Budejovice, Czechoslovakia, and Czech pilot Ivan Tucek took the Aresti Cup in a Zlin 50. The Zlin 50 was beginning its time as one of the top aircraft, winning again in 1985 and 1986. Kermit Weeks of the United States took second in the Weeks Special, a derivative of the Pitts. The Nesterov Cup was won by the Czech team. The Soviets dominated the women's division in the Yak-50, with Valentina Yaikova winning the top spot.

Leo Loudenslager

The 1980s

In 1980 the World Aerobatic Championships came to America for the first time. The site was Oshkosh, Wisconsin. Unfortunately, the contest was boycotted by the Soviet team and their east European allies.

Leo Loudenslager became the second American to become the world champion. Leo also introduced his Laser 200 midwing monoplane, whose influence can still be seen in the Extra design series. His teammates Henry Haigh and Kermit Weeks completed a U.S. sweep of the top three spots and won the Nesterov Cup. Betty Stewart won her first women's world championship title.

The 1982 WAC was held in Spitzerberg, Austria. Soviet pilot Victor Smolin won the Aresti Cup in a Yak-50. The Nesterov Cup was won by the Soviet team. America's Betty Stewart again won the women's championship.

In 1984 WAC XII was held in Békéscsaba, Hungary. Czech pilot Petr Jirmus took first and West German Manfred Stroessenreuther, for whom the Manfred Stroessenreuther Cup is named, took second. They were both flying the Zlin 50. Soviet women's pilots Khalide Makagonova and Liubov Nemkova took first and second in the women's championship, flying the new Yak-55. Debby Rihn-Harvey took third in a Pitts S1-S. WAC XII saw the introduction of the Sukhoi Su-26. The United States men's team of Kermit Weeks, Henry Haigh, and Alan Bush took home the Nesterov Cup for the fourth time.

In 1986, WAC XIII was held in South Cerney, England, where the weather was a factor. Petr Jirmus of Czechoslovakia repeated his individual men's title, and did it in a Zlin 50LS. The Nesterov Cup was won by the Soviet team of Victor Smolin, Nikolai Nikitiuk, and Sergei Boriak. Sergei Boriak later moved to the United States and became a sought-after aerobatic coach.

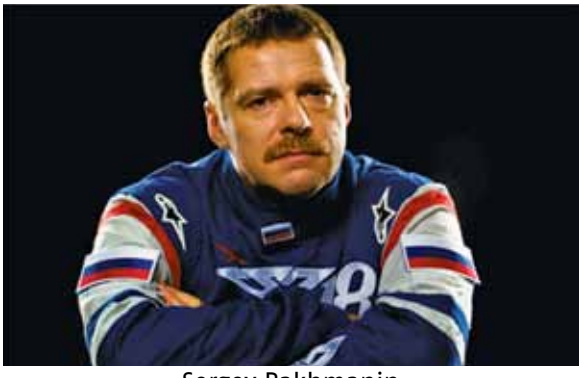
Linda Meyers-Morrissey won a gold medal in the Unknown, in a beautiful flight following a mistake in the Free Program. 1986 was also the first year that the Women's world aerobatic champion was presented with the Royal Aero Club Trophy. Liubov Nemkova of the U.S.S.R. was the winner.

1988 was another great year for the U.S. team. In addition, the WAC had returned to the North American continent for the second time and was held in Red Deer, Alberta, Canada. The United States team did well, with Henry Haigh finally winning the long-pursued Aresti Cup. He had an excellent Unknown flight in his personally designed Super Star monoplane. America now had three world champions. The U.S. men's team of Haigh, Kermit Weeks, and Clint McHenry took the Nesterov Cup. Patrick Paris of France, who we will hear more of, won the 4-Minute Free in a CAP 231.

The winner of the Royal Aero Club Trophy was Catherine Maunoury of France. In the first ever awarding of the FAI Challenge Cup, newcomer Ellen Dean joined Linda Meyers-Morrissey and Patty Wagstaff to take the women's team trophy.

Even though the United States had a good year, the development of the Russian Sukhoi, the French CAP 231, and the Extra 300 clearly indicated Europe was progressing beyond the capabilities of the 200-hp airplane.

Xaviar deLapparent with the Aresti Cup.



Sergey Rakhmanin

The 1990s

The fourth decade of world aerobatics seemed to only come in two flavors, French or Russian. At this point the Russians are Russians, not Soviets. Here was where we saw the domination of the French CAP 231/232s and the Russian Su-26/Su-31s, which continued well into the 2000s. This state of affairs held for both the Aresti Cup results and those of the Nesterov Cup. In this era we also see the rise and domination of Russian ballerina Svetlana Kapanina in the Sukhoi, who won the women's championship six times.

The 1990 WAC was in Yverdon, Switzerland, in 1990. The French won, with Claude "Coco" Bessiere, the well-liked Frenchman, taking the Aresti Cup in a CAP 231. The French team won the Nesterov Cup. Linda Meyers-Morrissey took second in her new CAP 231 to Natalya Sergeeva of the Soviet Union in a Sukhoi Su-26.

