

SPORT *Aerobatics*

December 2014

OFFICIAL MAGAZINE of the INTERNATIONAL AEROBATIC CLUB



- Flying Sportsman in a Harvard
- Tactical Approach to Safe Competition

Is Aerobatic Flight a Rich Person's Sport?



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—Rick Volker

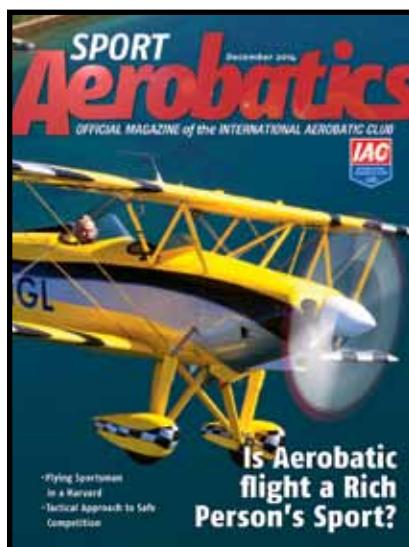
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REGGIE PAULK

COMMENTARY / EDITOR'S LOG

A 2014 thanks

AS I WRITE THIS, THE BOARD OF directors for the IAC is meeting in Oshkosh, Wisconsin, in the P.H. Batten Board Room in the EAA museum. What a difference a couple of months from AirVenture makes at Wittman Regional Airport!

**I'd like to thank
all of the people
who work year-
round keeping the
dream alive and
helping to make our
publications the best
they can be.**

This airport looks a little different from other airports around the country—the grounds are empty, and the airport is quiet. The grass around the runways has grown a bit from when it was mowed to accommodate the hundreds of airplanes that fly in for AirVenture, but the serenity of the field lies in stark contrast to an airport that becomes the busiest in the nation for the week of AirVenture.

Those of you who haven't come to Oshkosh have probably day-dreamed of the time when you make the pilgrimage and spend a week wandering around soak-

ing in the surreal feeling of being surrounded by a mix of airplanes and people unlike anything on Earth. What you probably haven't thought of is what happens the other 51 weeks of the year.

The EAA museum is still open, and the employees still show up every day, making preparations for the next AirVenture. IAC Manager Trish Deimer-Steineke makes her office here at EAA headquarters, and save for myself, all of the IAC's publications people work out of EAA headquarters as well.

Sport Aerobatics magazine happens with the help of the copy-editing staff headed by Colleen Walsh, and layout is thanks to our art director, Olivia Phillip. Sue Anderson helps us pay the bills as our advertising sales representative. Our e-newsletter, *In the Loop*, is copy-edited, again, thanks to Colleen Walsh, but we rely on Ric Reynolds and Sara Miller to lay it out and get it sent to all of our subscribers.

While you're daydreaming about someday attending AirVenture, or about the time you were there, I'd like to thank all of the people who work year-round keeping the dream alive and helping to make our publications the best they can be.

IAC

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



MIKE HEUER

COMMENTARY / IAC PRESIDENT, IAC 4

Please send your comments, questions, or suggestions to: mike@mheuer.com

Meetings, Competitions, AirVenture and more

ONE OF THE LARGELY UNKNOWN

responsibilities of the IAC president is an extensive commitment to an array of meetings and events that must be attended every year. As I write this, I leave the following day for the CIVA meeting in Wroclaw, Poland. After that meeting concludes, it will be direct to Oshkosh for the IAC and EAA board of directors meetings. The agenda packages for those meetings literally numbers in the hundreds of pages. I often wonder how things got so complicated.

In addition to two IAC board meetings a year, the IAC president sits on the board of EAA, and there are at least two of those meetings a year. The CIVA meeting usually takes almost a week out of the calendar every year. On top of that, EAA AirVenture in Oshkosh and the U.S. National Aerobatic Championships are on the list as well, and attendance is a must—IAC involvement in both of those events is intense and important.

In the case of the Nationals, it is obvious. We “own” the event, and it is held under our banner and IAC funds are used to organize it. How well it performs and is managed reflects directly back on our organization as well as the bottom line in our financial statements. Naming national champions is our primary mission, as well as selecting U.S. aerobatic teams, and we need to do it right and the best we can. The Nationals must be fair, objective, and run by the book. I am confident the 2015 event will be even better as your board considers upgrades for next year.

EAA AirVenture on the other hand has several purposes for IAC. The obvious one is that we are an essential and vital part of the EAA family of organizations. We have had a presence at the fly-in since 1970, when we signed up a record 120 new members. IAC volunteers and staff have been talking to aviation enthusiasts, selling our merchandise, answering thousands of questions, and holding seminars and forums for more than four decades. It is incredibly rewarding and a great reunion for hundreds of our members who stop by the IAC pavilion while they are there. I am planning upgrades and improvements to our presence next year, so be sure to put EAA AirVenture on your calendar as well.

Meetings of the board are held twice a year—in November and again in late March. As I have said in previous columns, I am totally committed to providing you a quality organization for your membership dollars, and this will be the main thrust of our meeting in Oshkosh on the 12th and 13th of November. I will have a full report on that meeting in next month’s issue. The board will assemble at the EAA museum and go through an agenda package that numbers more than 280 pages. There is a lot to do.

One of my goals has been to build a real “team” of officers, directors, and committee volunteers who are dedicated to the IAC and its future. Fortunately, I inherited many fine committee and program chairs who are doing a wonderful job. But we are also looking for

new talent all the time. The need for volunteers who have the skills and experience we need is unending. If you have job experience or specialized abilities you think might be useful to the IAC on an international basis, let me know. I am constantly scouring the countrywide, looking for new people who want to take on responsibilities I know they will find rewarding and fulfilling.

I have personally been a volunteer in aerobatics since 1968, when I assisted a well-respected judge for the first time at an aerobatic competition in Aurora, Illinois. His name was Dale Drummond, and he was one of just a handful of people who judged competition aerobatics at the time. It was very educational for me to sit at Dale’s side as he assessed figures and assigned them grades. It got me excited about being a pilot and a judge myself. I entered my first competition that year in a Sportsman-equivalent category and took up judging when IAC was formed in 1970.

I feel very lucky to be where I am in life and in the IAC at the moment. I retired from the airline a few years ago and now devote my full time to the IAC as one of your cadre of volunteers. This puts me in touch with people all over the world who share this passion for aerobatics.

Let me know if you would like to help out. **IAC**

ASK MIKE

Call or write at any time. My home number is (901) 850-1301. E-mail mike@mheuer.com



A Tactical Approach to Safe Competition Aerobatics

ARTICLE AND PHOTOS BY PATRIC “BALLS” COGGIN

My first stop on the journey to competitive aerobatics had nothing to do with the IAC. It first began when I looked for an airplane that could fill two missions: 1) Fast and efficient cross-country machine, and 2) Be a fun machine capable of helping fill that void. The other requirement is that it had to “fit in the hangar” as a mentor of mine would say, or in other words, it had to fit a relatively small budget.

It didn’t take long to land on an RV-4. After quite a journey in

finding the correct machine, I was a proud new owner in November of 2013 and loving every minute of flying it. However, as I was researching an online website about flying RVs, I found a thread that discussed flying in aerobatic competitions. This opened a whole new train of thought to me. While I knew there were “aerobatic champions,” I never thought about the actual contests before. After some more online research about the IAC and its contests, I knew this

might just be the perfect thing for me. What could be better than aggressive, high-g maneuvers requiring precise repetition and practice while surrounded by others who loved to do that same?

I started to plan how I was going to attack this animal of competitive aerobatics. While I started in general aviation before I entered the military, all of my “upside-down” flying experience comes from the military and jet aircraft... nothing like keeping a light general



Cleaned up and packed for departure.

aviation (GA) aircraft in a 1-by-1 kilometer box.

The easiest first step down the IAC path would be some instruction. However, the RV-4 has serious, if not dangerous, limitations on aerobatics with a body in the back seat. My other option would be to take instruction in a different airframe. However, that usually involves an aircraft such as a Decathlon. While I love flying Decathlons, an RV-4 surrogate it is not. I had a problem.

One part of my fighter pilot training that has been most beneficial to me has almost nothing to do with flying but lies in how we attack a problem. We are taught

that we must first identify the tactical problem, plan and brief to objectives, execute the mission, and then gain lessons learned through a debrief focused on those objectives. We continue to frame the problem by planning and briefing a tactical problem in the following format: Motherhood, Threats, Weapons, Tactics. In military circles, these terms are defined as:

Motherhood: Everything that needs to be done before we can even think about the mission. Fuel, taxi plans, mission products, weather, NOTAMs, and emergency procedures are all examples.

