OFFICIAL MAGAZINE of the INTERNATIONAL AEROBATIC CLUB

MAY 2011

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SPORT

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Twenty Three Seconds A Spin Doctor's Report

- A Near Disaster
- Meet Your Team: Tim Just



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"In 1967, my grandfather bought a brand-new Cessna 172. I worked hard to make sure that the plane never left the ground unless I was in it."

Tim Just





FEATURES

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by John Morrissey

Near Disaster by Jeff Boerboon

Flying for a Patch *by Adam Cope*

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THE COVER Photo by Dennis Biela

PHOTOGRAPHY COURTESY TIM JUST

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REGGIE PAULK COMMENTARY / EDITOR'S LOG

Expect the Unexpected

ONE DEFINITION OF SAFETY is "the quality of averting or not causing injury, danger, or loss." (http://Dictionary. Reference.com) We refer to the May issue of Sport Aerobatics as the safety issue because of a deeper focus on subjects that help enhance the safety discussion in our sport.

For me, one of the most exciting aspects of flying is hearing others' tales of near tragedy averted. These stories usually are a wealth of information about the thought process and actions behind a successful outcome. Accident chains are a series of unbroken links. Breaking a link anywhere along the chain can help avoid disaster. That means, no matter whether an accident sequence begins with a series of poor decisions or a mechanical fault, there are usually instances where the right action can change the outcome.

One of my personal stories involves jammed controls. I was training for my commercial certificate in a Cessna 172 with retractable gear. This particular plane was fresh out of a 100-hour maintenance inspection, and we were the first scheduled to fly it.

I started the airplane and taxied to the run-up area to perform our pre-takeoff checks and obtain taxi clearance to the runway. All of the items on the checklist went by without a hitch, but there was one item not on the checklist I always performed after the run-up and right before takeoff-a complete control check.

Before flying powered airplanes, I learned to fly gliders. By their nature, most gliders are easy to disassemble for transport. Because they are taken apart and put back together often, verifying positive control attachment is a

necessity. Early in my training, I learned to move the controls to their extremes of travel and verify the proper surface movements outside the aircraft. This would prove fortuitous.

Before calling ground to request permission to taxi, I performed my control check. I moved the rudder pedals and watched the rudder. I pulled the yoke all

Breaking a link anywhere along the chain can help avoid disaster.

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the way back and verified the elevator moving up. I then turned the yoke all the way left and watched the left aileron go up and the right aileron go down. I proceeded to move the yoke full forward while still turned full left to watch the elevator move down. With the yoke still forward, I turned it fully to the right and then tried to pull it back—nothing. I tried to turn it left—nothing. I told the instructor the controls were jammed, and he tried to move them with me-nothing.

We immediately taxied to the maintenance hangar, where they quickly found a screwdriver lodged in the aileron bell crank. I still shudder to think what would have happened had I not performed my control check.

The lesson here is that, no matter how routine a flight may seem, there is always opportunity to be a safer pilot. IAC

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

DOUG BARTLETT COMMENTARY / PRESIDENT'S PAGE



The Art of the Rudder

LAST MONTH I HAD the opportunity to make an "Introduction to Aerobatics" presentation to EAA Chapter 1067 in Naples, Florida. During this type of presentation, I talk quite a bit about the knowledge and use of the rudder. At the end of the talk I was asked what skill I thought was the most important one to master at any level of aerobatics and what type of drills I used to sharpen that skill. The answer to both of those questions is easy: rudder coordination and aileron roll drills.

In an earlier President's Page, I wrote about how to train and use all available time in the cockpit and not waste any of it. To this end I would always conduct Dutch rolls while heading to my practice area. This skill is important to any pilot who wants to develop good aerobatic skills and is one of the critical building blocks for aerobatic pilots.

In my opinion, the art of aerobatics is the art of using the rudder. One of the simple ways of noticing the effect of one control surface on another is to roll the wings to a 30-degree bank and notice the effect it has on the yaw of the aircraft. One of the first skills to work on is rolling the plane back and forth 30 degrees while not

In my opinion, the art of aerobatics is the art of using the rudder.

changing heading or altitude: Dutch rolls. This is no simple task when done correctly. Pick the left edge of a long, straight road at 2,500 feet, and roll the plane back and forth to a 30-degree bank without allowing the nose of the aircraft to move off the edge of the road. Take a deep focus to the horizon. Do not focus on the nose of the aircraft. Keep your altitude within 50 feet to start. Although one may think this is a boring drill, it is an essential building block because it requires eye, hand, and foot coordination. Knowing how to use two of the three axes in flight does an aerobatic pilot no good. The yaw axis is the one most often left out. Also knowing how to use all three axes is not sufficient if you do not know the effects of each based on the movement of any one. This simple drill will start you down the road to gain that knowledge. Yes, it is boring, but necessary.

Once you have a good feel for the Dutch roll, try pausing it for a second at the 30-degree bank and hold heading. Notice a difference? How is your altitude doing?

In an approved aircraft after having obtained the appropriate training, try the Dutch rolls inverted and maintain the same accuracy in heading and altitude that you were able to achieve in upright flight. This is a tough step because the foot and hand coordination changes. In upright flight a coordinated turn is done with the foot and hand going in the same direction. As an example, a left turn is done with left rudder and left stick. In inverted flight they go opposite to one another. An inverted left turn (from the pilot's view) requires left rudder and right stick. This is not a simple concept to grasp for most pilots but is critical for aerobatic pilots. To perform inverted Dutch rolls, the foot and stick must move opposite to one another at the appropriate time. Again, eye, hand, and foot coordination is a must.