In 1992 the competition was held in Le Havre, France, but could not be completed due to bad weather. The 1994 WAC was held in Debrecen, Hungary. Xaviar deLapparent took the Aresti Cup for France, and the French team won the Nesterov Cup. Patty Wagstaff took second in the women's championship for the United States behind Christine Genin of France, and the French won the women's team championship.

The 1996 WAC was held in Oklahoma City, Oklahoma, but it was an all Russian show. Victor Chmal of Russia won the Aresti Cup in his Su-26. The Nesterov Cup was won by the Russian team that included Nikolai Timofeev. Nikolai Timofeev now lives in Florida, is a sought-after aerobatic coach, and is on the 2013 U.S. Unlimited team. Svetlana Kapanina won the Royal Aero Club Trophy, and Russia also won the women's championship team trophy.

The 1998 WAC was held in Trencin, Slovakia, and was split by the French and the Russians. It was Patrick Paris in his CAP 232 that won the Aresti Trophy. The Nesterov Cup was won by the Russian team again. Svetlana Kapanina won the Royal Aero Club Trophy as the top female finisher, and the Russian women's team also won. The winner of the 4-Minute Free was Dominique Roland of France in another CAP 232.

The 2000s

In the 2000s the Nesterov Cup was still being passed back and forth between the French and the Russians, but the Aresti Cup got to see people from other countries, and we began to see the Extra 330s and the occasional MXS. Also, starting in 2001 the WAC changed to be held in odd-numbered years. The World Advanced Aerobatic Championships, or WAAC, is now held in even-numbered years.

At the 2000 WAC held in Muret, France. Most of the top 10 finishers would be on the French team in CAP 232s. Eric Vazeille won the Aresti Cup, and the French team won the Nesterov Cup. The women's champion was Catherine Maunoury, but the women's team trophy was won by the Russians.

2001 saw the WAC in Burgos, Spain. Mikhail Mamistov of Russia won the Aresti Cup in the Su-31, and the Russian team won the Nesterov Cup. Of course, Svetlana Kapanina won the women's championship. The only non-Russian result was the 4-Minute Free, which was won by Klaus Schrodt of Germany in an Extra 330 XS.

In 2003, the WAC came back to North America. It was held at the Sun 'n Fun International Fly-In & Expo facility in Lakeland, Florida. The Aresti Cup was won by Sergey Rakhmanin of Russia in an Su-31, and the Russian team won the Nesterov Cup. Svetlana again won the Royal Aero Club Trophy for the fourth time.

In 2003 the competitors and volunteers had a good time at Busch Gardens during the downtime, and the volunteers were hosted by Kermit Weeks at his new Fantasy of Flight facility up the road in Polk City, Florida.

The 2005 WAC was again held

in Burgos, Spain, and was a repeat of 2003. Russian champion Sergey Rakhmanin of Russia, flying an Su 26M, won the Aresti Cup. The Russian team won the Nesterov Cup. Svetlana again won the Royal Aero Club Trophy for the fifth time. Like 2001 the only non-Russian result was the 4-Minute Free, which was again won by Klaus Schrodt of Germany in an Extra 330 XS.

In 2007 there was a break in the Russian domination. The WAC was held in Granada, Spain, and the Aresti Cup was won by Ramon Alonso of Spain in an Su-31. Hooray for the hometown boy, eh? The Nesterov Cup was won by the French team. The United States got a top result when the 4-Minute Free was won by Zach Heffley in an Su-26. Svetlana Kapanina won the Royal Aero Club Trophy for the sixth time.

The 2009 WAC was held at Silverstone in the United Kingdom and was a sad one for the U.S. team. U.S. WAC team member and 2007 U.S. Unlimited National Champion Vicki Cruise was killed while flying the contest in a borrowed Edge 540 aircraft.

2009 was a mostly French show. Renaud Ecalle won the Aresti Cup in an Extra 330SC, and the French team won the Nesterov Cup. Renaud Ecalle also won the 4-Minute Free, again flying the Extra. Russian Elena Klimovich won the women's championship.

The 2011 WAC was held in Foligno, Italy. The Russians were back with a vengeance, but it was good to see American Rob Holland as the winner of the 4-Minute Free flying the MXS. 2001 Aresti Cup winner Russian Mikhail Mamistov came back to win the Aresti Cup a second time. The Russian team won the Nesterov Cup.

ANTOINE GRONDEAU, IMAGESHACK.US

In 2009 Frenchman Renaud Ecalle won the Aresti Cup.

Conclusion

Since the 2013 World Aerobatic Championships is being held at the site that already hosts the U.S. National Championships, the infrastructure for planes and pilots is already in place. It will be held in October so there will be an escape from the mid-summer heat.

It already looks like the WAC will be a well-attended event, with pilots from many different countries committed to attend, in spite of that ocean-thing being in the way. The volunteer rolls are filling up nicely, but we can always use some more.