Threats: Fairly self-explanatory, but simply said anything out there

**While I knew there
were ‘aerobatic
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that can be “poor to your health” is a threat. Not just enemy action as terrain, obstructions and bad weather can also qualify.

Weapons: Again self-explanatory, but in what ways can we employ our weapons to eliminate threats and complete the objective.

Tactics: Putting it all together: what attacks, what geometry, with what weapons will maximize our chance to completing the objectives.

These terms can easily be modified to fit my situation, or any other IAC newbie, as follows:

Motherhood = Aircraft setup, harness, parachute, competition setup, box entry, communication

procedures, IAC rules . . . Threats = what will kill you, weaknesses of your aircraft in competition. Weapons = your strengths, your aircraft’s strengths. Tactics = putting it all together for competition. A thorough evaluation of IAC competition through this lens could take volumes. What I initially focused on, as this article will focus on, will be my personal first steps of evaluating the Motherhood and Threats of my situation.

My own Motherhood briefing started with the IAC website and rule book. I studied until I felt like I had a solid understanding of what a contest was supposed to be, the layout of the competition and the box. Another disadvantage I had was that I was geographically separated from any IAC chapters. However, I am blessed to have many friends in the air show circuit who could give me tips and techniques on a wide range of issues, not limited to a parachute, FARs regulating practice areas, RV-4 aerobatic characteristics, etc. If you are planning a journey into competitive aerobatics, find your wealth of knowledge to help you through your first steps.

There are other concerns that may not be thought about when starting an aerobatic journey. Getting your aircraft ready, for instance. Too many times have I seen someone take off on an aerobatic flight with the cockpit full of portable navigation devices, loose antennas, pens, and drink cups. Loose items, loose or poor quality harnesses, and a proper parachute are all items that need strict attention. Even a correct pair of shoes that provides protection but a good feel of the rudder pedals is an important point that may be overlooked.

Once I felt I had a frame of reference for my upcoming practice, I wanted to get my hands around the threats of competing in aerobatics, specifically in an RV-4. As before, I aggressively sought after all the information I could find. I looked at



Initial hangar neighbors in Sherman.



NTSB reports, read online forums specializing in Van's aircraft (Vans AirForce.net), and discussed the topic with fellow RV-4 pilots.

The only trend I found in the accident reports was a string of accidents caused by illegal, low-altitude maneuvering and aerobatics performed by un- or under-trained pilots. (I am happy to say that the rate of these accidents is trending lower, but it is still far from zero. I implore the RV community to continue to police themselves to control this problem.) Beyond that, there were a few stall-spin accidents, mostly following engine failures at low altitude.

There was only one RV-4 in-flight structural failure, but the NTSB concluded that it may have been caused by a highly critical building/maintenance error.

After my research and talks with fellow RV-4 pilots and owners, I found that overall the aircraft is quite sturdy and can very safely compete in Sportsman-level aerobatics. The warnings I received from others all focused on its slippery nature. A few experienced pilots have found themselves in overspeed conditions on a downline only to over-g the aircraft to recover. The good news is

that I could not find an accident that came from this scenario, but it certainly got my attention, and I created my RV-4 syllabus around this threat.

Did I say syllabus? Yes I did. I created a performance-based syllabus for myself to defeat my identified threats before I even tried to make a loop round or a nail a 45-degree line. I forced myself to "pass" each ride below before I would go on to the next ride. Before you ask, yes, I did have to re-fly a ride or two.

Ride 1: Dive Recovery

Objective: From a worst-case situation (90-degrees nose low, less than maximum g), what is the maximum airspeed a recovery can be initiated and not overspeed. Gain confidence in this scenario.

Task 1: Perform a series of split-S maneuvers, starting at a very low entry airspeed (80 mph) and then increasing the entry airspeed until the max entry airspeed can be computed. Take note of g's pulled for reference in following maneuvers.

Task 2: After determining the max entry airspeed for the split-S, perform it again, capturing the airspeed as the nose tracks through the vertical down.

Task 3: At a slow airspeed (80 mph), roll inverted and pull to the vertical down. On the downline, initiate recovery 20 mph less than airspeed found in Task 2. Repeat, increasing recovery airspeed incrementally until reaching the airspeed in Task 2.

Caution: Not using the same g through these maneuvers can give widely varying results, including being much faster than planned.

Caution: Perform these and all following tasks at a very safe altitude. I use 5,000 feet AGL for these type maneuvers. This gives plenty of pad from the terrain, but it is not so high that turn performance and acceleration are highly affected by density altitude.

Note: I put a safety pad on the g-limit for my aircraft. I plan for 4g's



with a “self-imposed limit” at 5g’s. The RV-4 is rated to 6g’s with ultimate failure at 9g’s. Additionally, I pad V_{NE} 10 mph from book numbers.

Ride 2: Spins

Objective: Safely recover aircraft from various spin situations. Gain confidence in spins.

Task 1: Stall the aircraft in un-coordinated flight in various realistic flight situations. Attempt to recover prior to a developed spin.

Task 2: Repeat Task 1, but force aircraft into developed spin prior to starting recovery. Take note of spin and recovery characteristics.

Task 3: Perform a series of competition entry spins. Attempt in both directions. Attempt to recover after a one-turn spin and take note of altitude lost during the maneuver.

Caution: I performed this ride at 9,000 feet AGL. As it was the first time I spun this aircraft, I was much more concerned about safety than the effects of density altitude on performance.

Note: In most other pilot/aircraft situations, I would put the spin ride first. However, there were some reports of pilots coming close to overspeed upon exiting a spin. I have since determined that even a lazy pull after a spin recovery keeps me well below redline.

Ride 3: G Awareness

Objective: Gain g awareness in the aircraft. Be able to identify critical g-levels by feel alone.

Task 1: At a relatively high airspeed, perform a spiral turn 2g’s. Maintain until feel is developed. Incrementally increase until critical g is reached.

Task 2: Repeat, but pull to the expected g-load by feel only, then cross-check g-meter. Repeat until nailing expected g consistently +/- .5g’s.

Task 3: Starting at a low airspeed, start a spiral turn and pull g’s until an accelerated stall is reached. Take note of the maximum g available at that airspeed. Incrementally increase airspeed and repeat, taking note of maximum g available across the operating airspeed range.

Ride 4: Airspeed/Altitude Relationship

Objective: Be able to predict the airspeed and altitude of the aircraft exiting a vertical maneuver.

Task 1: Perform multiple split-S maneuvers, starting at low airspeeds and working up toward the maximum airspeeds discovered in Ride 1.

Task 2: Repeat Task 1, but this time start from the vertical downline.

Task 3: Perform multiple Immelmann maneuvers, starting at a very high airspeed. Incrementally slow the entry speed to determine a minimum entry airspeed.

Caution: Keep the aircraft coordinated and be ready to let the aircraft fall out of a botched Immelmann in Task 3 to avoid an inadvertent inverted spin.

Note: Strive to determine a rule-of-thumb of airspeed and altitude changes across all these maneuvers.

Note: Expect altitude lost in Task 2 to be about half of Task 1. This number can be used as an average turn radius. Knowing the turn radius of the aircraft can be useful later on in training for self-critiquing looping maneuvers.

Ride 5: Spins 2

Objective: Be able to predict exit parameters of spins.

Task 1: Using information gained from the previous spin ride, complete multiple spins in the preferred direction attempting to exit at exactly 360 degrees (one turn) of spin. Repeat until consistent. Note altitude lost.

Task 2: Repeat but attempting one plus one-fourth, one plus one-half, and two-turn spins. Note altitude lost.

(If anyone is curious, the spin rides took me twice each.)

I hope this description of how I framed motherhood and threats of competition aerobatics will help someone start their journey. Obviously, my situation is somewhat unique, but I’m confident there are others out there in situations similar to mine. The good news is that this entire journey has been extremely rewarding and enjoyable. Get the training you need with an instructor, and get in your aircraft and identify and defeat your threats. Once that is complete, the fun really begins by learning your strengths and putting it all together in a high scoring run.

IAC



Flying Sportsman in a Harvard

BY RICK VOLKER

The Sportsman category is a perfect starting point for aerobatic pilots with higher goals. It is also a great playground for those who want to have fun with less competitive aircraft. As a competitor who followed the path of Sportsman through Unlimited category, I considered competition to be the only acceptable preparation for realizing my first aviation goal—flying air shows in a Sukhoi 26M. I am as surprised as anyone else that I found my way back to the competition playground.