Now, let me describe my favorite aileron roll drill. From upright straight and level flight, roll 1/4 left, 1/2 right, 3/4 left, full roll right, and 1-1/2 left. The plane is now upright. The drill continues by rolling 1/4 right, 1/2 left, 3/4 right, full roll left, and now the aircraft is inverted. Without stopping, the exercise continues by repeating the above, always rolling in the opposite direction. The exercise ends upright.

It was a rare day . . . when the drill was completed on heading and within 100 feet of the starting altitude.

I would fly this exercise each day I would train. The first time through, I would fly it only as fast as I could while maintaining accurate heading and altitude (within 100 feet). The second time through, I would fly it as fast as I could until the plane would unintentionally snap instead of roll. It was a rare day, even as an Unlimited pilot, when the drill was completed on heading and within 100 feet of the starting altitude. I was never able to complete the exercise going fast!

The flying season is underway in most areas. Please take the time to establish your personal minimums prior to your flights. Never practice something in the air that you did not intend to practice while on the ground. The learning will be minimal and the risks will be elevated. Have fun and be safe. **IAC**

IAC NEWS BRIEFS DEPARTMENTS

THINKING OF JAPAN. LAST month, *Sport Aerobatics* featured a story about the first aerobatic contest held in Japan. The contest was held at the Fukushima Sky Park, located in Fukushima prefecture--the subject of ongoing evacuations due to radiation from the Fukushima Daiichi nuclear power plant. We contacted Yuichi Takagi to see how everyone is doing, and this was his response:

in Japan are fine. However, some of the volunteer supporters at the Fukushima Sky Park were from the Sendai area, so I can imagine they might have some loss of loved ones. I am very sorry for those who died; are missing; lost loved ones; and are living in the devastated area."

v everyone is doing, and this was his response: "As far as I know, all of the aerobatic related people" they are trying to think of a contest next year.



AIRCRAFT SPRUCE SUPPORTS THE Franklins. Aircraft Spruce & Specialty and Hartzell Engine Technologies have teamed up to support Kyle and Amanda Franklin. Beginning April 1st and continuing through June 30th, a donation of \$1.00 will be made to the Kyle and Amanda Fund (*http://www.icasfoundation.org/*) for every Hartzell Engine Technologies oil filter that is purchased through Aircraft Spruce.

IAC INTRODUCES TECHWATCH SAFETY forum. Please join IAC and the aerobatic community in helping to save lives! TechWatch, a new web-based forum, is in place to help all aerobatic pilots, mechanics, and manufacturers share information that may help others throughout the aviation community to recognize hazards or dangerous conditions that may arise with different aircraft. Please join TechWatch, or just browse as a guest, and share the information we all need to fly safely. The TechWatch site is *http://www. usnationalaerobatics.org/iacsafetyforum/*. Please join today and help save lives.

THREE CHANGES TO THE Doug Yost Memorial Aerobatic Scholarship: First, the amount of the grant is increased from \$1,500 to \$2,000. Second, the application period and recipient selection time has changed. This year we will accept applications until December 1, 2011 and the recipient will be announced on January 31, 2012. Lastly, we



have focused the qualifications for the applicant. We prefer that the successful applicant is a CFI. The purpose of the scholarship is to promote aviation safety through aerobatics training. For more information, visit *http://www.iac78.org/dys.html*.

MARCH CORRECTION – The photo on page 22 should read, "Greg Woods with Vic Brit (left), who also rents a front seat to compete in Sportsman." Greg gives instruction in an Extra 300L out of Venice, Florida, and may be reached at 941-587-2277 or *bleauskie@yahoo.com*



APRIL CORRECTION – From the story on Cecilia Aragon: Zivko Aeronautics Inc, manufacturer of the Edge 540 since 1991, is located in Guthrie Oklahoma, not Dusty, Oklahoma. The Edge wing was not designed by Leo Loudenslager. It was designed by Zivko Aeronautics, who hired John Rontz to design the specialized airfoil. In 1989, Leo was one of the test pilots used to evaluate the original Edge wing aerobatic flying qualities. Leo was at the Zivko facility consulting on a special project being built for him. During his visit, he flew Cecilia's aircraft and suggested she install an Edge wing to increase its performance. The Edge wing was already in production for a couple of years prior to that.

PHOTOGRAPHY COURTESY HARTZELL ENGINE TECHNOLOGIES

Non-Flying Award Nominations

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- FRANK PRICE CUP for significant contribution to the sport
- HAROLD E. NEWMAN AWARD for outstanding chief judge
- ROBERT L. HEUER AWARD for outstanding judge
- KATHY JAFFE AWARD for outstanding volunteer

www.iac.org/trophies/nonflying_awards.html

Deadline: June 15, 2011

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Twenty three Seconds By JOHN MORRISSEY IAC #3238