Many who have attended these world events over the years have commented on how much fun it is meeting people from all these different countries. Since everyone is in aviation, there is a common meeting ground. Frank Price said he found that even though governments may be different, people are the same, and you can get a long way with a smile. The WAC doesn't come to North America that often, so if you can, come meet some of your aviation brothers and sisters. You'll be glad you did! *IAC*

RESOURCES

http://en.wikipedia.org/wiki/FAI_World_Aerobatic_Championships
http://en.wikipedia.org/wiki/Aresti_Catalog
http://www.fai.org/championships-awards/aresti-cup
http://www.fai.org/championships-awards/nesterov-trophy
http://www.fai.org/championships-awards/manfred-stroessenreuther-trophy
http://www.fai.org/championships-awards/royal-aero-club-trophy
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http://www.franklinairshow.com/History%20of%20Aerobatics.htm
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http://web.archive.org/web/19961029024915/http://www.airspacemag.com/Expo/WAC/stakes.html#4MinCup
http://web.archive.org/web/19961029023841/http://www.airspacemag.com/Expo/WAC/Debby.html#Enter
http://web.archive.org/web/19961029023431/http://www.airspacemag.com/Expo/WAC/Pitts.html#PittsS1
http://www.hickoksports.com/history/aerobatic.shtml
http://jmrc.tripod.com/fa/aero/aero4.htm
http://www.allinflight.com/acrob/ACRO_INGL/acr_campmond.htm
http://www.france-voltige.org/Docs/OriginsWAC.pdf
http://web.archive.org/web/19961029022751/http://www.airspacemag.com/Expo/WAC/Home.html#Enter

The Starter

Your *last* chance at a *safe* flight

By Gary DeBaun, IAC 4145
Photos Laurie Zaleski

To some competitors the starter is just a person who tells them when they can start their engine and head out to the hold area; others know their true value to them and the contest. When it comes to safety, the starter *is* your last chance for a safe flight.

The starter has many responsibilities. Some are spelled out in the IAC contest rule book; others not so obvious will be detailed in this article.

Let's review the rule book, section 1.12, as to the starter's written responsibilities, and expand on them as we progress.

Safety will be the primary consideration of the starter at all times. The starter is responsible for:

Ensuring that a fire extinguisher is present on the starting line.

Don't try to use or carry around one of those big fire extinguishers you find at the fueling pit. A small, portable, 5-pound dry chemical fire extinguisher is sufficient for putting out an induction fire.

It is a good idea to discuss engine fire procedures during the morning briefing. Make it a point to demonstrate standard engine fire hand signals and how you will handle an engine fire should one occur.

Induction fires may occur during hot-start situations, so the starter should be ready. Give the pilot time to apply the correct induction fire procedure for the aircraft in an attempt to suck the fire out.

Using the fire extinguisher does have consequence. Some fire extinguishing agents are highly corrosive and damaging to the induction system. Should you have to extinguish an induction fire, make it a point to notify the chief technical monitor. The aircraft at this point should be considered unairworthy.

Final briefings, including notifying each competitor of changes to the official direction of the wind and challenging each competitor to ensure that his or her parachute and safety belts are properly fastened.

Things change during the course of the competition, which the competitor is not always aware of, especially new competitors. The starter should stay on top of weather conditions.

Changes in wind conditions can occur in the box and not on the ground. If conditions have changed, make sure the competitor knows this.

The starter should challenge the pilot on proper frequencies, taxi and runway usage, hold areas, sterile areas, and recall procedures. It's a good idea to also look at the pilot's sequence card to ensure the correct B or C card is being used. This is especially true for new competitors.

The above statement can be modified. The starter can elect what information is necessary, depending upon the contest and category being flown. For example, at the Nationals, when team selection is in progress, I will visually check Advanced or Unlimited competitors, talking with them only when I feel it necessary in relationship to safety so that I don't disturb their concentration.

Fuel quantity can come into play in all categories due to judging delays or a figure break from the contestant in the box. For example, if I know the pilot about to enter the box is fairly new, or flying a relatively underpowered aircraft, I will quiz the pilot I am about to release as to fuel quantity—and to make sure he or she knows of the situation. I take all this into consideration before I launch a competitor. This is a safety issue as we do not want pilots running out of fuel in the middle of their flight.

There are many things going on in competitors' heads as they ready for aerial battle. Even with a checklist, things may be overlooked. As a starter, one of the responsibilities is to challenge competitors as to the security of their safety belts. I take this to mean a *verbal* challenge. On two-place airplanes, you must always check the security of the belts in the front cockpit. Although very rare, there have been instances when the pilot performs the safety check before box entry and finds the front belts have not been secured.

Finally, although not a requirement, the starter should do a final walk-around of the aircraft to ensure the pitot cover, gust locks, and any other "remove before flight" items are removed. I have on several instances found the above during my final walk-around. As an added note, if the aircraft has a Lexan inspection panel in the tail (FOD checks), I will always take a last minute peek. I found a fuel stick jammed back there once.