Early in my air show days, I was given the opportunity to fly a Spitfire Mk IX in a surface 0-level aerobatic act. I required a T-6/Harvard checkout during the RAF-designed Spitfire training course. After the initial procedural review and flight-testing, my subsequent Harvard experiences were limited to providing a taxi service for the museum owner and as a photo ship for other WWII aircraft. Aerobatic experimentation was not welcome. I was surprised that this bus of an airplane felt so nimble and wondered what it would be like to use its full flight envelope. As soon as I was able to switch to the Spitfire, my Harvard curiosity was abandoned. The Spitfire satisfied my fighter pilot wannabe dreams and gave a taste for commemoration and history that was missing in modern aircraft. I used to joke that a Harvard was a big dumb airplane for big dumb pilots. I am here to eat those words.

After several years of flying the Spitfire, Messerschmitt, and Hurricane, the museum closed its doors, leaving me in warbird withdrawal. I kept thinking of how delightful the Harvard felt and wondered if

its bad reputation of biting new recruits was warranted. I needed another warbird fix. The Canadian Harvard Aircraft association, based in Tillsonburg, Ontario, provided the cure. I acquainted myself with its Harvard, finding it to be an “honest” airplane, devoid of any unexpected behavior. The performance envelope seemed much larger than I had anticipated. Quickly falling in love, I decided to buy my own Harvard.

Why a Harvard and not a T-6? The airframes are identical. It is the accessories that differ. Due to the weight and balance of the T-6 as equipped in the U.S. standard category, T-6s are banned from spins. In Canada, the operating limits of the aircraft in Harvard attire permit spins, and thus

cockpit layout that prepares for time in virtually any piston fighter of WWII. With a 4,300-pound empty weight and only 600 hp, the Harvard still teaches pilots valuable lessons in energy management. There is no inverted fuel or oil system. The asymmetric wing is not capable of more than -1g from level flight and provides roll rates of 90 degrees/second, typical for the WWII era. The 5.67g limit seems high for a 62-year-old airplane, so most pilots today use a self-imposed limit of 4g to preserve the airframe for the next generation. There are plenty of Harvards and T-6s with more than 11,000 hours on them. How many Unlimited monoplanes will make it that long in one piece? I’ll baby mine, thanks.



much more experimentation with maneuvers that may devolve into spins, such as hammerheads and avalanches. Harvards have been used since WWII to teach aerobatics to budding fighter pilots. They are blessed with perfect control harmony, great visibility, and a

Moving into a Harvard requires a separate set of skills to handle weight and procedural differences. The Canadian Harvard Aircraft Association averages about 10 hours of ground school and five hours of flight time to give a Harvard checkout to an experienced tailwheel

pilot. A Harvard will likely burn about 16 gallons of gas during a 20-minute aerobatic practice flight. Operating costs are about the same as an Extra due to the fact that the higher fuel burn is offset by hull insurance that is one-third the cost of an aerobatic carbon-fiber monoplane. The airframe and engine are easy to work on. Parts are cheap and plentiful. This is truly what people call a “gas and oil” airplane.

The 2014 air show season was spent showing crowds how a Harvard can fly an interesting and challenging solo. In addition to Sportsman figures, additional maneuvers including avalanches, snap rolls out of hammerheads, simulated tail slides, full slipping “hovers,” and a Harvard version of a rolling turn were added. It was great fun flying at the edges of the envelope. The eight-minute air show sequence was built without breaks for energy and was done entirely between the surface and 1,600 feet AGL for maximum crowd shock value.

Other performers constantly remarked that the Harvard and T-6 are perhaps the most dangerous aircraft in which to fly an exciting low-level routine. Why? If you lose fuel pressure on a hammerhead upline, you will not have enough power and rudder authority for the pivot, creating an unapproved tail slide, possibly into the ground. If slow rolls are allowed to dish out at low altitude, there is not enough roll rate or inverted push available to stop from hitting the ground. Ham-handed rolls and overzealous pulls will snap roll. An intentional snap roll at low altitude without commitment may end up as a half-snap with no way to recover. There is simply not enough power or roll rate to save oneself after doing anything stupid at low air show altitudes.

The air-show experience raised the big question: Can a Harvard be flown safely and competitively in Sportsman category aerobatic competition? Breaks in the contest sequence are not heavily penalized

in Sportsman, and are required of the Harvard pilot to maintain a high enough energy state to avoid violating the edges of the envelope, both personal and mechanical. The 1,500-foot floor provides an adequate safety margin for any conceivable known sequence. The lack of an inverted fuel and oil system

last student. I still remember Bill Thomas yelling, “Do another one!” in my ear over the same Olean airport in my first aircraft, a Pitts S-2B. Bill gave me a good “idiot proofing” that has hopefully lasted to this day. Surrounded by Pitts and Extras, the Harvard would make its stand here.



Bill Thomas used this Olean, New York, airport as his classroom during the summer.

affects the ability to gain a perfect score in a majority of Sportsman maneuvers. The penalty for losing fuel pressure is that the engine rpm drops off, the constant speed prop unit (CSU) tries to boost the rpm, and when the fuel pressure returns, the CSU is too slow to respond and overspeeds the engine. Bad. Expensive. So, why not fly Primary? Primary category was quickly ruled out as too simple and easy for a Harvard, as this year's sequence criminally lacked a spin.

With two weeks of Sportsman sequence practice after the 2014 air show season ended, the decision was made to compete in the Sportsman category at the Bill Thomas Can-Am Aerobatic Challenge in Olean, New York. This was enough time to sort things out, but not enough time to make it perfect. Bill Thomas had been my only aerobatic instructor, and I was his

The Sportsman Challenge

This is a description of a flight through the maneuvers that challenge the Harvard the most:

Reverse half-Cuban goldfish

Approaching the box in level flight at climb power (30 inches, 2000 rpm), the forward visibility is better than is found in any modern aerobatic plane. Tracking that Pitts bogey at your 2 o'clock in the hold is effortless. However, there is no way to look straight down. The wing blocks the whole airport! Where did the box go? Downline wing-wags meted out until the last second will save the day. Pulling for the reverse half-Cuban goldfish with a 4g pull feels perfect at 165 knots (max level speed), with 140 knots as the minimum speed to achieve a round looping segment. If one rolls to inverted and tries to draw a 45 line, the engine will

quit, inducing the dreaded prop surge upon fuel pressure return. Instead, the pilot should attempt to produce a short, shallow line after the roll that barely avoids losing fuel pressure, helped by a marked pull to enter the looping segment. Distracted by the sound of the R-1340 engine, the judges might overlook that this short line is almost parabolic. During the looping segment, the Harvard feels very stable in pitch, as if on a railroad track all the way around, albeit with a pinched top. An attempt to keep the top round requires a great amount of stick relaxation to give almost zero g, with all energy seemingly gone. The pilot feels like a ballistic projectile with no motor! Where did those 600 horses all go? Loops are likely to look segmented without the benefit of prior ground critique. The end of the maneuver is a 45 positive upline, with the Harvard pilot unable to push to level with less than .1g on the meter. This goldfish eats up the box like a piranha! The fuel system is the master again.

180-degree turn

The pilot is now forced to ask the Harvard to accelerate from what tiny amount of speed is left in level flight with less than half the box remaining in preparation for the 180-degree turn. The Harvard probably could use a mile to get up to the proper speed, so subterfuge must be committed. Coax it up to 100 knots and accept that it will be marginal. Pulling a hair over 2g at that speed will result in the demonstration of a beautiful half snap roll and a big fat zero on the score card. What to do? Use an initial high nose position in the turn, attempt to help it along by slightly descending, and cheat with some top rudder. This deception pays off with scores of 9 across the board.

One-turn spin

With power off, the prop is pulled all the way to full coarse to

prevent an overspeed on recovery. The Harvard breaks cleanly. The spin behavior of less than a 1-1/2-turn spin is textbook perfect with recovery inputs started one-half turn before the finish. To recover consistently in a Harvard, the pilot needs to use the same fuel and passenger load each time to get the timing right. The manual recommends half of a fuel load balanced between the two wing tanks for consistency. The push to a vertical line down requires negative g, which can only be done respectfully in this idle condition. The fuel and oil pressure overload demands a break after the spin to ease the engine back up to fighting form. Take planned break No. 1. Fellow competitors will say that the engine sounds funny on recovery. Intelligent people find Harvard noise to be quite stimulating. Any prolonged quiet from the big radial is felt as a disturbance in the force.

Hammerhead

Use an 85-degree upline. The engine will quit with any minute negative correction on this upline,

for years by ham-handed recruits at altitude, with little problem. Accepting the positive upline penalty ensures this gem will be passed on to another generation without any abuse. The hammerhead pivot is slow and will take at least a full wing width. Some judges will even register the dreaded “flown over the top” insult. Have you ever picked up a Harvard prop? It feels like it weighs 200 pounds. Imagine the crank barking out, “Drop and give me 50 pushups, soldier!” Despite all power and control timing choices, there is a tendency to torque toward the negative on the downline. Using 85 degrees up seems to grant 90 degrees down. For some unknown reason, the engine runs fine on the 90-degree vertical down with one-quarter roll. Flying the downline after this roll demands great attention to timing and speed. It is a runaway freight train downhill, and the 225 V_{NB} would be easy to blow through with any delay for the 4g pull. Respect your elders! Pull out to level after a “one-one-thousand” count at 180 knots.