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

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

Let me begin by looking at the rationale for spin training outside the competition arena. Simply stated, this training is mandatory for anyone who plans to engage in all-attitude flight. Aerobatic aspirants must learn to confidently recover from both proactive and inadvertent autorotation. In fact, this training should be mandatory for all pilot certificates as it is never a question of *if* one is going to have a departure from controlled flight, only *when. Departure* is a protocol word that means an unintentional transition from the flight envelope at less than the stall angle of attack, (CL_{MAX}) to autorotation in the post CL_{MAX} regime. When this unintended transition from good guy country to bad guy territory occurs, it is assumed that all departures have an extremely high probability for disorientation. It is for this reason that both emergency spin recovery procedures as well as traditional proactive spin recovery methods must be mastered. And by way of a brief review, the emergency recovery procedure should always be used following a departure when the associated disorientation severely limits timely and accurate determination of the spin direction and/or type. The emergency recovery method must also be used anytime an intentional spin recovery procedure is not working. This reversion to the emergency spin recovery method must be an immediate preplanned default reaction. If the intentional spin recovery is not producing results, the pilot is doing something wrong; therefore, one must *immediately* transition to the emergency recovery procedure, as it eliminates most of the decision points required for preplanned recovery procedures, i.e., the upright or inverted spin determination. And of course, all of this training should be accomplished at 6,000 feet AGL or higher to allow as much time as possible to sort out any recovery procedure errors, to minimize time compression during recovery attempts, and to provide adequate time and altitude for successful parachute use if the recovery problem cannot be solved.

INQUIRING MINDS

I was curious how many of our Primary and Sportsman pilots have had thorough and extensive spin training covering all aspects of intentional and emergency spin recovery procedures. And I wondered if this training covered the result of incorrect out-spin aileron use in both positive and negative spins? And

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had that training required the student to demonstrate *proficiency* in handling those unintended eventualities?

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

Now let's continue with this thread and think about spins in the lower altitude environment of our competition arena. To put ourselves in this mindset, try to imagine yourself flying in the box as an unobserved spectator with an entry-level pilot in the Primary sequence—a pilot who has received only limited, but not extensive, training in the entire spectrum of spins. Watch closely as our pilot begins by setting the 45-degree line of the first maneuver and exiting for the one-turn spin at 3,500'. Quickly now, spin coming up. Idle. Stall. Stick full back. Left rudder, full in. Ailerons centered? Well, close, but the stick is offset a little to the right. During recovery we observe another small procedural error—forward stick is applied prior to recovery rudder. Rate of rotation increases instead of slowing, stick is now very hard to move forward...aircraft not responding as the pilot remembers...pilot continues to try to solve the problem...time compression begins...then uncertainty...rapid, flailing movement of controls...still spinning... panic...realization...then, too late...too late... too late....

Unusual? Unlikely?

Not in my experience. I have watched this scenario dozens of times when giving spin instruction over the past 33 years. And this does not even begin to cover the many other unintended control inputs that can cause departures and prevent their recoveries. The most common serious error I have observed is the unintentional use of out-spin aileron in upright spins to either stop the rotation or to try to help the rudder stop the rotation—the perfect combination of events that leads rapidly to the perfect storm—the flat spin mode.

FACTS AND FIGURES

Now let me make this time-compression scenario a bit more realistic by looking at some actual flight-test numbers associated with time remaining when the aircraft does not answer the helm during attempted spin recoveries. In a vanilla upright spin from the top of the box at 3,500 feet, one has approximately (~) 28 seconds and 3,100 feet to stop the spin and begin the pull to level flight.¹ To accomplish this, the spin must be stopped and recovery begun at least 400' above the ground. And to accomplish

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

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

Only 23 seconds!

And those 23 seconds are from the point where recovery should have begun. By the time the pilot begins to realize he is having a problem, as mentioned in the previous Primary flight example, less than those 23 seconds are available. Said more realistically, if the initial spin recovery control inputs do not immediately

produce normal, reassuring evidence of recovery, then exiting autorotation is highly unlikely for pilots with the limited spin training and experience previously mentioned. Once 23 seconds have elapsed, there may not be enough altitude left for recovery even if the spin is stopped. Throw in a few more seconds and recovery is impossible. We can break the rules, but we cannot escape the laws of physics. When the time-distance equation begins producing negative numbers, ground impact is inevitable.

CALLING IT QUITS

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

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

I realize that statement is not intuitive, so please bear with me while I explain. When I was leading the four-ship Pitts Black Hawk Aerobatic Team in the mid '80s, our slot pilot -Lew Shattuck- and I decided to see just how long it would take us to exit the cockpits of our Pitts S-2Ss aircraft if we were faced with a bailout situation. I put on my chute, strapped in, and closed the canopy. In the single-seat S-2S the canopy is opened by first unlocking the latches holding it forward, sliding it to the rear, and locking it in place with, unfortunately, about two2 inches of the canopy still protruding forward into the cockpit area. Lew then walked out of sight. Just as I began to think he had been distracted by another task, I heard

and felt a loud bang on the turtledeck. At that instant, Lew started his stop watch. I won't drag you through the rest of the details except to say that all I had to do to stop that watch was to open the canopy, release my two safety harnesses, remove my headset, stand up in the seat, and get one leg out onto the wing walk. We each tried it four times. Our best time was 23 seconds—and this after several attempts inside a hangar with no wind, lateral g, or panic. From this data we determined that if we experienced a control jam in pitch on a vertical downline with a true airspeed of ~ 170 mph, we would have to initiate our egress at 6,800' to give us any chance of a chute opening by 500', and only then if everything worked perfectly. We were no strangers to the concept of jettisoning doomed aircraft. During the course of our Air Force careers Lew had ejected three times and I once.