The timely release of each competitor in order to take off at intervals set by the chief judge.

I've never had a chief judge set intervals. It's obvious that the starter must maintain the aircraft flow in such a manner so as to not impede the progress of the contest. This is al-

ways a challenge to the starter. I have actually seen starters burst into tears and quit in the middle of the contest because of their inability to control the process. Although this is not a safety issue, here are just a few things to consider before launching a competitor:

The CATEGORY. If Primary or Sportsman, spend a little more time with these folks to ensure they understand everything and are ready to fly. Do *not* rush them.

The AIRCRAFT. If the pilot is flying a low-powered aircraft, you must realize it will take longer to climb to the hold, and therefore you must launch them sooner than you would a more high-powered aircraft. Some aircraft take longer warm-up times, and you must take this into consideration. Ask the pilot if he or she needs some warm-up time—beforehand—so you can account for this.

The PILOT. Each competitor is different. It helps to know the pilot and his or her personal quirks. Some are quick in getting strapped in and ready, while others like to do yoga and hand-fly their sequence *after* you tell them it's time to strap in. Some take forever to adjust their headsets while doing a final stare at their sequence card. It really helps to know their style in order to get them launched on time. However, *never* rush a competitor. I'll let the chief judge yell at me before I ever try to rush a competitor into tax-

ing off before he or she is ready.

In the event of an aircraft malfunction prior to takeoff, advising the chief judge of the change in the order of flight and launching the next competitor.

If the starter sees that a competitor may not launch in a reasonable time, it is the starter's responsibility to change the order of flight. The starter must notify the chief judge as soon as possible so paperwork changes can be made on the judging line before the next competitor enters the box. It is then the starter's responsibility to insert that competitor back into the lineup as soon as is possible.

Meeting aircraft landing after a mechanical abort, advising the competitor to stay with the aircraft and not attempt to fix the fault, and calling the chief technical monitor or technical committee member to investigate.

Yes, safety *is* the issue here. After a pilot aborts for a mechanical issue, the starter must ensure the chief tech is advised. The chief technical monitor/committee must investigate the problem and determine if the aircraft is or is not airworthy. It should be pointed out that no single person on the committee should make this decision. Always get a consensus as to the airworthiness of the aircraft.

Duties as specified in the contest incident response plan.

The starter should be provided with a copy of the IRP and understand his or her responsibilities should an incident occur.

Beyond the Scope of the Rule Book

I just want to point out a few items that I feel are related to safety that are not in the rule book.

The Hold Area and Usage by the Starter

Most regional contests use one hold area. That usually works well because of the lower number of contestants. At the Nationals two holds are the norm. I personally like to have the option of two hold areas even at the regional level. This allows the starter some flexibility. For instance, Pitts N260AB is next to be launched and carrying two pilots, one new to our sport and the other is the safety pilot. As the starter I recognize a bit more time is needed

to "adapt" to the situation. If I have the option of a second hold I can send that pilot early to give the new pilot a little breathing space.

On the other hand, I like a second hold in case the pilot in the box takes a few "breaks" in the sequence that the starter was not anticipating and has one already in hold and has launched another competitor. This could be a safety issue if a second hold is not available. These are just two of many cases. I feel that if it is possible, two holds should always be an option for the starter.

Briefing Card

A briefing card is another tool that the starter can use to help avoid confusion. This is a half-sheet of paper with the taxiways, runways, hold areas, frequencies, and other important information. These can be handed out during the initial morning briefings or during the launch process. If I had a nickel for every time a pilot getting ready to launch has asked me the box frequency...

Hopefully I have touched on many of the items that are of value to a starter. It is by no means everything a starter should do, just a guide from years of personal experience. If you find yourself a contest director and must select a starter, please choose wisely as the starter can sometimes make or break a contest. **IAC**

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When Doing It Inverted

A look into glider aerobatic safety

BY LUKAS VON ATZIGAN

When it comes to safety in aerobatic gliders, there are few differences from powered aerobatics other than that there isn't an engine to quit; that being said, however, a glider—like its powered counterpart—can still stall. We are most vulnerable while in inverted flight. Everything on the glider that worked in the positive *g* environment is now subject to the opposite forces. The first thing I teach students who want to learn about unusual attitudes is how to get out of an inverted attitude. For pilots untrained in aerobatics, the automatic reaction to get out of the situation is to pull, which could be fatal as it has the potential risk to overspeed and overload the glider, causing it to break up in the air.

We all know that it is important during preflight to secure anything loose, but when it comes to aerobatics, the level of importance is increased. Anything loose that was overseen or ignored during preparation and preflight can now become an object of distraction, a missile, or a block of control elements. The battery is one of those objects that requires particular attention as it is routinely removed from the glider for recharging. In an aerobatic glider it is advisable to invest in proven battery containment; stay away from some of the adventurous homemade designs as seen in some regular gliders.