Hammerhead in the box at the Bill Thomas Can/Am Aerobatic Challenge.

rendering the rudder useless and producing a beautiful tail slide. Sorry, tail slides are no longer approved, though they had been done

Immelmann

This works well from 165 knots. Start the roll at 20 degrees before inverted, finishing in level

flight at 75 knots. It will snap roll if you wait too long to roll upright, and leaves no time to accelerate to the 160 knots needed for the following slow roll. Enter planned break No. 2!

Slow Roll

A slow roll seems impossible due to the limits imposed by the inverted system. Go to max continuous power (32 inches/2200 rpm). Using 32 inches of manifold pressure brings in a different fuel jet in the carb for a super rich condition that barely defeats a momentary passage through -1g. The asymmetric wing requires full forward stick and 160 knots to

hold inverted level flight through a slow roll. V_A is 165 knots. If it had an inverted system, this wing and elevator setup could not push up from level inverted flight into any negative maneuvers, unable to exceed minus 1g. Be content to briefly experience close to -1g during the slow roll. Rolling to the left is faster than to the right and can be done with imperceptible barreling. The first third of the roll is slowed down significantly with right rudder, and the final third of the roll speeds up as left rudder is reintroduced. Working very hard to keep the roll level, changes in roll rate during the roll are the only factor to downgrade one



The Harvard continues the roll of "pilot-maker" during Sportsman competition.



slightly. Stick movements needed in the Harvard during the slow roll are large enough to challenge the short of arm.

Add up the scores. Two breaks are unavoidable. Subtract penalties for three of the maneuvers that have short and shallow lines after a half-roll. Subtract for the positive upline of the Hammerhead. After that, is the Harvard still competitive? Yes, though a mid-pack finish is probably the best that can be achieved in this aircraft.

So, how did the Harvard fare? It wasn't last! It was especially satisfying to beat one Pitts S-1S





Make big friends or bring an AC Air Technology tug!

with a score of 82.68 percent in the Sportsman category. Other competitors were close enough to declare that the Harvard was good competition in this category. There was never a moment in practice flights or during the con-

test when safety was in question. There is room for improvement as tricks are learned to manage the fuel system. Passengers in the rental car felt guilty enough to ask, "Can we chip in for the rental?" I replied, "No, but you can all risk

hernias and slipped discs helping me push the Harvard!" It took about five people to move it safely into a crowded group hangar when thunderstorms threatened. Many remarked how amazing it was to see and hear the old trainer march through the sequence with apparent ease. Suggestions were offered for inverted systems, weight removal, streamlining, and the Harvard's own spot OUTSIDE of the group hangar.

What do you call this experience? I call it Sportsman. Exactly what it was meant to be. Fly what you have. Learn and respect your own limitations and laugh at them. Have fun. Extras and Pitts now dominate Primary and Sportsman aerobatic competition. Let us encourage the clipped-wing Cubs, Chipmunks, Fairchilds, Stearmans, and yes, even the Harvard to show up for Sportsman and remind us all why they were called the "pilot-makers." The Harvard Mk IV is registered in the experimental exhibition category in the United States.

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Is Aerobatic Flight a Rich Person's Sport?

BY DOUG JENKINS

Well, I'll give away my answer to this thesis question upfront... it depends. Now, having destroyed any suspense, let's get started. As we all fret over our declining IAC membership, the shrinking of contest participation, and the category creep that is supposedly rampant in our sport, it seems to many that the root of these concerns is the cost of participation. Perhaps the solution starts with a healthy debate as to whether the cost is reasonable enough to allow participation at a sustainable level. And let's undertake that debate not with emotion, but with evidence and actual numbers. I will now attempt to energize that debate. This is in no way to be construed as an attack on folks who fly high-priced steeds; I have no doubt that you have earned the right to purchase and fly those airplanes. This is more to, perhaps, show those on the fence that you really can participate without being fabulously wealthy...within certain constraints.

There is a question I get a lot

from pilot and non-pilot friends alike, and maybe you do, too: "Doesn't it take a lot of money to fly aerobatics?" or maybe it's in the form of a statement such as, "I'd love to fly acro, but I just don't have that kind of money." To which my usual responses are, "No, it really doesn't," and "Yes, you do."

Please follow along as I lay out my reasoning. I will use myself as an example as I go through this article so I think it's only fair to let you know from where I am coming. Without going into too much detail, I am comfortably upper middle class. If you really want to, you can figure out how much I make each year. I am a retired USAF O-5 and a Civil Service GS-12. The pay tables are out there. These two sources of income are adequate for me to own, operate, and compete in a Pitts S-1E as well as own and fly 1946 Taylorcraft BC-12D. Barely. So how do I make it happen? Please read on.

Let's start with the cost. For those of you familiar with my Pitts purchase story (see *Sport Aerobatics* from April 2013, page 10), you may recall that I bought the airplane with a loan from my dad. I pay him \$250 per month. My insurance costs me \$75 per month, and this includes the competition liability amount. My hangar costs another \$225 per month, and while the Pitts shares the hangar with the T-Craft, I will include the entire amount here. My annual (condition) inspection costs \$350; for simplicity we will call that \$30 per month. Unforeseen maintenance is just that and hard to estimate, but the last two years have yielded about \$100 per month. Gas is by far my biggest expense and averages \$500 per month. So to add it all up (scary, I know):

Loan Payment: \$250

Insurance: \$75

Hangar: \$225

Annual: \$30

Maintenance: \$100

100LL: \$500

Total: \$1,180 per month

Since I fly about 10 hours per month this yields a per hour cost of \$118. The total amount looks a



Chrissy and Doug Jenkins.

little prohibitive, but the per-hour cost is actually pretty reasonable and compares favorably to renting. And the more I fly, the lower that cost goes! So, how about it; can you afford around \$1,200 per month? Do you need to be "rich" to afford that? Here's how I do it, because I really can't afford it either!

The first item of business is it MUST be a team effort. If your spouse or significant other isn't onboard, this whole thing is going to be tough. In my case, this one is easy because my wife is an amazing lady. And, more importantly, she's been around me long enough to know that if I don't get to fly and pull g's every now and then, I get a tad grumpy...at least that's what she says. At this point she truly enjoys going to contests with me, and we're having a great time doing that. We treat each contest like a mini-vacation, a chance to get away. More about contest costs later. For now it's enough to know that family support is critical. If you don't have it, then the expenses you are inevitably going to incur will be a

source of friction in the house. Explain why aerobatic flight is important to your well-being and how it will greatly improve your mood and outlook on life in general. Most significant others can be swayed by an honest discussion out of the situation. Good luck.

Next up you will NEED to make some sacrifices. In my case, there are several I have made. I have driven the same car for 22 years now. I figure the money I could/would/should have spent on new automobiles is mine to spend on airplanes instead. We also don't own a boat, motorcycle or other expensive toy. Nor do I golf, play tennis, gamble, or participate in other money-depleting pastimes. These were easy sacrifices for me as none of those other activities have ever held any allure; all I ever wanted to do was fly cool airplanes.

Finally DON'T buy more airplane than you can afford! It may be tempting to target the carbon-fiber monoplane dream machine, but can you really afford it? And, more importantly, do you really need it? A

quick browse of Barnstormers.com on a random date in October 2014 revealed the following range of available airplanes (I have included only flying airplanes, not projects):

RANS S9: \$20,000
Pitts S-1E: \$32,000-45,000
Skybolt: \$35,000
Decathlon: \$43,000-57,000
Ultimate Pitts: \$45,000
DR-107: \$50,000
Pitts S-1T: \$75,000 (airplane in Europe so adjust accordingly)
Zlin 50LS: \$75,000
Great Lakes: \$79,000
Super "D": \$79,000-145,000
Pitts S-2B: \$89,000-95,000
Pitts Model 12: \$139,000-185,000
Staudacher: \$152,000
Pitts S-2C: \$150,000-225,000
Extra 300: \$165,000
Extreme "D": \$235,000
Extra 300LP: \$339,000
Extra 330LX: \$428,500
Now, obviously, I know nothing about these particular airplanes, their actual value, their airworthiness, or their desirability. This was just an exercise to establish a gen-

eral look at a price range. And quite the range it is! The top end of the market is more than 20 times the entry-level airplane! Might I suggest that your first aerobatic mount should be on the lower end of the spectrum? To me this only makes sense; why would you spend more than a house on an airplane when you've never even been to a contest? Let's take it slow and easy at first. The cost for an entry-level airplane frankly shocks people (in a good way). I know it did me. I figured there was no way I was going to be able to get a competitive airplane for much less than \$75,000, and six figures was going to be closer to the truth. Imagine my surprise when I realized that for less than what a car costs I could open the door to competition aerobatics. Many of your friends may not realize this. Let them know...the price of admission is not out of reach. Just this year at Nationals I was talking with another retired USAF pilot who

was contemplating joining the fun. When I told him what an airplane could be had for, I could, almost literally, see the wheels turning in his brain as he realized that HE COULD AFFORD THIS!