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

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Another important issue came up during flight verification of these figures that needs to be emphasized. A fully developed spin will take longer to stop after recovery controls are applied than those from typical Aresti competition variants. Those two turn (or less) spins recover nicely when full opposite rudder is applied about 45 degrees prior to the desired exit heading and forward stick at 20 degrees prior. Well developed spins that have continued

seven six . . . five . . . four . . . three . . . two . . . one . . . zero



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





The author after the 1980 Fond du Lac IAC Championships (the same year the WAC was held at Oshkosh).

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twenty two . . . twenty on

for ~ 3,000 feet or more can take two to three turns to stop the rotation. And of course this takes more time and altitude.

I realize that the data in our sport would seem to be counterintuitive to my findings. I can only remember one spin fatality during actual competition since 1975, and that was in the

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

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

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

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

The second factor is a nontraditional outsidethe-box thought concerning aerobatic competition: In the truest sense, the spin is much more of an air show demonstration and/or a maneuver to be mastered for safety considerations rather than a pure classic aerobatic figure. In a sequence it always causes an undesirable tempo change when the rhythm and energy of the performance is decreased for spin entry only to be regained at a significant sacrifice in altitude. When I offer either a proposed Known or Unknown compulsory sequence to either the IAC or CIVA, I never include a spin as it is required in the Free program's versatility requirements. And one spin demonstration per contest category should suffice. To be clear, this is just a think piece on safety, with no specific agenda other than a request to review mandatory competition spin requirements from a different mindset. Try considering the issue from this perspective: When a loop goes poorly, or a roll dishes out above 1,500', the results from a safety sense are usually negligible. When an Immelmann or a hammerhead goes wrong, there is real potential for a departure, but at least the aircraft is going up when the trouble begins.

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

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

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



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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 Melvill

...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.

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PHOTOGRAPHY COURTESY JEFF BOERBOON

A GARAGE DOOR OPENER NEARLY RUINS THE DAY

BY JEFF BOERBOON

My first flight in an Extra 300L wasn't a typical introduction to a new airplane, and I will never forget the lessons I learned.

Near Disaster

I RECEIVED ALL OF my initial flight training at the University of North Dakota (UND), where safety is the number one priority from day one. My first aerobatic flight was in UND's Mudry CAP 10B aircraft. After receiving my flight instructor rating certificate, UND hired me as a CFI specializing in aerobatic training and tailwheel sign-offs.

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LEFT: Approaching the tail, the garage door opener is not yet visible. **RIGHT:** Getting closer reveals something amiss toward the top of the photo.



The garage door opener fit perfectly between the bellcrank and fuselage structure, jamming it.

As an instructor in the Super Decathlon and the PA-18 Super Cub, one of the things I learned and subsequently passed on to my students was the importance of a thorough foreign object damage (FOD) check. I had read accident reports regarding items flying around and causing problems in the airplane for other pilots and was hoping to prevent this from happening to me.

I like to think of myself as a very safety-conscientious aerobatic pilot, but no matter how hard you try, the possibility always exists of something lurking out there that could bite you. And you need to be ready to handle it.

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After UND I moved to Las Vegas, Nevada, to fly Grand Canyon tours and build flight time. A friend of mine was in town to work on organizing the Tournament of Champions (TOC) radio-controlled model aircraft invitational aerobatic contest. One of the perks he enjoyed as the contest director of TOC was flying Bill Bennett's Extra 300L, and he invited me to go fly with him.

Until this flight I had flown aerobatics only in the CAP 10B and the Super D, so needless to say I was very excited to fly the Extra 300L. I was lucky enough to be in the right place at the right time to have a chance to fly this amazing airplane.

He pulled up on the ramp at the Boulder City airport after the quick flight over from Las Vegas in a beautiful red Extra 300L. I would have donned a bib if there were one



available! I had never been this close to an Extra; I couldn't wait to strap it on. We spent some time talking about the airplane during the preflight and going over our flight plan.

The airplane had very low time and appeared to be in perfect condition. One look and you would think there's no way there can be anything wrong with the airplane mechanically. A look in the cockpit was equally as telling. With its leather seats and beautiful panel, the airplane seemed flawless in every way. So the only thing left to do was to buckle in and go fly. In retrospect I realized looks could be misleading.

We decided I was going to fly the airplane from the front seat, and after takeoff we would climb to altitude over a nearby dry lake bed and work on a few aerobatic figures. Everything was going according to plan; up to this point the airplane was flying just like I imagined it would. It was very light on the controls and had plenty of power. I thought that a half-Cuban-eight would be a good figure to start off with.

Altitude was good, airspeed was 170 knots, and I pulled around 5/8 of a loop to the inverted 45-degree downline. I was impressed by the ability of this amazing airplane. I set the 45 line, then did a half-roll to upright with a quick check of the sighting device, and that is when the excitement began. I tried to pull back on the stick to get the airplane to level upright flight, but nothing happened; the elevator control was jammed.

One thing we did right was climb to a very safe altitude, which was a good thing because we were still on the 45 line down with no up elevator. I called back to my friend to ask if he knew what was going on, and he responded with a few choice words that made me realize there was definitely a problem. Since I didn't have trim control in the front, I asked him to move the trim to see if we could get the nose to come up.