If possible, leave anything not essentially needed on the ground. On days that have a potential for staying

airborne for an extended amount of time, it is advisable to carry some water on board. I use a water bag that is secured behind the seat and run the drinking hose underneath the seat belt to avoid it dangling around. Make sure not to route the drinking hose underneath the parachute harness as it may become an obstacle if you have to bail out. Some water bags have extra pockets that can hold a phone or wallet. Don't forget to close those pockets; otherwise, you may share an experience where my phone hit me in the head before it fell to my feet. It put an end to my flight as I could not retrieve and secure it, and I had to land. Although upset about giving away an opportunity to thermal back up for another routine, I was glad that the phone didn't block any of the glider's controls.

After I release from tow and each time I arrive at altitude for an aerobatic sequence, I go through an aerobatics checklist . . .

In some gliders the tow release knob is hard to reach for taller pilots that sit farther back. I've seen some of these knobs extended with strings. I heard an anecdote of a situation where such an extension almost caused an accident. A pilot flying a Pilatus B4 inverted radioed to his colleague on the ground that his controls were blocked. His colleagues told him to bail out, but the pilot flying in a stable position refused to give up and assessed the situation. He quickly found that the tow release extension had wrapped around the wheel brake lever that was installed on the stick. He was able to unwrap the string and save the day.

Another item to consider, that was brought to my attention by the glider community, is the uncontrolled deployment of the spoilers. Although they should remain firmly locked in place even in a negative *g* situation, if it

As inverted flight is uncomfortable, I tend to limit the time I spend upside down.

happens, it likely will be a noisy event. At that point it is advisable to roll to upright position and take a break in the sequence to close the spoilers and lock them. While the firm locking of the spoilers is checked before takeoff, it should be part of the aerobatics checklist that is used after the tow release.

After I release from tow and each time I arrive at altitude for an aerobatic sequence, I go through an aerobatics checklist:

- Belts: A last check that the belts are secured and tight.
- Canopy: Check the canopy locks and make sure they are secure.
- Spoilers: Check for the proper locking of the spoilers.
- Landing gear: Check the gear is up and locked.
- G-meter: Reset the g-meter.
- Traffic: A final check that the practice area is clear of traffic.

As inverted flight is uncomfortable, I tend to limit the time I spend upside down. So my inverted flying is not as refined as with positive *g*'s. The airfoil of my glider is built with a

3F

40-to-1 lift-to-drag (L/D) ratio—sunny side up. It is built to be slick and efficient, which is a concern when it comes to downlines in a maneuver. It picks up speed very fast, and approaching the redline happens quickly.

I approach a new maneuver with extra caution and think of ways to break it down into elements that I can practice safely. For example before attempting an outside loop, I start with an element where the effects of timing and speed can be easier controlled—like an inverted 45-degree downline. You can test how much push is required at what speed and get more used to the negative *g*. The first part of the outside loop could be practiced with an inverted reverse half-Cuban-eight. During that maneuver, I discovered that I have to be careful with the amount of push, particularly on the last quarter of the loop. I got into a stall at the most critical position, where the speed was too high for a safe roll or pulling out. So the only choice I had was to relax the push, reattach the airflow to the wing, and then continue to push to inverted straight flight. On an instructional flight in a high-performance aerobatic glider, I was shown the effect of a straight inverted stall. As we descended with increasing speed, we had to pull a bit to fly again. It was a good reminder that the angle of attack is the cause for a stall and not the airspeed. By instinct and training, I was able to make the right adjustments on that reverse half-Cuban-eight and came out safely.

When designing a sequence, it should be kept in mind to place the maneuvers with a potential risk for an extended altitude loss into the first part of the sequence. I usually place horizontal rolling elements at the end of the sequence and use the maneuvers with vertical lines in the earlier part. It gives me more time to react if I have to make significant corrections in a maneuver. If in doubt or if you need help in the design of a sequence, you can always count on your more experienced colleagues. I have always had good experience when I reached out to the glider aerobatics community, so don't be afraid to ask for help. IAC

CONTEST CALENDAR

Mark your calendars for these upcoming contests. For a complete list of contests and for the most up-to-date contest 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.*

Midwest Aerobatic Championship
Friday, June 28 – Sunday, June 30, 2013
Practice/Registration: Friday, June 28
Power: Primary through Unlimited
Location: Seward (SWT), Seward, Nebraska
Region: Mid-America
Contest Director: David Moll
Contact Information: Primary Phone: 402-613-5422
E-Mail: *davidmoll66@gmail.com*
Website: *IAC80.org*

Green Mountain Aerobatic Contest
Friday, July 12 – Sunday, July 14, 2013
Practice/Registration: Thursday, July 11 – Friday, July 12
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Hartness State Airport (VSF), Springfield, VT
Region: Northeast
Contest Director: Bill Gordon
Contact Information: Primary Phone: 803 585 0366
E-Mail: *wsgordon@earthlink.net*
Website: *http://iac35.aerobaticsweb.org*