If you decide to buy an aerobatic steed (or any airplane for that matter), I believe that defining the mission should guide the process. Do you want to compete or are you looking to fly loops to music on any given Saturday? Do you want or need a second seat so your spouse can travel with you or can he or she travel by car and join you there? Can you afford the quantity of 100LL that a six-cylinder engine will require? If you do want to compete, what level do you see yourself flying? Even if you want to be an Unlimited Skygod, you will likely start in Primary or Sportsman and spend some time in Intermediate on your way. Do you really need that Skygod chariot now, or can it wait a year or

two while you hone your skills in a less-expensive machine? Honest answers to these questions are required if you want to make a good decision and not have buyer's remorse. I will tell you that I spent \$25,000 for my Pitts S-1E (it was more of a buyer's market two years ago), and that amount was (and is) the very top end of my aviation budget. But it met my needs. I wanted to compete and be competitive through Intermediate, I was okay with one seat, and I couldn't afford six-banger fuel bills. Ta-da, the answer was obvious. The most bang for the buck was an S-1E. Assess your own airplane needs and run your own numbers, and buy the airplane that is best for you. But be 100 percent certain that the numbers work out first.

Now, many of you who are contemplating starting aerobatics or purchasing an aerobatic airplane may be deterred by the whole tail-wheel thing in general and the Pitts



Chrissy and Doug Jenkins rest in the shade as Doug prepares to fly to second place in Sportsman.

in particular. To this I say, "Pshaw." Speaking from long experience I can tell you that a Citabria/Decathlon type airplane is a pleasure to fly. Given a few hours of dual, any pilot can safely fly this airplane. I will, perhaps surprisingly, say the same thing about the Pitts S-1. Many of you will say sure, but you had thousands of hours of time and tailwheel experience when you bought your airplane. You're right; I did. But not everybody does. Here is some anecdotal evidence from two fellow Pitts S-1 pilots in my home chapter:

Pilot No. 1:
Total time at first Pitts solo: 85 hours

Tailwheel time at first Pitts solo: 35 hours

Hours required in S-2B: 5 hours

Contest results: Second in Primary at first and only (so far) contest

Pilot No. 2:
Total time at first Pitts solo: 198 hours
Tailwheel time at first Pitts solo: 33 hours

Hours required in S-2B: 6 hours

Contest results: Top three in multiple regionals (Sportsman and Intermediate) and third at Nationals in Intermediate

To me this shows that, given good training, anyone, even a low-time private pilot with very little tailwheel experience, can be happy in an S-1 and fly it pretty well.

So, I hope, we have established that simply owning an aerobatic airplane is not out of reach of most anyone who can afford to be a pilot in general. Many of the fine aerobatic airplanes on the list cost less than a typical "\$100 hamburger" collecting machine. So, if you can afford to fly, I am pretty sure you can afford to fly aerobatics. This is further proven by my per hour cost breakdown of a tad

under \$120. There aren't very many nice airplanes for rent at that cost! I hope I also presented some evidence that the Pitts is not impossible for the mere mortal to tame. Don't let a reputation generated by years of myth-spreading deter you from buying what is, I believe, the best performance-to-dollar ratio airplane available. So to answer my original question: "Is aerobatic flight a rich person's sport?" It depends. Are you willing to make some sacrifices elsewhere in your life? Are you okay with an entry-level airplane? Are you willing to tackle a Pitts? If you answered yes to these questions, then the answer to the thesis question is an emphatic no! If you can afford to fly, you can afford to fly aerobatics.

What about competition? Maybe you want to earn some really cool trophies! Surely you need a high-dollar airplane to do that, right? Not really. Take a look at the contest results page on the IAC website. Choose a few random regional contests and look at

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Former Students Say:

Budd is one of the best instructors I've ever flown with. He has more knowledge to share about the Pitts, and flying in general, than anyone. -Mike Melville

...I had to dead stick my Pitts in and an old timer said "Nice save. Someone taught you well." Yes they did! Thanks, Budd. -Craig H.

My insurance company covered me, a low-time, low-tailwheel-time pilot in a single-hole Pitts largely because I went to Budd for my training. -Tom P

... the engine failed at low altitude and the accident investigators said that my fundamentals saved me. Thanks my friend. -Maynard H.

www.airbum.com

Primary, Sportsman, and Intermediate results. Go ahead, I'll wait. So, what did you notice? Almost every regional contest will feature a Pitts S-1S/E, Decathlon, or Skybolt type airplane at or near the top of the leader board in Primary through Intermediate. The last two years at Nationals, Decathlons, Skybolts, and Pitts S-1Es have finished first and second in Sportsman. You do NOT need to overbuy in order to compete and even WIN! The quality of your flying is FAR more important than the quality of your airplane. A well-flown Decathlon will beat a less well-flown (insert name of expensive airplane here, I don't want to offend anyone!) every time. Take the money that you would have sent to the bank for the high-priced machine and run it through your engine on practice flights. You'll stand a much better chance of bringing home some hardware.

Now, obviously, attending contests is also an expense if that is what you aspire to. Registration will usually run in the \$150-\$250 range. This will be added to hotel costs for the weekend. I average \$90 per night and allow three nights for a regional contest. Some folks rent cars, too. My wife usually drives in and meets me so I can save this expense. Some folks just bum rides. There's nothing wrong with that either. Add the gas to and from (which will, quite obviously, vary based on your travel distance) as well as the gas to compete, and you have a pretty good idea what a contest costs. The first column is for a regional contest, the second is for Nationals.

	Regionals	Nationals
Registration:	\$150	\$400
Hangar:	\$100	\$100
Hotel:	\$270	\$630
Rental Car:	\$200	\$600
Gas:	\$100	\$300
Total:	\$820	\$2,030

Again, these are just examples to give you an idea what the outlay will be. I somehow scrape together the money to attend three regional contests and Nationals each year. Luckily, as I said earlier, my wife supports

all of this because we approach each weekend as a mini-vacation and the chance to spend some time together. Chrissy has become quite the volunteer and is a skilled recorder at this point. Next year she will likely assist and then look at attending judge's school! She loves the atmosphere and the people we have met in our travels. At this point she would be disappointed if she was unable to attend a contest with me.

Is competition an additional expense on top of merely owning the airplane? Obviously. Is it worth it? I sure think so. Very few things in life provide me the satisfaction of flying in front of a jury of my peers and having them provide feedback on the quality of my flying that day. Having a pilot I respect find me after a flight and tell me that I flew well is immensely rewarding. The very act of practicing for a contest season gives my goal-oriented personality something to focus on and something to strive for. These are two key ingredients for my personal happiness recipe.

Do you need to spend an exorbitant amount of money to win? No. Up to a point, and here is where the "it depends" answer comes in. Once you have reached the time where you are going to step up to Advanced and beyond, you will need to shell out some money for an airplane to get there. Usually. Now, go look at the Nationals results for the last two years. Check out the Advanced category. You will notice at least two Pitts S-1S aircraft there. It can be done. But, typically, it's a lot easier to fly Advanced and mandatory for all intents and purposes to fly Unlimited in a more capable (read: more expensive) aircraft. Given these constraints I know that Intermediate is as high as I will ever aspire to. And even that is currently out of reach. I really need a lightweight prop to fly snaps with my crank, and I'd feel a lot better if I could uncover the airplane and look inside before I press her much harder. As my wife likes to remind me, there's no room in the hangar for that. That's our personal code

phrase for it's not in the budget right now. And that's okay. Sportsman is still fun and challenging, and my airplane has far more capability than I ever will. Maybe by the 2016 season, if I start saving now, I can make the move up. How did I figure this out? By realistically assessing what I needed and not buying more than I could afford every step of the way.

So, one more time, back to the opening question...is aerobatic flight a rich person's sport? By the standards of today's America, sure it is. But, as I hope I've shown, if you can afford to earn a private pilot certificate and rent an airplane, then you can certainly join the club of aerobatic pilots. All it takes is a willingness to make some sacrifices, smart decisions, some common sense and, most importantly, the commitment and desire. So to all of us who already play...tell your friends and bring them over to the fun side. For what they're shelling out to drive a Cessna around on the weekends, they can get involved in our world. For those who were wondering if this was something you could do, spend a few bucks and hop on the train to fun town; we'd love to have you aboard!