This worked. We built speed, and with a bit of trim control we started to climb. Now that we were out of immediate danger, my friend was able to explain what went wrong. He told me he hadn't zipped the document bag on the sidewall of the cockpit properly and that all the stuff inside had come out of the bag when we were inverted on the 45 downline. He was able to collect everything that had fallen out of the bag with the exception of the garage door opener.

"A garage door opener?" you ask? Well, so did I. It turned out Mr. Bennett's hangar is in the Quail Air Center at the Las Vegas airport, and the pilot needs a garage door opener to open the gate for taxiing in and out to the ramp at the airport.

... the possibility always exists of something lurking out there that could bite you.

We made every attempt to dislodge or break the garage door opener to free the elevator—with no success. We had forward stick, so I rolled inverted again in an effort to dislodge or break the opener. Nothing we did worked and now we were faced with a decision. To maintain altitude with the stick as far back as possible we had to hold about 125 knots. Because of the light fuel load for aerobatics in the Extra we didn't have much time to make something happen.

If we were going to make an attempt to land the Extra, I thought that the dry lake bed below us would be the right spot because it's about 15 miles long. I called Boulder airport personnel and had them dispatch the crash fire rescue to the lake bed. We also considered other options such as jettisoning the canopy and bailing out. But we were in Mr. Bennett's airplane, and having to explain to him that his airplane was a burning hole in the desert didn't seem like a good idea. Not to mention that I was using his parachute and I knew nothing about its integrity—yet another lesson.

Near Disaster



Jeff (left) went flying with Patty Wagstaff a few days after his incident.

When the emergency equipment was in position on the lake bed, we started to make an attempt at a landing. We were both holding the stick back to get as much up elevator as possible, and I was using the throttle to control our altitude. I made a very long, shallow approach by pulling the power a couple of rpm at a time to ease down to the lake bed. We were at 130 knots, which is more than twice the regular speed for touchdown in the Extra. We were both still holding the stick back, but when the wheels touched down I tried to push the stick forward; my friend held the stick back.

Obviously this didn't work, and we skipped off the lake bed about 10 feet in the air. We settled back to the ground and skipped again. This time when the nose was up I hit the power and we went around. We were getting really low on fuel, and I explained to my friend that we needed to push the stick forward when touching down. He didn't have as much experience flying tailwheel airplanes as I did and said that he would stay off the controls.

I was able to make another pass. This time when we touched I pushed the stick forward and we were safely on the ground. We were both anxious to see where the garage door opener had ended

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up, and a quick look in the tail of the airplane through the clear inspection panel was all we needed. The opener was just the right size to lodge itself in the flanges of the lightening holes in the rudder post at a 90-degree angle to the control horn for the elevator. I removed the inspection cover and pulled out the garage door opener. We buttoned it up, and I flew off the lake bed back to Boulder City. Who knew there would be so much to learn in such a short flight? ()

Here are some of the lessons I learned from a close call. A pilot is most familiar with his own airplane, but when you have a chance to fly with someone in



that person's airplane, or when flying a different airplane in general, you have to be that much more aware of the pitfalls. Make the effort to look for problems beforehand. Don't be shy in pointing out a potential problem when it comes to flying with someone in his aircraft even if it's new and looks perfect. He'll thank you if you find something that will make it a safer flight.

We all have to make some decisions when it comes to bailing out of an airplane. You have to use absolutely all the information at your disposal. When I was faced with this decision, I had far too many questions unanswered. What's the status of the parachute? How would I get out of this particular airplane? What are the implications for the owner? These are just a few of the questions you should have answers to before you take off.

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Something that I have adopted at the start of every aerobatic flight is a half-roll to inverted, not only to check the inverted oil pressure and seat belts, but also to see if there's FOD in the cockpit. Had we done this simple thing, we would have caught the opener without incident before rolling upright. Another problem we faced was not having a clear understanding of who was flying the airplane at the most critical moment. With both of us on the controls it made for a lot of excitement at low altitude.

The bottom line is that you can never know all the things that might go wrong when flying an aerobatic plane. However, it's our responsibility to make sure that we do everything we can to eliminate these issues and to be prepared for what might happen.

Fly safely. IAC



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Flying for a Patch

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BY ADAM COPE

IN MY HELMET I hear, "Well...that didn't work," as I continue to fall out of a botched vertical-up snap roll. This was but one maneuver I was trying to score five or better in order to achieve my Unlimited Smooth patch.



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started this flight with a long sequence of maneuvers in an attempt to get all five Smooth patches. I had made it through the other four (Primary, Sportsman, Intermediate, Advanced) and was about halfway through the Unlimited patch at this point. With little steam left in me and the fuel gauge nudging closer to "E" I decided to land.

"What's a patch?" is a question I've been asked several times over the course of this contest season as I talked about my quest for all of them. I suddenly became obsessed with getting patches and wanted them all after some idle conversation during a rainy contest in 2009. I've been competing and instructing in aerobatics since 1994, but not until now have I decided to try for any patches. The patches I refer to are part of the IAC Achievement Awards program. You can find all of the information about them in Appendix 5 of the *IAC Official Contest Rules* book. I've discovered that most of the newer IAC members know nothing about this program, so I thought I would share my story on my quest so far to get my patches.