Salem Regional Aerobatic Contest
Saturday, July 13 – Sunday, July 14, 2013
Practice/Registration: Friday, July 12
Power: Primary through Unlimited
Location: Salem-Leckrone Airport (SLO), Salem, IL
Region: Mid-America
Contest Director: Bruce Ballew
Contact Information: Primary Phone: 314.369.3723
E-Mail: *bruceballew@earthlink.net*

High Planes HotPoxia Fest
Saturday, July 13 – Sunday, July 14, 2013
Practice/Registration: Friday, July 12
Power: Primary through Unlimited
Location: Sterling Municipal Airport (STK), Sterling, CO
Region: South Central
Contest Director: Dagmar Kress
Contact Information: Primary Phone: 303-887-4473
E-Mail: *DagmarAerobatics@me.com*
Website: *www.iac12.org*

Kathy Jaffe Challenge
Friday, August 9 – Sunday, August 11, 2013
Practice/Registration: Thursday, August 8 – Friday, August 9
Power: Primary through Unlimited
Location: South Jersey Regional Airport (VAY), Mt. Laurel, NJ
Region: Northeast
Contest Director: Mark Mattioli
Contact Information: Primary Phone: 609-634-0327
E-Mail: *ce2n6gk@gmail.com*
Website: *www.iac52.org*

Hoosier Hoedown
Saturday, August 10 – Sunday, August 11, 2013
Practice/Registration: Friday, August 9
Power: Primary through Unlimited
Location: Kokomo Municipal Airport (OKK), Kokomo, Indiana
Region: Mid-America
Contest Director: Mike Wild
Contact Information: Primary Phone: 765-860-3231
E-Mail: *mike.wild@hotmail.com*
Website: *www.hoosierhammerheads.com*

Doug Yost Challenge
Saturday, August 17 – Sunday, August 18, 2013
Practice/Registration: Thursday, August 15 – Friday, August 16
Power: Primary through Unlimited
Location: Spencer Municipal Airport (SPW), Spencer, IA
Region: Mid-America
Contest Director: Aaron McCartan
Contact Information: Primary Phone: 515-570-3537
E-Mail: *northernplanes@outlook.com*
Website: *www.iac78.org*

Beaver State Aerobatic Contest
Friday, August 23 – Saturday, August 24, 2013
Practice/Registration: Thursday, August 22
Rain/Weather: Sunday, August 25
Power: Primary through Unlimited
Location: Eastern Oregon Regional Airport (PDT), Pendleton, OR
Region: Northwest
Contest Director: John Smutny
Contact Information: Primary Phone: 206.399.7097
E-Mail: *johnsmutny@gmail.com*
Website: *http://www.iac77.eaachapter.org/*

2013 Upper Canada Open
Saturday, August 24 – Sunday, August 25, 2013
Practice/Registration: Friday, August 23
Power: Primary through Unlimited
Location: Chatham Kent Municipal Airport (CNZ3), Chatham ON, Canada
Region: Mid-America
Website: *http://aerobaticscanadachapter3.blogspot.com*

Oshkosh 2013
Saturday, August 24 – Sunday, August 25, 2013
Power: Primary through Unlimited
Location: Wittman Regional Airport (OSH), Oshkosh, WI
Region: Mid-America
Contest Director: Audra Hoy
Contact Information: Primary Phone: 920-203-9000
E-Mail: *audra_hoy@yahoo.com*

Happiness is Delano
Saturday, August 31 – Sunday, September 1, 2013
Practice/Registration: Friday, August 30
Power: Primary through Unlimited
Location: Delano Municipal Airport (DLO), Delano, CA
Region: Southwest
Contest Director: Stephen De La Cruz
Contact Information: Alternate Phone: 760-963-6426
E-Mail: *sec@iacchapter26.org*
Website: *www.iacchapter26.org*

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Hammer Fest
Saturday, August 31 – Sunday, September 1, 2013
Practice/Registration: Friday, August 30
Rain/Weather: Monday, September 2
Power: Primary through Unlimited
Location: Llano Municipal Airport (AQ0), Llano, Texas
Region: South Central
Contest Director: Mike Carver
Contact Information: Primary Phone: 360-888-7604
E-Mail: *mngcarver@comcast.net*
Website: *iac107.org*

Ace's High Aerobatic Contest
Saturday, September 7 – Sunday, September 8, 2013
Practice/Registration: Friday, September 6
Power: Primary through Unlimited
Location: Newton City Airport (EWK), Newton, Kansas
Region: South Central
Contest Director: Ross Schoneboom
Contact Information: Primary Phone: 316-648-5057
E-Mail: *schoneboomr@prodigy.net*
Website: *www.iac119.webs.com/*

East Coast Aerobatic Contest
Saturday, September 7 – Sunday, September 8, 2013
Practice/Registration: Friday, September 6
Power: Primary through Unlimited
Location: Warrenton-Fauquier Airport (HWY), Midland, VA
Region: Northeast
Contest Director: Scott Francis
Contact Information: Primary Phone: 703-618-4132
E-Mail: *s.francis@ieee.org*