So, is money (or more accurately "expense") what deters people from entering or staying in our sport? I really don't think so. Most folks who can afford to fly can, as I have shown above, afford to fly acro if they really want to. So, then, why the decline we all see happening around us? I believe the answer to that is multifold and beyond the scope of this article. But the key is in the phrase "if they really want to." Unfortunately, for whatever reason, not enough pilots want to do what we do. Crazy, right? Perhaps if we stopped worrying about expense and focused on the root causes of why folks aren't willing to join us, we would make some progress. I have some thoughts on that topic, but I think I'll save them for another day. I'll give you a clue, though, the problem is not us, it's "them." Until then, fly fun!

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Mentoring the Next Generation

BY MICHAEL LENTS, MS, MCFI-A

We dream of free-flight, but not necessarily the direct-to capability of widespread NextGen IFR systems—true freedom in the sky. Birds dip and dive, tumble and turn at their whim. Restricted surely by their seemingly frail frames, but mastering everything that dares pilots to dream bigger.

Behold the joy and wonder present in a child's face as he or she witnesses the miracles of manned flight

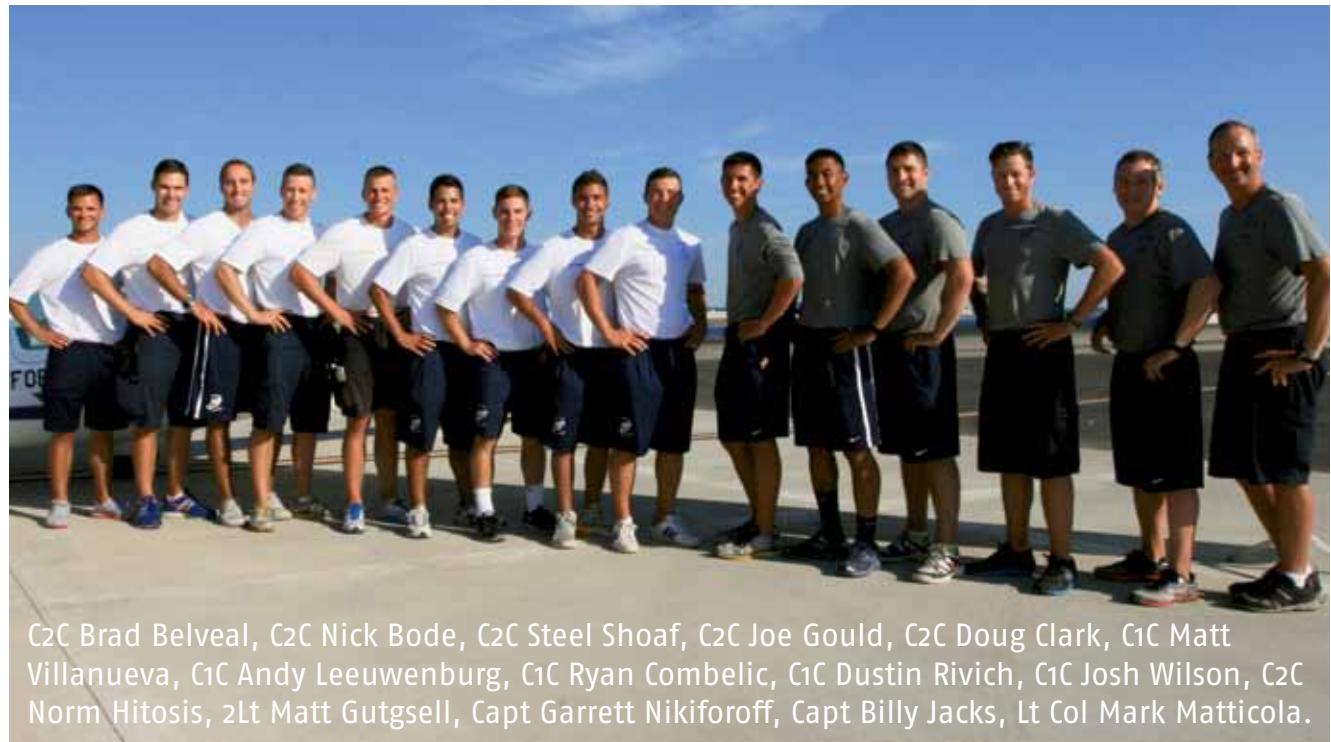
at any air show across America. That wonder remains throughout the years. You can see this as you look between that 60-year-old child and the granddaughter and grandson flanking him. The passion and awe transcend time. It needs but a small catalyst, a tiny reminder, and the dream renews.

For aspiring aerobats, they dream of that first lesson. Taking to the sky, ready to learn maneuvers, we

quickly find that flying an aircraft requires skill, requires concentration, requires practice. We also learn that barrel rolls during initial training tend to be frowned upon.

It is imperative that the pilot learn all of the basic skills to control an aircraft with professionalism, precision, and restraint. Safe aerobatic flight demands nothing less. Thus begins the mentoring process.

Throughout the past few decades,



C2C Brad Belveal, C2C Nick Bode, C2C Steel Shoaf, C2C Joe Gould, C2C Doug Clark, C1C Matt Villanueva, C1C Andy Leeuwenburg, C1C Ryan Combolic, C1C Dustin Rivich, C1C Josh Wilson, C2C Norm Hitosis, 2Lt Matt Gutgsell, Capt Garrett Nikiforoff, Capt Billy Jacks, Lt Col Mark Matticola.

airmanship has played a significant role in the very public air carrier accidents of the past two decades. The impact of these events continues to shape and change the landscape for those looking to aviation as a career. This presents us with a unique opportunity. As aerobatic pilots and those interested in aerobatic flight, we are ahead in the battle for airmanship. Despite being that vanguard, do the inspired follow? Can we do more?

Many pilots-in-training do not realize the opportunities that exist. Where to find aerobatic experience, much less quality aerobatic instruction, seems elusive. We can become an instrument in this fight by pointing out the schools and opportunities—most listed on the International Aerobatic Club (IAC) website. Better yet, consider becoming a mentor and a safety pilot.

The IAC Collegiate Program and the aerobatic programs at the University of North Dakota (UND) and Eagle Sport Aviation Club hinge on these points. By mentoring students early, focusing on competition precision, and utilizing a safety pilot, these programs enable students to compete. These students who enter these programs may have completed aerobatic training but may not be checked out in the aircraft. They may lack their tailwheel or high-performance endorsements, so they fly with a safety pilot acting as pilot-in-command (PIC). Insurance restrictions might prevent low-time pilots from taking to the air solo, but a good mentor and safety pilot empowers and facilitates these flights. Aerobatics becomes available to students and novice pilots in a very safe environment.

Breaking down the barriers to entering the aerobatic arena opens doors to students and IAC chapters in the effort to connect and reinvigorate the sport. Finding these students can be as easy as holding an informational meeting at the nearest college with an aviation



UND Aerobatic Team

REGGIE PAULK
program. These pilots may be your family, your friends, or the Civil Air Patrol volunteers helping out at the contest.

The benefit to these pilots is immense. The confidence gained not only in aerobatic flight but through competition and camaraderie helps drive these pilots to grow. Well-rounded aviators need to experience more than the minimums of the practical test standards (PTS). The challenges of flying the full envelope include not just aerobatics but the journey to the contest. Weight and balance, range limitations, weather, and logistics challenges are all part of the adventure.

Once the flying finishes, the connections, the networking, and the bonds made expand the interests and awareness of those in our community. This leads to great business connections, opportunities for internships, and employment for these students.

Mentors experience a number of benefits as well. Costs can be shared, or if the mentor is a qualified instructor, income earned. The mentor will learn more about flying the aircraft by simply observing how the aircraft behaves for another pilot. Once critiquing begins, a whole new perspective on aerodynamics and control inputs opens up. With two up in

an aerobatic aircraft, smoothness and accuracy become critical to maintain energy and complete the maneuvers as planned. The recommended speeds for maneuvers from the Super Decathlon POH work well with two pilots. As smoothness increases, many of the same maneuvers can be accomplished 10 mph slower once flying solo. Personally, I like a little more speed, but the ability to fly it slow widens the operational and performance range considerably when energy is at a premium.

Consider being a mentor. A pilot needs only to be willing, be available, ready to offer assistance and, in so doing, learn more about flying aerobatics accurately. Fuel through the carburetor is only a part of what it takes to get better. The next part is a mix of drive, incentive, and critique. Be the force that grows our sport and inspires future pilots. I encourage you to become familiar with the IAC Collegiate Program. Be available, be willing, be courageous, and be safe. Win.