There are two types of awards, Smooth and Stars. Smooth awards are achieved simply by flying individual maneuvers in front of a judge and scoring five or better. You can do this in one flight or one maneuver at a time over days or years. Practice days at contests make for the perfect place to find a judge to watch you fly. Another alternative is what a few of us in my local chapter tried to do. We scheduled a "patch-orama," where we all would take turns getting all five patches in one day. Weather kept patch-o-rama from ever coming to fruition, so I took advantage of an early practice day to get through almost all of them in one flight. I was flying the Extra 200 I was going to use for the competition and went right through my Primary, Sportsman, Intermediate, and Advanced patches with little trouble (although the silly roller in Advanced gave me an issue). Now it was time to push on to Unlimited. I could just imagine how quickly the judge's fingers were counting down as I got halfway through a roller and heard, "Start over." That stupid 360 four-roll inside/outside roller (I believe all rollers should be outlawed) took what seemed to be at least 1,000 tries to accomplish. Finally I



Adam and son Jackson, "My chief fuselage FOD retriever and IAC pilot to be."

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could hear everyone cheering from 2,000 feet as I came out 10 degrees off heading but managed to get the "perfect five" score. After the roller (did I mention I don't like rollers?) my brain was fried, but I pushed on. I got through my double-outside Cuban-eight with a score of eight and moved on to the vertical snap roll, where my quest for the final patch of the flight would end. A few days later I was able to go up and finish off the Unlimited Smooth patch. When you get them all, you get a special "All 5" patch.

GETTING MINE

Flying for the Smooth patches was fun and challenging in its own way. Many times in the contest environment I find I can mess up a figure quite well and still score it above five. I believe the workload on the judges in just trying to keep up, especially for more complex sequences, makes the quick calculations difficult. The result is a lot of scores in the six to nine range. Now you put that same judge out there to watch you fly just one thing at a time, and suddenly it's easy for him to count down through five points all the way to zero. I never recall scoring below a five in a roller at a contest. But here I wasn't even halfway through the thing, and I was below five. (Again, rollers should be outlawed.)

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I found that flying for the Smooth patches was fun, and it gave me something to do while hanging out the day before the contest. I believe the folks on the ground had a good time watching. Now everyone is jealous of my cool patches.

Since I flew for my Smooth patches, there has been a rule change that has created an even more accessible way to get Smooth patches. You can now fly with a qualified person in the airplane with you, and he can sign them off. I plan on getting many of my students this season all "patched up."

Over this contest season I was also able to get my Intermediate Stars and Advanced Stars patches but couldn't get the ever-evasive Primary Stars patch. My first try at the Primary patch was in a T-28 at the East Coast Aerobatic Contest in Virginia. After flying two 85 percent flights, I was feeling pretty good about it. You see, for the Stars patch, you have to fly all the available flights in the contest and not score below five on any one maneuver. Well, I was solid on two flights and thought I had it in the bag. After all, what contest would have more than two Primary flights, especially in one day?

As I taxied out for my Advanced free flight, a voice sounded in my headset, asking if I wanted to fly again that day. "Sure!" I said. After my Advanced free flight was completed, I strapped on the T-28 and headed up for the third flight. Long story short, I entered the loop too slow, fell out of the top of it a little bit, and a certain judge (initials BF and 2008 hall of fame inductee) gave me a two. So much for my Primary Stars patch!

The Intermediate Stars wasn't that bad in the Extra, and I was able to get it down in Lumberton, North Carolina. (Can't wait for more frog stew this year.) I had to set out with a strategy to get the Advanced Stars. Since the goal was to score a five or better on all figures in all available flights, I was ready to take breaks and set myself up

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for good figures. Of course the Unknown flight was the one I worried about most. Turned out the Unknown was the least of my worries. My first attempt at the Advanced Stars ended on the Known flight. I managed to "zero" two figures. I even zeroed a figure on my free. How the heck did I do that? Funny thing, the Unknown was clean, scoring 86 percent. Oh well.

My second shot at the Advanced Stars went much better. I managed to get through the Known and Free without a zero. *Wooo-hooo!* I was all geared up for the Unknown, but Mother Nature had a different plan; I didn't fly it. I felt like I cheated, but the rules are the rules. My two flights were enough, and I scored more than five on everything.

PATCHWORK

This season my plan is to finish my Primary and Sportsman Stars patch in some kind of low-powered airplane or at least a fun airplane. I would like to shoot for Primary Stars in something cool like that T-28 again if the owner will let me. Maybe I'll be able to get through the Primary without falling out of the loop. Then it will be on to Sportsman in something like a Citabria. That will give me the "All 9" designation and all the fame and fortune that go with it.

I doubt I'll ever get the Unlimited Stars. I hurt my brain just watching the Unlimited Unknowns from the ground. Kind of sad because the "All 10" patch looks cool, and the chicks dig it. I'll leave that one up to the nuts of our sport. **IAC**

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Photo by Alden Frautschy

UNLIMITED TEAM PROFILE BY TIM JUST



Tim Just (left) and his grandfather and his new Cessna 172.

Tim Just

MY STORY IS JUST like that of so many other aerobatic pilots. I'm a third-generation pilot who grew up in Southern California. I was born in 1961. In 1967, my grandfather bought a brand-new Cessna 172. I worked hard to make sure that the plane never left the ground unless I was in it. Southern California was the perfect place to be if you wanted to see an air show. Art Scholl was the first air show pilot I can remember...wingtip smoke... inverted ribbon cuts...what could be better?