NorAm Team Championship
Friday, September 13 – Saturday, September 14, 2013
Practice/Registration: Thursday, September 12
Rain/Weather: Sunday, September 15
Power: Primary through Unlimited
Location: Ephrata Municipal Airport (EPH), Ephrata, WA
Region: Northwest
Contest Director: Jerry Riedinger and Emma Stewart
Contact Information: Primary Phone: 425-985-9469
E-Mail: *JRiedinger@perkinscoie.com*
Website: *http://www.iac67.org/*

Rocky Mountain "Oyster" Invitational
Saturday, September 14 – Sunday, September 15, 2013
Practice/Registration: Friday, September 13
Gliders Categories: Sportsman Intermediate
Power: Primary through Unlimited
Location: Lamar Municipal Airport (KLAA), Lamar, Colorado
Region: South Central
Contest Director: Jamie S. treat
Contact Information: Primary Phone: 303-304-7937
E-Mail: *JamieTreat@q.com*
Website: *http://www.iac5.org*

2013 US National Aerobatic Championship
Sunday, September 22 – Friday, September 27, 2013
Practice/Registration: Saturday, September 21
Rain/Weather: Saturday, September 28
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: North Texas Regional Airport (KGYI), Sherman, TX
Region: Mid-America
Contest Director: John Smutny
Contact Information: Primary Phone: 206-399-7097
E-Mail: *usnationalscd@gmail.com*
Website: *http://nationals.iac.org/*

27th FAI World Aerobatic Championships
Wednesday, October 9 – Sunday, October 20, 2013
Practice/Registration: Tuesday, October 1 – Tuesday, October 8
Power Categories: Unlimited
Location: North Texas Regional (GYI), Sherman, TX
Region: South Central
Contest Director: Chris Rudd
Contact Information: Primary Phone: 850-766-3756
E-Mail: *waccd2013@gmail.com*
Website: *wac2013.com*

Sebring Aerobatic Championships
Friday, November 1 – Saturday, November 2, 2013
Practice/Registration: Saturday, October 26 – Thursday, October 31
Power: Primary through Unlimited
Location: Sebring regional (SEF), Sebring,FL.
Region: Southeast
Contest Director: mike mays
Contact Information: Primary Phone: 561-313-8503
E-Mail: *soaerobatics@aol.com*
Website: *www.iac23.com*

Tequila Cup
Friday, November 8 – Saturday, November 9, 2013
Practice/Registration: Thursday, November 7
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Marana Northwest Regional Airport (AVQ), Marana, AZ
Region: Southwest
Contest Director: Jim Ward
Contact Information: Primary Phone: 603-860-4456
E-Mail: *cd@tequilacup.org*
Website: *www.tequilacup.org*

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BY GARY DEBAUN, IAC #4145

Peggy Jordan Riedinger

IAC 433547
Nickname: Pegster
Occupation: Accountant
Chapter Affiliation: 67 and 77
Age: Old enough
(over 21—that's all that matters!)
E-mail: *iac67president@gmail.com*

GD: So Peggy, I see you are a big Seahawks fan, eh? Let's forget football for the moment and talk about aerobatics. Give us a little intro on how you found your way into our sport.

PJR: I was dating a pilot (who is now my husband). He wanted to fly aerobatics, and I wanted to spend time with him, so I started going to contests with him.

GD: What was your first contest and when?

PJR: I know it was in 2006, but I can't remember whether it was the Apple Cup in Ephrata, Washington, or the Beaver State Regional in Pendleton, Oregon.

GD: What motivated you to become a national judge?

PJR: I became a regional judge after seeing the volunteer coordinators struggle to fill out the judging line. A few years later, some contest directors in the Northwest requested that I become a national judge to provide additional chief judges at our Washington and Oregon contests.

GD: You have indicated that you would like to teach a judges school, but you do have a few reservations about that. Can you tell us why?

PJR: Some acro pilots believe that to be a good judge, you have to be an acro pilot. I'm concerned that because I'm not a pilot, I might not be seen as credible. As a nonpilot, I have a different perspective on judging. I'm not influenced by how a particular plane flies a particular figure; I judge solely on what the figure looks like, according to the rules.

GD: You have been on the judges line at the Nationals; from your perspective is there anything we can do better out there?

PJR: My first Nationals in 2012 was very well-run. It was awesome to see that many pilots fly in such a short time. Our judging line in Ephrata has spoiled me by having well-defined markers so the judges know they are lined up with the center line of the box. I missed that at Nationals.

GD: What is the most difficult figure to judge?

PJR: Loops are tough, but I think the figure eights in Family 7.8 are the toughest. Not only do you have to consider the size and altitude of the loops, there are different grading criteria on the entry and exit lines depending on whether there are multiple rolls on the 45-degree lines.

GD: Do you have any specific goals in the aerobatic world?