IAC

Michael Lents lectures for the University of North Dakota and is head coach of the UND Aerobatic Team. He competed three seasons in Intermediate in a Super Decathlon and is currently competing in an Extra 300L.



Pitts S-1 series brake pedal failure

I think most Pitts pilots would agree—good brakes are a necessity. Experiencing a brake system failure in flight is a big deal. The mere thought of landing my Pitts with just one operable brake pedal made me start practicing no-brake landings almost every flight.

The airplanes that we maintain are operated to the extremes, and we see our share of broken parts. Four time U.S. National Unlimited Champion (congrats!) Rob Holland is likely the toughest on his equipment of any of our customers. We have coined the term



Photo 1



Photo 2

“Rob proof” to describe repairs and modifications intended to eliminate extreme use failure modes. We keep a list of common issues and use this when we inspect aircraft. Occasionally, a trend is observed, and we feel it is important to inform others.

During a recent aerobatic contest, one of our customers encountered a broken right side brake pedal. The pedal broke during a snap roll to the right. Our customer owns a factory-built 1976 Pitts S-1S and competes in the Advanced category. He is an exceptional pilot and was able to land without incident. I am certain that I may have not been so lucky.

After inspecting the broken brake pedal, we recalled a similar failure a few years ago involving an amateur-built Pitts S-1C. We posted a few pictures on our Facebook page and immediately learned of at least four other failures of the exact part. We have inspected every Pitts we maintain and thought it would be a good idea to get the word out to others so they can, too.

The failure seems to be caused by the difficulty in welding a thin piece of metal to a thick one. Any accomplished welder will recognize this as an area that's easy to mess up. Additionally, during rapid movement of the rudder pedals, significant pressure and mechanical advantage can be placed on the lightly constructed



Photo 3

brake pedal. Combine these variables with a part that is difficult to see, and you end up with a hazard that could go undetected. The Pitts S-2 series are of a different design, and this does not apply.

The photos describe the part and the failure encountered. The first photo shows the intact part. The second and third photos show the pedal and horn after failure.

A properly welded part may never fail. We decided to make a slight modification to ensure we reduce the risk of a similar failure. We now install these on every experimental S-1 Pitts that we maintain. It may be possible to install the improved brake pedals on standard category aircraft under the provisions of CFR 21.303 for owner-produced parts. Many other airplanes share a similar design, so a quick inspection can't hurt.

Minimize the risk:

- 1) Practice no-brake landings.
- 2) Have a qualified mechanic inspect your brake pedals.
- 3) Replace/repair any suspect brake pedal.
- 4) Add this inspection to your preflight.

Sharing of information is critical to our sport's safety. We operate in an unforgiving environment and often find the limits of our flying machines by exceeding them. Anything we can do to make things "Rob proof" is a good thing. Let's pass it on!

IAC

Eric Minnis, IAC 26912, is an active IAC competitor, aspiring air show pilot, API IA, commercial pilot, DAR, and parachute rigger. ericminnis@yahoo.com, #BullyAero, www.facebook.com/bullyaero

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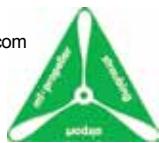
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Winter practices

Surviving the cold

As the winter months are approaching, some of you will head south for warmer climates. Others are stuck at home and will consider other alternatives like skiing, and many of you will brave the winter weather and fly anyway. After all, skiing is fast and too close to the ground. You could find yourself hitting a tree at low altitude.

Having said that, winter flying requires some special precautions. You'll be donning protective clothing to keep out the cold. Before you fly off into the wild and cold blue yonder, I hope you will practice to make sure you can operate your aircraft safely with those thick gloves on. Will you be able to quickly open and jettison your door or canopy in an emergency? Some of you will say you've been flying for years and have had no problem in cold-weather. I'm not talking about normal cold weather flying followed by a warm cup of coffee.

Have you seriously considered having to bail out with your winter clothing on? You may have practiced operating your aircraft's emergency releases and experienced no problem releasing them. But, have you thought about being able to find the ripcord handle? Let's consider you've successfully bailed out and the ripcord is right where it's suppose to be, only to discover you can't take a hold of it and pull the ripcord because your gloves are too bulky and restrictive. There has been more than one skydiver who has found this out the very hard way. That's why each year mention is made, usually in *Parachutist* magazine, that you must properly winterize your jumping apparel, especially gloves. The United States Parachute Association recommends that gloves be worn below 40 degrees Fahrenheit or about 5 Celsius. Gloves can keep your hands warm and cozy, but they can also make it impossible or very difficult to exit your aircraft quickly, let alone pull the ripcord handle.

I recommend that you practice over and over until you feel comfortable and are sure you'll be able to respond rapidly, if an emergency exit becomes necessary. Luck and carrying a rabbit's foot while flying is not a good option. There has been more than one fatal-

ity that one of the contributing factors was the inability to pull the ripcord with gloves on. In addition to a tight fit they may be securely fastened to your wrists with something like Velcro, preventing quick removal. I know someone out there will say just take a hold of the Velcro in your teeth and pull. This might work, but when you bailed out, your glasses either blew off or fogged up and you couldn't see clearly due to the wind. Did I mention you bailed out lower than you intended because you had trouble releasing the door or canopy with your gloves on? You could try and remove them before you exit your aircraft, but the loss of time and altitude could prove fatal. Think about it. Be proactive and be prepared. Do something before your next cold-weather flight to insure you'll be around to enjoy that warm cup of coffee.

If you plan on storing your parachute for the winter, please treat it kindly and keep it in a cool/warm, dry place out of direct sunlight. I suggest you also place it in a plastic container with a snap-on lid to help further protect it from all kinds of critters and moisture. If you plan on storing it for over six months, I further suggest you pull the ripcord and remove all the rubber bands. Be careful that the lines and canopy material do not come in contact with the scratchy part of Velcro tape that can damage them.

Rubber bands will deteriorate over time and they sometimes become very sticky. I recently received a parachute that hadn't been packed in a very long time and was improperly stored in a hot, humid climate. The rubber bands were stuck to the grommets on the deployment diaper and to a couple of the suspension lines. At the very least this would have slowed the opening. It could have also prevented the parachute from opening.

Fortunately I was able to replace the grommets and successfully remove the very small amount of rubber band that had stuck to the lines of the parachute. Rubber bands can sometimes become sticky enough to essentially glue the lines of your parachute



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together. In most cases this will permanently ground your parachute. This would have become a very expensive lesson.

I personally have never found a safe chemical or a way to remove the sticky rubber bands from the lines without damaging them. In the above case I mentioned only a very small piece of rubber band was stuck to a line or two and the owner was lucky that I was able to remove it. Preventive maintenance starts with you. "Remember, only you can prevent . . ." Oops that's forest fires, but you get the picture.

For further information about this problem, you can go to my website. Once there click on the link to "Ask Allen" on the left and then click on my December 2008 column. It explains in more detail what I'm talking about. I've attached a photo from that article showing what rubber bands can do. They're an integral part of your parachute's deployment system and require special care.

The holiday season is upon us and I want to thank each and every one of you who read my column, have given me suggestions and advice for future columns, or have invited me to give your group a bailout seminar. I would also like to thank *Sport Aerobatics* and especially the editor, Reggie Paulk, for printing my column. **I wish you and your families a very Happy Holiday Season and New Year.**

IAC



BETH STANTON

COLUMNS / BRILLIANCE AND BUFFOONERY

bethstanton@gmail.com

Success and Failure

Attitude is everything

I've failed over and over and over again in my life, and that is why I succeed.

—Michael Jordan

The 2014 contest season has come and gone. You may be taking stock of your performance this year. You may be delighted or disappointed. Perhaps you exceeded your expectations and goals; perhaps you fell short of them.

Elizabeth Gilbert, author of the blockbuster book *Eat, Pray, Love*, did a Ted Talk recently titled Success, Failure and the Drive to Keep Creating.

Let's substitute "aerobatics" for "writing" in the following excerpt:

"I loved aerobatics writing more than I hated failing at aerobatics writing, which is to say I loved aerobatics writing more than I loved my own ego."

We participate in an extremely demanding and exacting sport. This is most likely its appeal to us type-A overachievers. We thrive on challenge and love to succeed at a goal. However, the hard reality of aerobatic competition is that any one of us is just a tiny lapse of focus, a zero, or a low call away from being catapulted out of the clinkie zone.

We need to figure out a way to reconcile this reality if we plan to continue to participate in and enjoy the sport.

Imagine this scenario:

You are flying Sportsman. In your last few practice flights you have nailed the Known repeatedly. Contest weekend is finally here. You're feeling so ready: rested, confident, and excited. You fly three great flights. Yes, you made a few minor mistakes here and there, but overall you are feeling really good about your performance.