Model airplanes became my obsession, and I spent all of my free time flying models in Mile Square Park. I periodically gave myself a little extra free time during high school by skipping class to practice. I started to compete with aerobatic models in 1978 and won the national competition at Lincoln, Nebraska, in 1979.

It was that same year I took my first ride in a Pitts Special. I talked the pilot into showing me an outside loop. As we pushed around the back side of the loop, the orange trees at Santa Paula looked huge! I was hooked.

Fast-forward a few years: I found myself living in Fresno, California. The Selma Aerodrome had a Decathlon for rent, and I started taking lessons from Alan Geringer. Alan was my aerobatic instructor and was also the examiner for my private pilot checkride. Selma is a magical place. No less than four pilots have gone from that 2,000-foot strip to the U.S. Unlimited Aerobatic Team. In 1985 I flew my first IAC contest—Sportsman in Alan's Decathlon. There were eight competitors in the category, and I came in 8th. But flying the Decathlon was great fun.

It was clear I needed my own airplane. Step one: Get a good job. Luck was on my side on this one. A friend from my model airplane days recommended me for a job flying unmanned aerial vehicles (UAVs).

In his 25 years flying unmanned aerial vehicles (UAV), Tim has flown first flights on 17 UAV's; most notably the Predator.

The bad news was I spent most of the next decade either out of the country or out of the state. In 1994 I bought a Pitts S-2S, but UAV deployments made big gaps in my contest career. However, after 25 years of flying unmanned airplanes, I'm very happy to have done the first flights on 17 UAVs, most notably the Predator. Predators have now flown more than 1 million hours, and one is on permanent display at the Smithsonian National Air and Space Museum.

Fast-forward a few more years: My Pitts was replaced by an Extra 300. I had a forced landing on my last practice flight before the 2007 U.S. National Aerobatic Championships at Sherman-Denison, Texas. I wasn't injured, but my Extra would spend most of the next year at Southeast Aero being rebuilt. (It looked better than new when it was done.) However, it was time for another plane. While the 300 was being rebuilt, I found an abandoned 300 S in the back of a hangar in Santa Barbara, California. This plane hadn't flown in a few years and had become a bird habitat, but it was just a pressure washing and ferry permit away from its new home.

Fast-forward another year: After flying Advanced for a while, I decided that it was time to try Unlimited. This turned out to be a great decision. At most of the local contests there were only a couple of other competitors—instant gratification! I had flown in the Nationals for the first time in 1993, and it took a while to get back. My fourth Nationals in any category was in 2010. When I landed after the second Unknown, I knew I had a good flight. My friends were making eye contact with me as I taxied in (instead of reading their programs). When the dust settled, I was the first alternate. Since that time, Hector Ramirez resigned his spot. His decision left a



Tim prepares to fly his first contest in Alan Geringer's Decathlon. He finished 8th out of eight competitors, and was hooked.



Tim won the national competition in model aircraft before moving on to their full-scale counterparts.

spot for me as a competing team member, and some big shoes to fill. Having the opportunity to fly in the World Aerobatic Championships and represent the United States is truly a dream come true. **IAC**

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STEVE JOHNSON COLUMNS / SAFETY CORNER

Van's RVs are a popular aircraft capable of competition aerobatics

Your Input Please

THIS MONTH, INSTEAD OF providing information I would like to ask all of you for information. Please take a look at the accident data chart, and give us your thoughts about what we can do to reduce aerobatic accidents in our community.

The data is derived from the NTSB accident investigation data for the five-year period from 2005 through 2010. Although I said aerobatic accidents, please note that several of the accidents occurred while doing aerobatics in nonaerobatic airplanes. These nonaerobatic airplanes included a Beech Baron, Piper Cherokee, Cessna 172, and weight-shift trikes. We need to reach these pilots as well as the pilots flying aerobatic aircraft. From the NTSB data I did remove takeoff and landing accidents, and those accidents that occurred in aerobatic airplanes that were not related to aerobatic flight. These included fuel exhaustion issues, flight into instrument meteorological conditions, and pilot medical issues.

A large group involved in aerobatic accidents is the Van's series of RV aircraft. The IAC has a working group set up to try to reach more RV pilots, and you have probably read the articles about us trying to get more RV pilots involved in the IAC. If you know of any RV pilots in your area, invite them to your next IAC chapter meeting, contest, or practice day. We need to reach out to this group of pilots.

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PHOTOGRAPHY BY ABBEY HAUG

Note the numbers of nonfatal accidents. There are not many survivable aerobatic accidents, thus the risk is very high for severe injury and death for small mistakes made when doing lowlevel aerobatics.

One-third of all the accidents in this time period were from RVs or nonaerobatic airplanes, while the other two-thirds were from "aerobatic" aircraft. I recognize that RVs are aerobatic, but most are not built or flown as aerobatic mounts. It is difficult to tell the pilot experience levels from the NTSB reports, though pilot hours are discussed. Total pilot hours reported varied from about 100 hours to many thousands of hours. The accident rates are trending slowly downward, but 15-20 deaths per year are way too many for our aerobatic community.

So my question is, how do we help to prevent these aerobatic accidents? How can we reach these other pilots? Your IAC Safety Committee is trying to spread the word within our aerobatic community, but we need to get the word to others. How can we do this?