PJR: You've already mentioned that I'd like to teach judges school. I'd also be thrilled to one day be one of the chief judges at Nationals.

GD: Who do you admire most in our sport and why?

PJR: The spouses and significant others who give up their vacation days to come to a contest and fill those much-needed volunteer roles to support their pilots. Without those nonflying volunteers, it would be a real challenge to staff a contest.

GD: What other interests do you have outside of aerobatics?

PJR: Seahawks! I'm also an avid knitter. Anyone who has seen me away from the judges line at a contest can probably tell you that. I stopped working full-time in June (just in time for contest season!) and am looking forward to getting back to doing some other crafts like stained glass, quilting, and making jewelry. Oh yeah—and most important—I'm going to learn to fly straight and level!

GD: Last question. If you could change anything in the IAC, what would it be and why?

PJR: I would like to see more spouses and significant others become judges—or at least attend judges school—to become more familiar with the sport. I suspect that we would have more pilots flying if their spouses could see how important safety is in our sport. *IAC*

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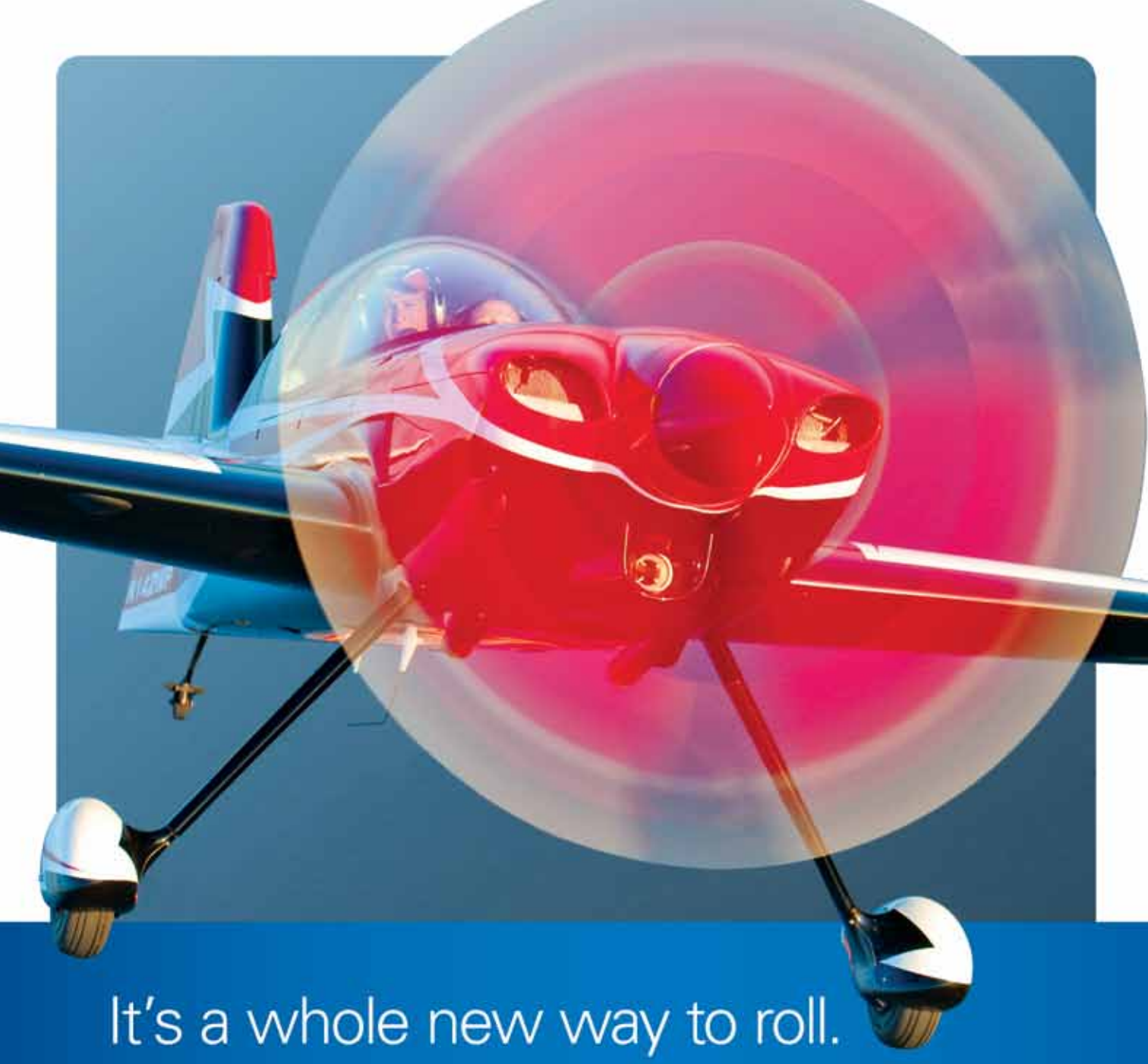

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