Now, let's examine two different possible outcomes:

Seven pilots flew Sportsman. Three were first-time Sportsman, and the other three have been flying a

couple of years and are pretty solid. The first-time guys flew well enough, but made the requisite rookie mistakes. The more experienced guys each made a big boo-boo that took them out of the running. You won first place in all your flights and first place overall. Hooray! You are bathed in glory and are reveling on cloud nine. You LOVE aerobatics. This is the best thing EVER.

Seven pilots flew Sportsman. The other six guys have been flying Sportsman on rails for years. One of them got five 10s! Holy moly! How are you supposed to compete against such perfection? You get seventh, then fifth, then sixth on your three flights to earn you last place overall. You are in despair. You ask yourself why, why, why do I do this to myself? All this time and avgas, and for what? So I can spend a bunch of money over a weekend and come home with a stack of paper that says how much I suck? Maybe I should take up knitting.

Let us remember a key point here:

You flew the same in both scenarios.

When it comes to contests, you cannot control:

- Who shows up
- How they fly
- The weather
- The judges

It is helpful to remember that you only control two things:

- How you fly.
- How you respond to the above circumstances, aka your ATTITUDE (pun intended).

I have not failed. I've just found 10,000 ways that won't work.

—Thomas Edison

Last year, I spent my first Sportsman season having my ass handed to me. I fell out of Immelmanns,

did the wrong figures, was awarded the fabled Dennis Earnst belt (for the lowest-scoring Sportsman without zeroing a flight), and generally finishing at the bottom of the pack. I was looking forward to making my first 5,000 mistakes so that I could move on to making the next 5,000.

2014 was a season of firsts. I flew solo acro for the first time in May. A couple of weeks later I flew my first contest without a safety pilot. After a great year in Sportsman, I decided to finish out the season by flying my first Intermediate contest. The goal was to just get through it. It would be a stretch to fly Super D in Intermediate with limited practice. I came in second-to-last.

A friend commented that “losing can be tough work, my dear.”

Are you kidding? I WAS THRILLED.

I had made it successfully through all three flights, including my first Unknown. Yes, a couple sluggish snaps were zeroed. Some low scores were inevitable as I struggled for energy and fumbled about. Nevertheless, I managed to fly the figures relatively well, in the correct order, mostly where I wanted them in the box, and kept my head screwed on straight. I’ll take it!

There are many talented Intermediate pilots that I will be flying with next year.

Take Matt Dunfee. He has dominated California in Intermediate the past two seasons. He flies with power, precision, and grace. He is pure poetry in motion.

How am I ever going to beat them?

Short answer:

I’m not.

Long answer:

I am going to fly with the most power, precision, and grace that I possibly can. I’ll do my best to prepare physically and mentally to find that sweet spot of focus and flow.

Will that be enough to win?

Maybe.

Maybe not.

Either way, it’s all good.

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Success is not final, failure is not fatal: it is the courage to continue that counts.

—Winston Churchill

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MEET A MEMBER

BY GARY DEBAUN, IAC #4145

SEAN VAN HATTEN



IAC 434286

Nickname (if any): Probably, but I don't know about it.

Occupation: Fabricator at Specialty Aero

Chapter Affiliation: 77, 67

Age: 24

GD: "That kid can fly pretty good." Well, Sean, when you get a compliment like that from the Godfather (Tom Adams), people sit up and listen. Tell us how you got your start in aerobatics.

SV: After taking my first Young Eagles flight at 9 years old, my dad and I started flying remote-control airplanes. After soloing, we quickly began experimenting with aerobatics. Our first experience with an outside loop was . . . traumatic. However, we persevered, and during high school I began competing in scale aerobatics and Freestyle competitions at the regional level up through Unlimited. When I started learning how to fly at 16, my instructor and I would go search for "turbulence" in the Citabria. He told me to call Steve Wolf, which resulted in the third hour of my logbook filling up two entries with just about every maneuver a Pitts S-2B can do. After I got my private, I went back and completed Steve's 10-hour course in the Pitts before continuing with my ratings. With Will Allen as a safety pilot and instructor, I flew a Patch day and camp in his Super D before college put a hamper on my aerobic flying. Now that I'm graduated and have a steady job, I decided to take this summer and focus on getting back into aerobatics with a goal of flying three contests. Four contests later, including Nationals, I'm ecstatic with the result!

GD: I hear you build Wolf wings for a living—how did you get involved in that adventure?

SV: I met Tony Horvath, owner and proprietor of Specialty Aero, when I was training with Steve. Since he always had cool projects in the shop, I would drop by periodically to stay in touch. Around the time I graduated, I stopped by the shop, and he asked if I wanted a job. Almost a year and a half later, I haven't found a good reason to leave. We do a lot more than just Wolf wings. With a full aviation fabrication shop, our projects range from Pitts restorations to one-off custom experimental aircraft designs.

GD: When and where was your first contest? How did it go?

SV: My first contest was Apple Cup this June in Ephrata, Washington. I was flying in the front seat of an Eagle with, as my safety pilot put it, "Two hundred fifty pounds of ballast in the back seat." It was a fantastic experience from which I learned and improved a lot. And I didn't come in last!

GD: What is your current acro ride? Any changes in the future?

SV: This season, I flew a friend's EXTREME Decathlon. (Since everyone asks: You definitely notice the faster roll rate, but the extra power is less obvious, and the controls are heavier than a Super D.) The airplane is currently being sold, so I have no idea what my acro ride will be next year. I'm currently building a custom Pitts S-1 with Wolf wings and a modernized tail and fuselage that should be finished inside of two years. With a goal to make the airplane as light as possible, I have gone to great lengths to shave ounces out of the airplane. Words cannot describe how excited I am to fly it, but there's a lot of work left to do.

GD: You did very well at the U.S. Nationals in 2014; third in a big field. Are you coming back in 2015?

SV: I'm sure going to try my hardest!

GD: What is your favorite figure to fly?

SV: Lomcovák and ride it out to an inverted flat spin! From the Aresti catalog. I'm having a blast learning rolling turns right now.

GD: Do you have any pre-acro routine, like stretching, yoga, or listening to music?

SV: When I'm in the start queue, I like to sit on the tarmac in the shade of the airplane, listen to the airplane noise of the competitor in the box, and visualize

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.

what the sequence is going to look like from both the cockpit and several different perspectives outside the airplane.

GD: You are relatively new to the IAC; anything you would like to see changed?

SV: Well, I'm new to IAC, so I don't have a really good perspective on the organization as a whole, but here are a couple observations. I would like to see more of an effort to engage the communities around our contests. In today's world, it's hard enough to keep airports open without the support of the surrounding community. It seems like the success of this sport is directly tied to the people surrounding our activity to not only having a rudimentary understanding of what we do but also to being involved in some way.

Thing two: Being one of the younger members of this sport, I often think about how to make it more accessible to the next generation of pilots. Seeing groups like the University of North Dakota and the Air Force Academy at Nationals makes me incredibly excited, but those are only two programs. Aerobatics is exciting and has the capacity to engage young people, but we need to work on ways to make it more accessible to the younger crowd.

GD: Who in the sport has been an inspiration to you?

SV: After watching Jim LeRoy fly his air show routine at the Oregon International Airshow in 2001, aerobatics became a goal of mine. I still have a signed poster from that show in my apartment.

GD: Do you have any interests outside of flying?

SV: More flying! I still fly remote-control airplanes, which led me to help set up an aerospace engineering club in college that I now volunteer with. When I'm not around airplanes, I play bassoon in a few different symphonies in Oregon. Additionally, I like camping, rock climbing, ballroom and swing dancing, and I have an '82 BMW that I enjoy driving and tinkering with.

IAC



Snowbird Acro Classic (Southeast)

[Friday, February 27 – Saturday, February 28, 2015](#)

Practice/Registration: Wednesday, February 25–Friday, February 27

Rain/Weather: Sunday, March 1

Glider Categories: Sportsman through Unlimited

Power: Primary through Unlimited

Location: Marion County Airport (X35), Dunnellon, FL

Region: Southeast

Contest Director: Chris Rudd

Contact Information: 850-766-3756

E-Mail: invertedribboncut@gmail.com

ACE's High Spring Opener (South Central)

[Saturday, May 9 – Saturday, May 9, 2015](#)

Practice/Registration: Friday, May 8

Rain/Weather: Sunday, May 10

Power Categories: Primary Sportsman

Location: Newton City County Airport (EWK), Newton, KS

Region: South Central

Contest Director: Mark Wood

Contact Information: 602-361-3504

E-Mail: Mark@dreamcatcheraviation.com

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