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I discussed the IAC/RV Working Group in place already, and another piece of the answer will be the new IAC TechWatch. TechWatch, currently under development, is an Internet-based safety, human factors, and airframe/ engine forum where we can provide information on safety and mechanical issues we find. TechWatch will be open to all IAC members, so please feel free to provide safety issues and solutions at TechWatch when it becomes available. Both of these programs will provide some help and information, but we need to reach out to all realworld pilots, and this is where all IAC members can help.

I teach aerobatics in my airplane and provide aerobatic and competition presentations to local EAA chapters and other aviation-oriented groups, and I know many of you also do these things. But what else can we do? How can we reach other nonaerobatic pilots? Please help the IAC make aviation and aerobatics safer by giving us your ideas. What works in your area? How do you get more safety information out to local pilots? What works for you may work elsewhere, too. Please share any information or programs with me at gjunkie1@aol.com, the IAC Exploder, or TechWatch. General safety, or nonmechanical issues, will fit perfectly in the human factors section of TechWatch. so please be ready to use this IAC new resource when it becomes available. Thanks, and fly safely! IAC



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CONTEST CALENDAR



Mark your calendars for these upcoming events. Updates at **www.IAC.org.**

And if you're hosting a contest, post it there!

Ben Lowell Aerial Confrontation (South Central)

Thursday, May 12 – Sunday, May 15, 2011 Location: Sterling Municipal Airport (STK): Sterling, CO Tel: 303–514–1609 • E-Mail: *mlforney1@msn.com* Website: *http://www.IAC12.org/*

Carolina Boogie (Northeast)

Friday, May 13 – Sunday, May 15, 2011 Location: Wilson Industrial (Wo3): Wilson, NC Tel: 919 605 9585 E-Mail: n100mp@yahoo.com Website: www.IAC19.org

Jersey Skylands Aerobatic Championships (Northeast)

Friday, May 13 - Sunday, May 15, 2011 Location: Greenwood Lake Airport (4N1) (4N1): West Milford, NJ Tel: 845-978-0511 • E-Mail: *jdf@fellp.com* Website: *http://www.iac52.org/2011/jsac/index.html*

Armed Forces Memorial (Southeast)

Friday, May 20 – Saturday, May 21, 2011 Location: Granada Muni. Airport (KGNF): Granada, MS E-Mail: wroberts@waco-eng.com Website: www.IAC27.org

Southeast Aerobatic Open (Southeast)

Friday, June 3 – Saturday, June 4, 2011 Location: Russell Regional Airport (KRMG): Rome, GA Tel: 706–506–0550 E–Mail: *capitoline@bellsouth.net* Website: *www.iac3.org*

Robert L. Heuer Classic (Mid-America)

Saturday, June 4 – Sunday, June 5, 2011 Location: DeKalb (DKB): DeKalb, IL U.S.A. Tel: 815–258–0047 • E-Mail: *jimklick@sbcglobal.net* Website: *www.IACChapter1.org*

Lone Star Aerobatic Championship (Southwest)

Friday, June 10 – Saturday, June 11, 2011 Location: North Texas Regional (GYI): Denison Texas Tel: 214–208–3523 E-Mail: cplne@aol.com

Northern California Cloud Dancer Hoedown (Southwest)

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Friday, June 10 – Saturday, June 11, 2011 Location: Paso Robles Municipal Airport (PRB): Paso Robles, CA Tel: (510) 579–3407 • E-Mail: martin@pull.gs Website: http://www.iac38.org/paso2011.htm

Wildwoods AcroBlast (Northeast)

Friday, June 10 – Sunday, June 12, 2011 Location: Cape May County (WWD): Cape May, NJ Tel: 717-756–6781 • E-Mail: cwisman@comcast.net

Ohio Aerobatic Open (Mid-America)

Friday, June 17 - Saturday, June 18, 2011 Location: Union County Airport (MRT): Marysville, OH Tel: 574-721-4340 • Website: www.IAC34.com E-Mail: jgranger@columbus.rr.com

Illinois Aerobatic Open (Mid-America)

ADRIL ADVERTISING INDEX

Saturday, September 3 – Sunday, September 4, 2011 Location: Kankakee (IKK): Kankakee, IL Tel: 815–258–0047 • Website: www.IACChapter1.org E-Mail: jimklick@sbcglobal.net

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Superflite	19	www.superflite.com	800/323-0611

Ohio Fall Frolic (Mid-America)

Saturday, October 1 – Sunday, October 2, 2011 Location: Bellefontaine Regional Airport (EDJ): Bellefontaine, OH Tel: 513–284–5076 • Website: www.IAC34.com E-Mail: penn.lorr@yahoo.com

Apple Cup (Northwest)

Friday, June 24 – Saturday, June 25, 2011 Location: Ephrata Municipal Airport (KEPH): Ephrata, WA Tel: 206-359-8664 E-Mail: JRiedinger@perkinscoie.com Website: www.iac67.org/

U.S./ CANADA AEROBATIC CHALLENGE (Northeast)

Saturday, June 25 - Sunday, June 26, 2011 Location: OLEAN AIRPORT (OLE): OLEAN, NEW YORK Tel: 716-361-7888 • E-Mail: cbpbmb@aol.com Website: IAC126.blogspot.com

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Hector Ramirez





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